MYKOLAS ROMERIS UNIVERSITY

Public Security Academy

TRANSFORMATIONS, CHALLENGES AND SECURITY

Collective monograph

Mykolo Romerio universitetas

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Chapter V. The definition of terrorism: international legal regulation and policy. Violeta Vasiliauskienė

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Chapter IX. Regulation of non-horizontal concentrations in the context of EU economic security. Anželika Banevičienė.

INTRODUCTION

This collective monograph presents the results of several years of scientific discussion in the MRU Public Security Academy, while also outlining the concept of security as a separate research area in various fields of human activity.

It is noteworthy that the first contours of the concept of cohesion as a distinct field of research were drawn by taking into account both the national and international dynamics of the debate and the current context of the field. The results of both international research and that of the community and peers of the MRU Public Security Academy have shown that security is a priority not only at the local level, but also at the international level; at both the micro and macro scales.

In recent years, researchers have paid particular attention to assessing security, challenges, and risks through a multidisciplinary lens. While interdisciplinarity is crucial in security research, it is also necessary to acknowledge that this field of study possesses certain qualities that make it distinct. This collective monograph presents the work of researchers from the MRU Public Security Academy.

The monograph covers a wide range of issues, from economic security to understanding tourism risks.

The aim of the monograph is to highlight the challenges of transformation in the context of economic security. The issues raised in the monograph are explored through several objectives:

1. Analyze the transformation of the global labor market in the context of globalization.
2. Identify changes in Ukraine's economic security and strategic priorities.
3. Describe environmental security in the national security frameworks of countries.
4. Understand the impact of hybrid threats.
5. Analyze the international legal and policy framework for terrorism.
6. Demonstrate the impact of economic security on business.
7. Analyze risk perceptions in the tourism sector.

8. Understand the characteristics of economic security and tourism risk management.
9. Examine the regulation of non-horizontal concentrations in the context of EU economic security.

Creating this collective monograph involved the following basic research methods: scientific literature review, economic analysis, analysis of statistical data, analysis of legal acts, synthesis of results, formulation of conclusions, and justification of proposals for security theory and practice.

The monograph consists of the following 9 chapters:

Chapter I. The transformation of the global labor market: globalization discourse.

Chapter II. Ukraine's economic security: changes in security positions and strategic priorities.

Chapter III. Environmental safety in the national security systems of Ukraine and the European Union – case studies.

Chapter IV. The impact of hybrid threats.

Chapter V. The definition of terrorism: international legal regulation and policy.

Chapter VI. The impact of economic security on business.

Chapter VII. Features of risk perception in the tourism sector.

Chapter VIII. Economic security and tourism risk management.

Chapter IX. The regulation of non-horizontal concentrations in the context of EU economic security.

This monograph represents the collective efforts of Lithuanian and Ukrainian scientists. Its aim is not only to present security research and enhance the scientific discourse, but also to offer a critical analysis of the research process and the peculiarities of research methodologies. While treading this path, the authors also seek to enhance their own knowledge and build on their research skills.

CHAPTER I. THE TRANSFORMATION OF THE GLOBAL LABOR MARKET: GLOBALIZATION DISCOURSE

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Abstract. *The aim of this study is to identify the most recent transformations in the global labor market in the context of the globalization of the labor supply system.*

Research tasks:

- *to investigate global labor resource transformations and economic development;*
- *to analyze migration trends in the global labor market system;*
- *to determine the prerequisites for the formation of a global migration policy outline.*

The influence of globalization on the development of the global labor market is studied. It is established that the dynamics of the international labor market have a complex socio-economic nature and are determined by the state of labor resources, the development of national labor markets, and the nature of the distribution and

redistribution of labor in the global economy.

A conclusion regarding future labor resource threats in the global labor market system is formed on the basis of the analysis of the global demographic situation. Manifestations of global labor resource crises are identified, determined by: the features of the development of employment in the global economy; the transformation of employment due to the influence of technological change; and the global gap in the level of employment. It is determined that international migration is a key factor in the transformation of the global labor market.

At the present stage of economic development, international migration is an objective requirement for the formation of an integrated global economic system. Manifestations of international migration are driven by both the needs of global development in general and factors of the internal economic development of some countries in particular. In modern conditions, migration is not only a factor and component of the globalization process, but also a means of solving economic problems.

It is determined that in recent decades, stable trends have emerged in the distribution of migration flows between countries. Economically developed countries dominate among migrant destinations. The labor shortage in these countries is a consequence of the so-called "demographic transition": it requires significant compensatory immigration to maintain the size of the economically active population. The result is the intensification of international labor migration. As a consequence, the redistribution of labor resources on a global scale is observed.

This chapter concludes by suggesting that the primary features of international migration are reflections of socio-economic transformations around the world. The manifestations and dynamic trends of these changes should be taken into account when developing state migration policy in any country.

Keywords: global labor market, globalization of labor supply, global labor resource transformations, employment, international migration, migration policy.

Current global economic development is characterized by systemic transformations in the context of the integrity of the global economy. Under these conditions, the labor resource factor turns into a determining component of economic development that causes transformational changes in the global labor resource provision system.

Global labor resource transformations make it necessary to analyze trends in the development of the global labor market, taking into account the role of migration in the system of international labor communications in order to determine optimal ways of creating a system for the international division of labor.

1.1. Global labor transformations and economic development

The activation of globalization processes radically changes the mechanism of labor supply at all levels and expands the spatial field involved in solving the problem of labor supply, which goes beyond the geographical borders of countries.

The basic condition of labor supply in the global economy lies in the nature of demographic development. From 1950 to 2100, the continuation of a positive trend is expected in the size of the global population (with some decreases expected after 2085). It is projected that there will be 8.5 billion people in the world by 2030, 9.7 billion by 2050, and 10.3 billion by 2100 (Fig. 1).

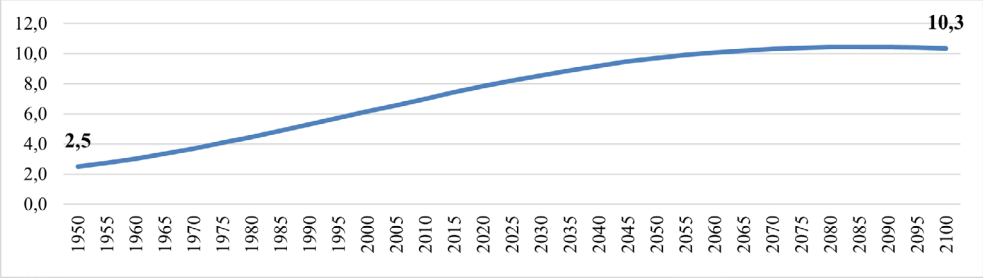


Figure 1. The dynamics of the global population from 1950 to 2100, million people

***2025–2100 – forecast**

Source: PopulationPyramid.net (n.d.)

At the same time, as the total population grows, differences in global demographic trends increase depending on countries' levels of economic development (Fig. 2). From 1960 to 2020, the population in high-income economies increased by 1.6 times (from 0.78 to 1.24 billion people), in upper-middle income economies it increased by 2.3 times (from 1.20 to 2.77 billion people), in lower-middle income economies it increased by 3.4 times (from 0.91 to 3.12 billion people), and in low-income economies it increased by 4.8 times (from 0.14 to 0.67 billion people) (World Bank, 2023b).[1]

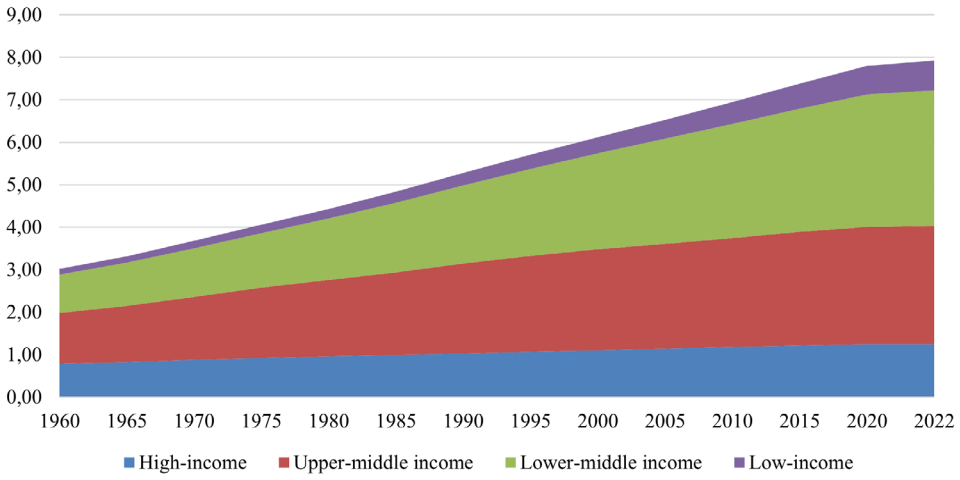


Figure 2. The structural dynamics of the global population by country income level, 1960–2020, billion people

Source: World Bank (2023b)

Over the next 30 years, half of the world's population growth will occur in 9 countries: India, Nigeria, the Democratic Republic of the Congo, Pakistan, Ethiopia, Tanzania, the United States, Uganda, and Indonesia. The most heavily populated countries in the world are China (1.4 billion people) and India (1.3 billion), and India is expected to overtake China in terms of population by 2024–2026. At

1 Here and further the classification of countries by income level is provided by the World Bank Country and Lending Groups https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

the same time, the country with the highest population growth rate is Nigeria, which will become the third most populous country in the world and overtake the United States in this regard by 2050 (Balabaniuk, 2020).

In addition, due to increases in life expectancy, the number of elderly people in the world will increase significantly. It is expected that the number of people aged over 80 years will increase six-fold from 2020 to 2100, from 146 million people to 881 million, while the average global age will increase from 31 to 42 years. Accordingly, the structure of the working-age population will change significantly, which will require the formation of a new paradigm of labor supply for the global economy.

From a regional perspective, the situation is significantly differentiated (Fig. 3): in each region, the demographic policy and the birth rate were formed as components of the general political, economic, and social history of the region's countries.

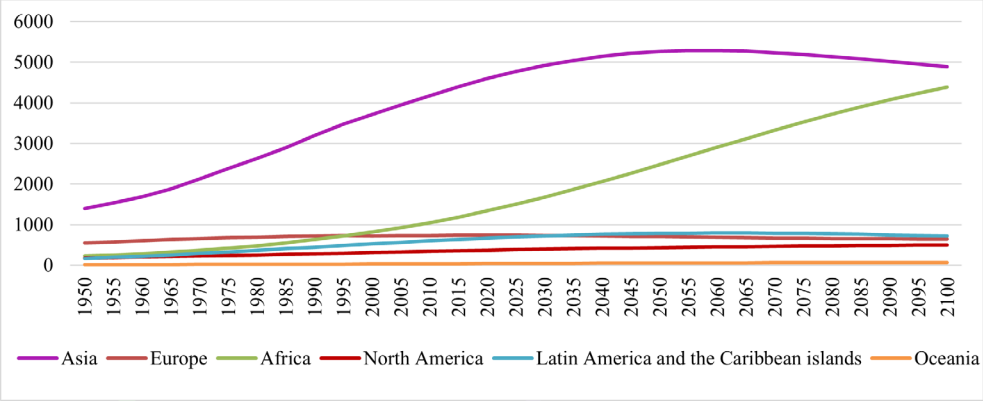


Figure 3. Population dynamics by global region in 1950–2100
***2023–2100 – forecast**
Source: PopulationPyramid.net (n.d.)

As a result of the Asian demographic transition (a decrease in mortality while maintaining a high birth rate), for example, the characteristic feature of the demographic situation in Asia in the second half of the last century is the demographic

explosion, which led to the strengthening of institutional birth control.

Demographic shifts in Europe are based on changes in Europeans' demographic behavior and an increase in the employment rate of women (Northern, Southern and Western Europe: 1995 – 39.7%; 2000 – 42.5%; 2005 – 44.6%; 2010 – 45.7%; 2015 – 46.3%; 2018 – 47.7%; 2021 – 49.1%). In Europe, an important role is played by measures aimed at achieving gender equality and equalizing professional and parental roles, as well as supporting single parents.

These measures are part of the second demographic transition in Europe, the leading feature of which is the sanctity of individuals: special importance is given to self-development, self-expression, and free choice of lifestyle. Characteristic features of the second demographic transition are a well-developed welfare state, which requires a high level of economic development to ensure social needs, and a positive migration balance, because today the birth rate in Europe does not ensure the reproduction of the population, so it's below replacement rate.

Until 1975, the demographic development of North America was similar to the situation in Europe. Starting from 1980, the birth rate on the continent gradually increased, and by 2000 it reached the replacement level. In the USA, the total birth rate varies between 2–2.1, in contrast to Europe, where it is 1.6–1.7. The US population is expected to grow by almost 1.5 times by 2050, due to both natural increases and migration growth.

The demographic situation in Latin America is influenced by significant property inequality, which leads to so-called social exclusion (low educational level, lack of necessary professional qualifications, low wages, poverty) and causes powerful flows of unskilled migrants from the region (ADASTRA, 2021).

The demographic situation in Africa is quite specific, as a result of significant differences in the levels of economic development of the continent's countries. African countries demonstrate a special version of the demographic transition, according to which a country can simultaneously be in two stages which do not

necessarily have to follow one another (e.g., a declining birth rate and increasing life expectancy). At the same time, despite high mortality in sub-Saharan Africa (excluding South Africa), the region's population doubles every 30 years.

Regarding Ukraine, existing and projected demographic trends (1990 – 51.6 million people, 2000 – 48.8 million, 2010 – 45.7 million, 2020 – 43.9 million, 2030 – 38.3 million, 2040 – 35.7 million, 2050 – 33.2 million, 2100 – 20.6 million people; Fig. 4) testify to future labor resource threats, which have been intensified by the full-scale aggression of the russian federation (downward demographic trends in the pre-war period are added to flows of refugees abroad, the size of which as of the beginning of 2023 was estimated at 6.7 million people; Kalashnyk, 2023).

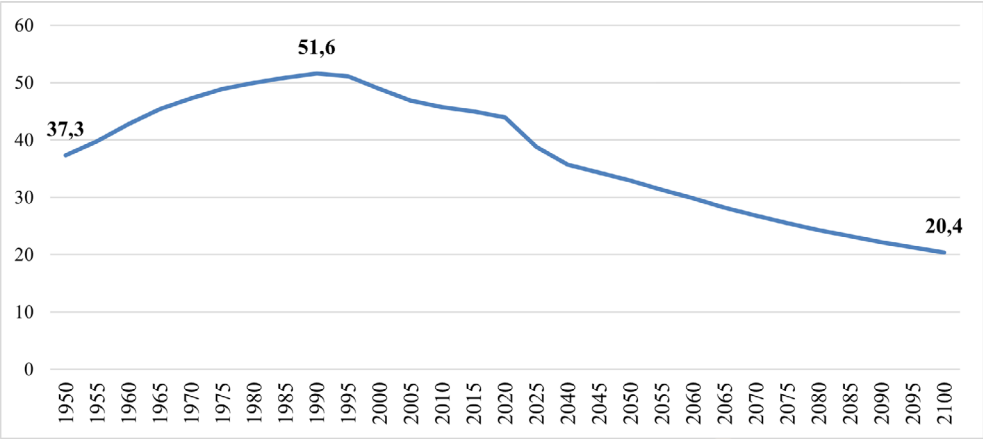


Figure 4. Dynamics of the population of Ukraine in 1950 –2100
***2023–2100 – forecast**
Source: PopulationPyramid.net (n.d.)

Despite a significant decrease in the population in 2022–2023 due to population outflow because of the war (2021 – 43.5 million people, 2022 – 39.7 million, 2023 – 36.7 million), a return to previous demographic trends is expected in the coming years (2024–2026) (Fig. 5). This is a phenomenon that requires further research, highlighting that the issue of regulating the demographic situation lies

within in the area of general economic processes in the state.

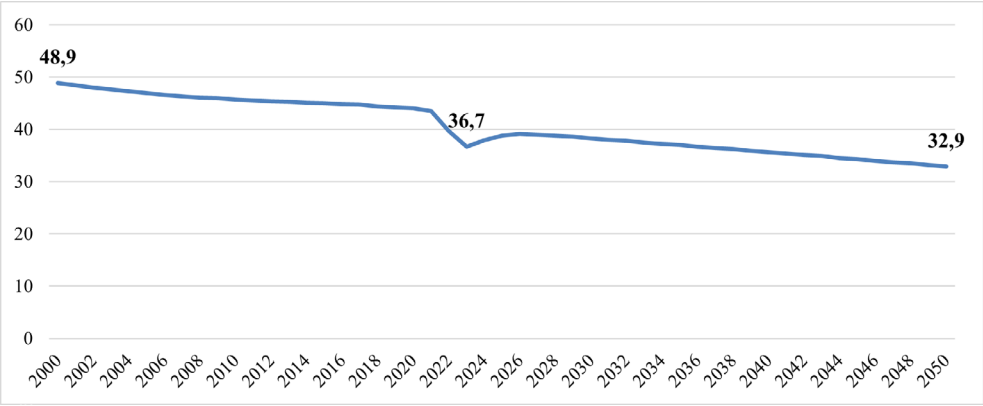


Figure 5. Dynamics of the population of Ukraine in 2000–2050
***2023–2050 – forecast**
Source: PopulationPyramid.net (n.d.)

According to estimates, in the medium and long term, the working-age share of the population in Ukraine is expected to decrease. According to positive or negative forecasts, by the beginning of 2060 this share may be between 47.7% and 55.3%. The specific weight of people older than working age may range from 24.7% to 40.8% (Pozniak & Shevchuk, 2014, p. 81). Taking into account the aforementioned, it is possible to form a conclusion regarding the expected growth of the demographic-economic load: there will be 600–633 people of retirement age per 1,000 people of working age at the beginning of 2060. One can also foresee the corresponding narrowing of the working-age population share to 47.7–55.3% (Pozniak & Shevchuk, 2014, p. 83), which actualizes the need to increase labor productivity in the country's economy. The importance of solving this issue is growing in the context of providing labor resources for post-war recovery and the further economic development of Ukraine.

It is obvious that global labor resource transformations affect the state of the international labor market, the importance of which is growing due to the issue of labor supply beyond national borders.

One characteristic of these transformations is that despite the growth of the workforce in the global economy (from 2.3 billion people in 1991 to 3.6 billion in 2023; Fig. 6), the level of employment exhibits a steady downward trend (from 61.4% in 1991 to 57.8% in 2023; Fig. 7).

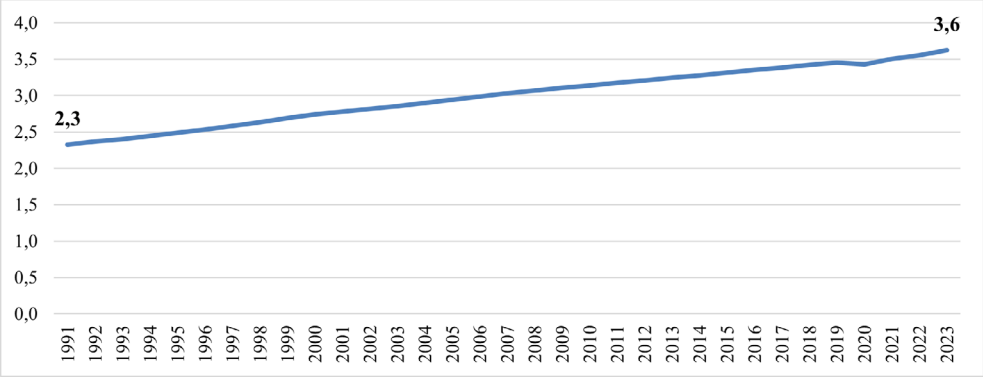


Figure 6. Dynamics of the workforce (15–65 years old) in the global economy in 1991–2023, billion people

Source: World Bank (2023a)

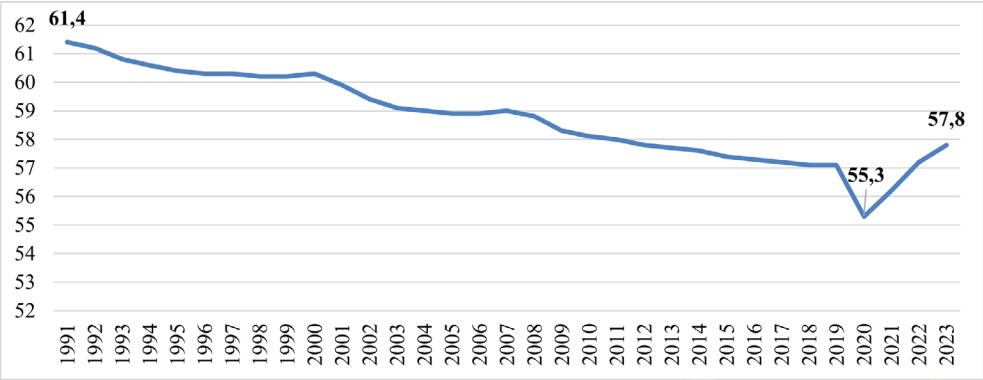


Figure 7. Level of employment in the global economy in 1991–2023, %

Source: World Bank (2023a)

A rise in the unemployment rate is quite expected under these conditions, but existing trends do not confirm this hypothesis: the overall unemployment rate in the global labor market shows only minor fluctuations, and a downward trend can be observed from 2003 (Fig. 8). The only exception to this is the COVID-19 pandemic of 2021. It is also obvious that migration is causing the redistribution

of workers on the global labor market – that is, labor migration is intensifying.

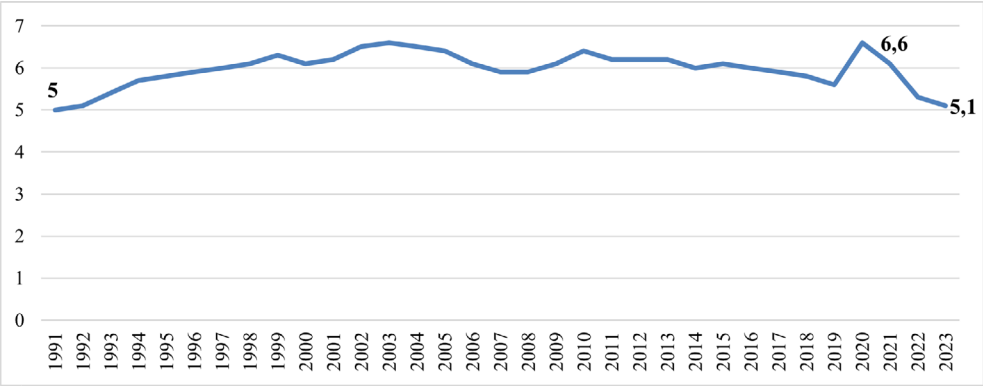


Figure 8. The level of unemployment in the global economy in 1991–2023, %

Source: World Bank (2023a)

It should be noted that before 2020, all forecasts regarding the development of the labor market were based on the postulates of the fourth technological revolution. However, the development of technologies after 2020 led to the emergence of new trends and challenges, which significantly affected the prospects for the development of the labor market on a global scale.

Despite the difficulty of quantifying the impact of technological progress on human labor, the fact remains that this trend does not depend on countries' levels of economic development, as it is characteristic of all countries (Fig. 9).

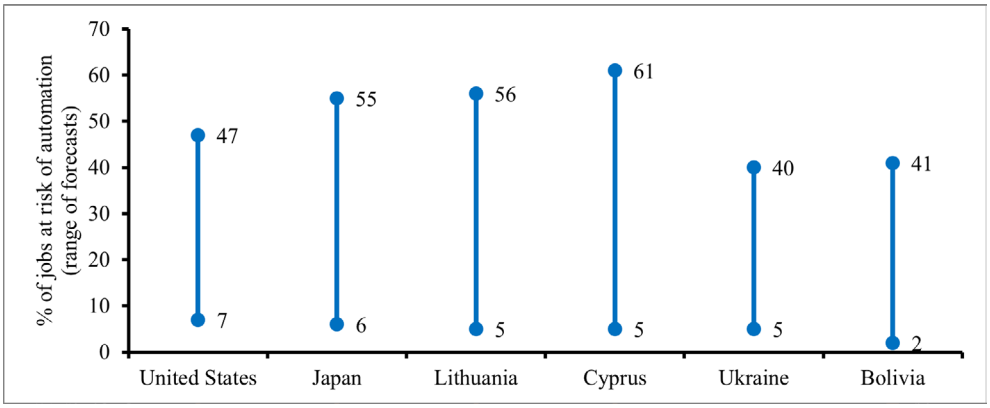


Figure 9. Estimates of the percentage of jobs that may be lost as a result of automation (minimum and maximum estimate) for a number of countries, %.

Source: World Bank (2019, p. 22)

According to Oxford University estimates, of the 70 specialties contained in the O'NET database of the US Department of Labor, almost 50% are at risk of automation (some inaccuracies in these estimates are possible due to the likely mismatch of occupational categories used in different countries). In addition, the reduction of jobs in outdated industries is accompanied by their creation in high-tech areas (Gregory et al., 2019). For example, according to the estimates of the World Economic Forum, the loss of 75 million jobs was expected by 2022 as a result of automation in the world economy, with the creation of 133 million new roles ("Technology will create more jobs…," 2018) – that is, new technologies create more jobs than they displace.

It is possible to single out several main trends in the transformation of the labor market under the influence of technical and technological changes.

Firstly, new technologies lead to the creation of global digital companies that generate value by creating a network effect that connects customers, manufacturers, and suppliers, and also simplifies their interaction.

Secondly, new technologies form the newest set of skills necessary for work: in addition to professional training, the importance of cognitive skills (complex problem solving), social-behavioral skills (teamwork), and the ability to adapt (logical thinking, self-confidence) is increasing in the labor market. According to World Bank estimates, the share of workers in specialties that require cognitive and social-psychological skills not related to the performance of routine operations increased from 19% to 23% in developing countries from 2001 to 2019, while in developed countries it increased from 33% to 41% (World Bank, 2019, p. 24).

Thirdly, new technologies affect the strengthening of inequality between countries. In conditions of inequality between the opportunities available for professional self-realization or a mismatch of jobs with available skills, prerequisites are created for international labor migration (World Bank, 2019, pp. 5–9).

Developed countries dominate the process of technological transformation. This significantly affects the transformation of the employment structure, bringing the service sector into a dominant position (Fig. 10) and setting trends in the structural transformations of the global economy.

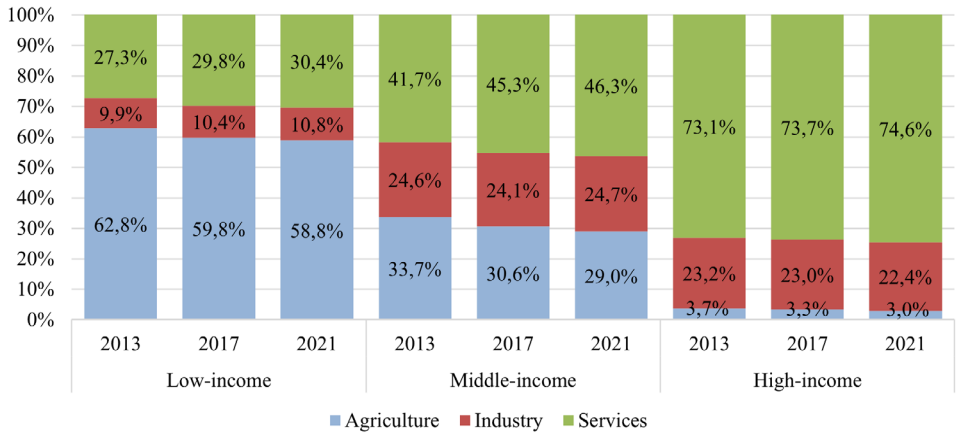


Figure 10. Dynamics of the structure of employment by spheres of economic activity and groups of countries by income level, 2013–2021, %

Source: World Bank (2023b)

Today, the growth of the service sector is among the most dynamic in the global economy. Services cover around two thirds of economic activity, and more than 50% of the world's workforce is employed in service companies. In many countries, the contribution of the service sector to GDP ranges from 50% to 70%, and over the last decade international trade in commercial services has grown annually by 5.5%. The development of global exports of computer and information services has been particularly dynamic (10% per year), while the R&D sphere (9% per year) and royalties and license payments (6% per year) have also grown at a fairly high rate.

Companies with a higher share of highly educated employees more successfully generate innovations and compete on the international market, while employees with more significant human capital receive more substantial economic

benefits from new technologies. Thus, at different levels of the economy there is a positive correlation between the state of human capital and the extent to which new technologies have been introduced (World Bank, 2019, p. 12). That is why making investments in human capital is a condition for using the opportunities that open up with the use of new technologies. Thus, continuous training is an objective prerequisite for balancing the labor market.

In order to achieve the best economic results, the most valuable resource is a labor force of productive age. At the same time, the global unemployment rate among young people aged 15–24 remains high (Fig. 11).

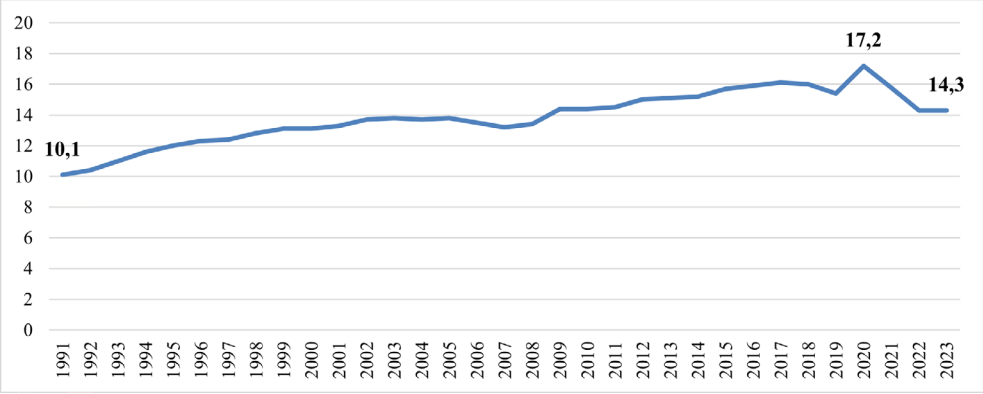


Figure 11. Unemployment rate in the global economy among youth aged 15–24 in 1991–2023, %

Source: World Bank (2023a)

Two groups of factors influence the formation of the inactive segment of the youth population: *external* (economic and political uncertainty in the country, lack of decent work for young people without professional experience, lack of social elevators) and *internal* (low motivation to work, overestimated self-esteem, desire for quick results). These factors intersect at the point of self-actualization (self-actualization is connected with the availability of interesting work and is possible only under favorable socio-historical conditions; Azmuk, 2016, p. 15). The absence of appropriate external conditions alongside the presence of a desire

for self-actualization contributes to the activation of the migration factor in the global labor supply system: labor migration expands the range of possible individual life strategies which are aimed at adaptation to socio-economic realities.

Against the backdrop of growing differences in global well-being (Table 1) and aging populations in developed countries, the solution to the issue of labor supply will directly depend on migration. This confirms the experience of the permanent immigration countries (USA, Canada, Australia, New Zealand), whose economic development strategies are based on the attraction of highly qualified immigrants as the basis of economic growth. Germany and France also belong to the group of developed countries with similar approaches to solving the labor supply problem.

As a result, the task of the international labor market concerning regulation in the context of migration arises, the starting conditions of which can be defined as follows:

- taking into account the openness of the labor market to foreign labor and the availability of mechanisms for recognizing professional skills and qualifications;
- understanding that managed labor migration has a positive effect on both countries of origin and countries of destination by accelerating economic development;
- the need for labor migration, which is supported by the improvement of national labor legislation and social protection systems; `
- the need to organize dialogue on labor migration issues at the intergovernmental level (Vnuchko, 2014).

Table 1. Dynamics of GDP per capita in different groups of countries in the 1000–2030 period, (PPT 1990* USD)

Countries and their groups	***Year***								
	1000	***1500***	***1820***	***1870***	***1913***	***1950***	***1973***	***2001***	***2030****
Western Europe	400	771	1,204	1,960	3,458	4,579	11,416	19,256	30,503
USA, Canada, Australia, New Zealand	400	400	1,202	2,419	5,233	9,268	16,179	26,943	43,109
Japan	425	500	669	737	1,387	1,921	11,434	20,683	32,774
Western countries	405	702	1,109	1,882	3,672	5,649	13,082	22,509	35,932
Asia (excluding Japan)	405	572	577	550	658	634	1,226	3,256	…
Latin America	400	416	692	681	1,481	2,506	4,504	5,811	8,949
Eastern Europe and the former USSR	400	498	686	941	1,558	2,602	5,731	5,038	10,920
Africa	425	414	420	500	637	894	1,410	1,489	1,987
The rest of the world	441	538	578	606	860	1,091	2,072	3,372	8,304
The world as a whole	436	566	667	875	1,525	2,111	4,091	6,049	11,689
Interregional gap	1.1:1	1.9:1	2.9:1	4.8:1	8.2:1	14.6:1	13.2:1	18.1:1	…

Source: Lukianenko et al. (2013, p. 228)

** 2030 forecast*

At the same time, the key requirement of the abovementioned regulation is the determination of the prospective needs of the labor market, taking into account the unification of requirements regarding the quality characteristics of the workforce in the conditions of the globalization of labor supply.

The importance of such regulation at the national and supranational level is determined by the need to mitigate the negative consequences and strengthen the positive effects that each country receives as a result of labor migration. Thus, it is necessary to consider the effects of both economic and non-economic factors: the

degree of the country's integration into the global economy; structural features of national labor markets; the characteristics of the demographic situation and the professional and qualification characteristics of the workforce, etc.

Taking into account differences in the levels of countries' economic development, the size of economic potential, specific conditions of economic activity, and the content of the national employment policy, it is obvious that the content of labor market regulation policies in different countries is not identical. At the same time, the central element of this new labor supply paradigm of the global economy is that it approaches the unification of the regulation of labor markets at the national level, which should be based on the ILO Global Pact on Jobs. This concerns promoting effective employment, regulating the labor sphere in accordance with international standards for the development of labor relations, developing tripartite cooperation, and social dialogue.

1.2. Migration trends in the global labor market

At the current stage of global development, the phenomenon of international migration continues to increase in scale, acting as a defining manifestation of the globalization process.

The foundational component of the formation of international migration flows is the state and nature of the development of the demographic situation – as the population grows, significant differences emerge in the course of demographic processes depending on the level of countries' economic development.

Against the backdrop of the increase in the global population over the last 60 years, there is a positive trend in international migration values. In 2020, almost 281 million people lived in a country other than their country of birth (UNDESA, Population Division, 2020; Migration Data Portal, n.d.; Fig. 12). This is approximately 128 million more people than in 1990 (152 million), and almost four times more than in 1960 (72 million).

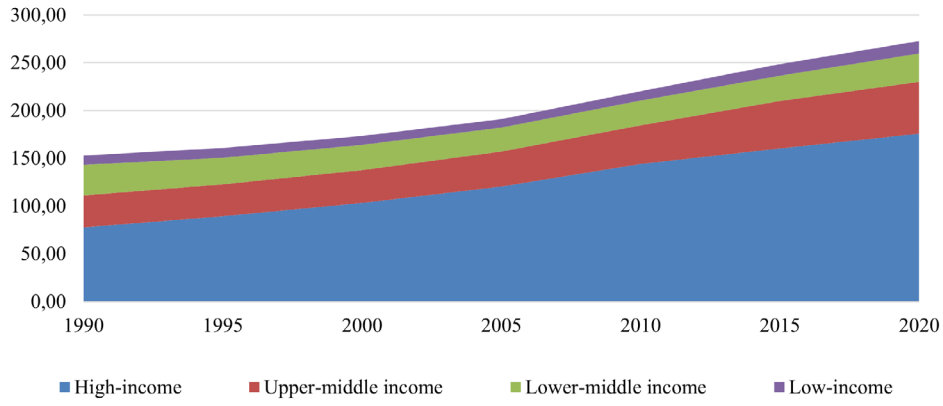


Figure 12. Dynamics of migrants by income levels of destination countries in 1990–2020, million people[2]
Source: UNDESA, Population Division (2020)

Motivation is the determining factor in the formation of international migration flows, and is composed of the following sub-elements: economic system (search for better opportunities to realize the ability to work), security (evacuation, repatriation, etc.), political (political persecution, discrimination), social (marriage, recreation, etc.), environmental motives (ecological disasters, unsatisfactory state of the environment, etc.), and force majeure circumstances.

The distribution of migrants by destination in terms of country income level indicates a steady increase in migrants flows to high-income economies (from 77.80 million people in 1990 to 175.81 million people in 2020; Fig. 12), while maintaining a stable number of migrants to other groups of countries.

More revealing is the change in the distribution of migrants by specific destination country (Fig. 13). For the period from 1990 to 2020, the share of high-income economy destinations increased from 51% to 64%. At the same time, the share of lower-middle economy destinations decreased from 21% to 11%. Taking into account the increase in the global population, these changes are quite significant: 77.8 million people migrated to high-income economies in 1990, and 175.8 million people in 2020; 33.3 million people migrated to upper-middle economies

2 Hereinafter, "migrant" is used to refer to an international migrant.

in 1990, and 54.3 million people in 2020; and 9.8 million people migrated to lower-income economies in 1990, and 13.1 million people in 2020. A decrease in the number of migrants is observed only in low-income economies – 31.9 million people in 1990 and 29.5 million people in 2020.

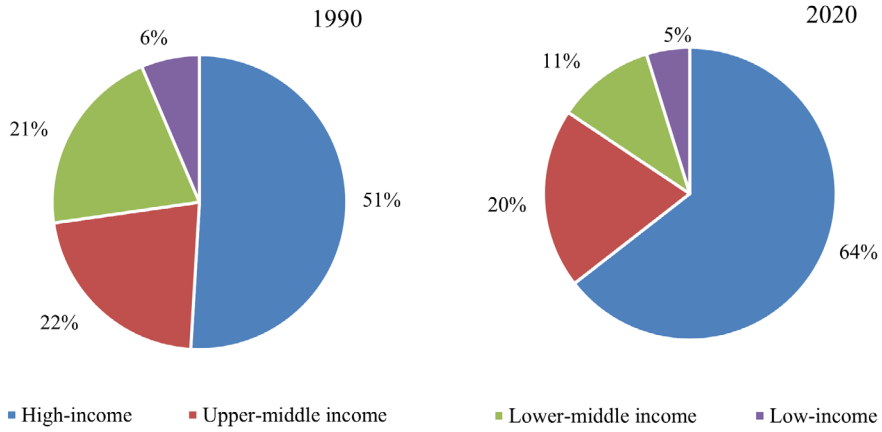


Figure 13. The distribution of migrants by destination country income level, 1990 and 2020, %

Source: UNDESA, Population Division (2020)

The shares of upper-income economies and low-income economies remain largely unchanged during the specified period: 21% and 20%, and 6% and 5%, respectively.

As can be seen, migrants are represented in countries with all income levels, but the reasons for migration are different, and the countries of the Persian Gulf (Gulf Cooperation Council) stand out in particular (Fig. 14).

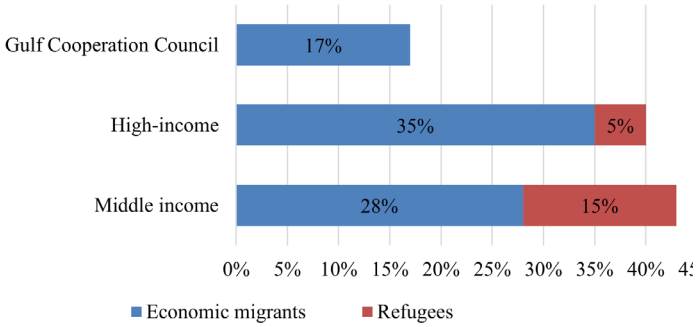


Figure 14. The structure of global migrants by host countries and reasons for migration in 2022, %

Source: McAuliffe& Triandafyllidou (2021, p. 44)

** Gulf Cooperation Council countries are not included in other country groups in the chart*

In order to highlight the factors that affect the transformation of the structural landscape of international migration movements, the situation in specified groups of countries requires more detailed analysis.

High-income OECD countries

The approximately 74 million migrants and refugees living in this group of countries (Fig. 15) consist of both high- and low-skilled workers, migrants with student visas, and stateless migrants.

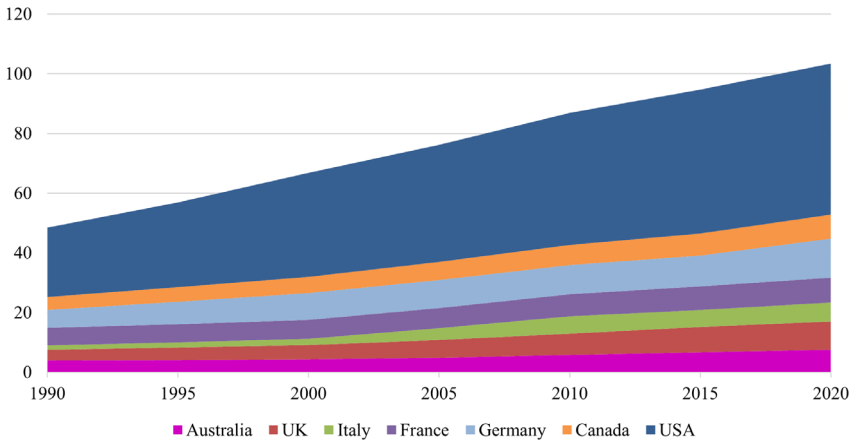


Figure 15. Dynamics of migrants to OECD countries (countries with the largest influx of migrants are listed), 1990–2020, million people

Source: UNDESA, Population Division (2020)

A significant share of regular migrants are motivated by family reunification (with spouses, parents, or children), and around 35% of these migrants live in the European Union (EU). Among migrants in OECD countries are those who have full rights of residence (for example, 11 million EU citizens living in another EU country and 13.6 million Green Card holders in the United States). Some migrants move to OECD countries temporarily, others intend to stay – in OECD countries, there are around 62 million naturalized citizens who are not considered migrants and are not counted in statistics. Among migrants in this group of countries, around 10 million refugees also receive international protection.

The overall dynamics of the influx of migrants to OECD countries shows a significant increase over the past 30 years – from 65.6 million in 1990 to 144.2 million in 2020.

In 2022, migration flows to OECD countries reached record levels. In particular, permanent immigration has been at its highest point over the last 17 years: every third country recorded an inflow of migrants, including France (301,000), Spain (471,000), and Belgium (122,000), while absolute records were broken in the United Kingdom (521,000) and Canada (437,000).

In particular, two million asylum applications were submitted in OECD countries in 2022, which is the highest level in history and twice as many as in 2021. At the same time, almost 80% of immigrants belonged to the economically active category, of which 70% were working people (Ukrinform, 2023).

In total, the group of high-income countries hosts more than 175 million migrants (as of 2020, according to United Nations Department of Economic and Social Affairs data (UNDESA, Population Division, 2020). The vast majority of migrants come from China, India, and Mexico (Fig. 16).

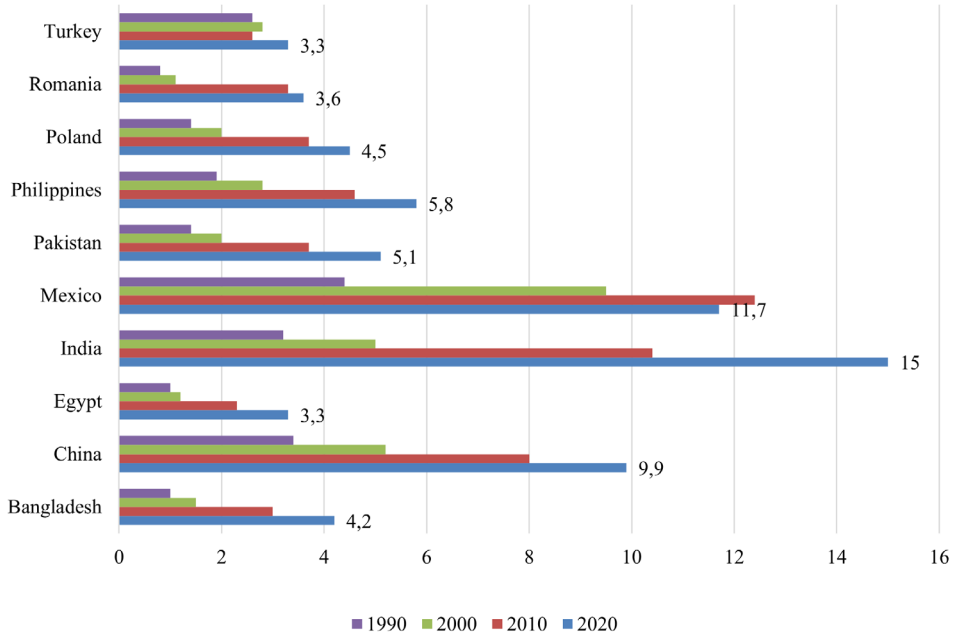


Figure 16. Leading countries of origin for migrants in high-income countries, 1990–2020, million people

Source: UNDESA, Population Division (2020)

Low- and middle-income economies

Approximately 79 million migrants (among them around 27 million refugees) that live in of low- and middle-income economies migrated for employment, family reunification, or other reasons, including those without citizenship (detailed data are not available for most countries in this group). Although migrants represent a relatively small proportion of the population in most low- and middle-income economies, there are some exceptions (Côte d'Ivoire – 9.5%, Djibouti – 12.6%, Gabon – 16%, Jordan – 41%, Lebanon – 34%; World Bank, 2023).

If we analyze the flows of migrants to middle-income and low-income economies, both the volume of migration flows and the countries of origin differ. Thus, middle-income economies are more attractive to migrants than low-income economies (82 million and 13 million migrants respectively, according to 2020

data).

There are also differences in migrants' countries of origin. People from middle-income economies mostly migrate to middle-income economies (russian federation, Ukraine, Kazakhstan, Uzbekistan, Palestine, Pakistan, India, Indonesia, Belarus, Bangladesh, Azerbaijan), and only 2 countries from the group of low-income economies (Syria and Afghanistan) are among the leaders in this regard. A similar situation is evident in low-income economies: low-income countries predominate among the countries of origin of migrants (Sudan, South Sudan, Somalia, Rwanda, Congo, Central African Republic, Burundi), and middle-income economies account for a much smaller share (Palestine, russian federation and India).

Member countries of the Gulf Cooperation Council (Bahrain, Qatar, Kuwait, UAE, Oman, Saudi Arabia)

Of the approximately 31 million migrants (Fig. 17) living in the Persian Gulf countries, almost all have temporary status – usually a multi-year work visa with the right to extend. Of the entire pool of migrants (both high-skilled and low-skilled), only highly skilled migrants can be accompanied by their families. These countries do not accept large numbers of refugees. In general, migrants make up more than half of the population of the Persian Gulf countries – around 79% (excluding Saudi Arabia). Migration to the Persian Gulf countries is exclusively labor-based, but there are differences in levels of qualifications which affect the duration of migrants' visas and the possibility of inviting family.

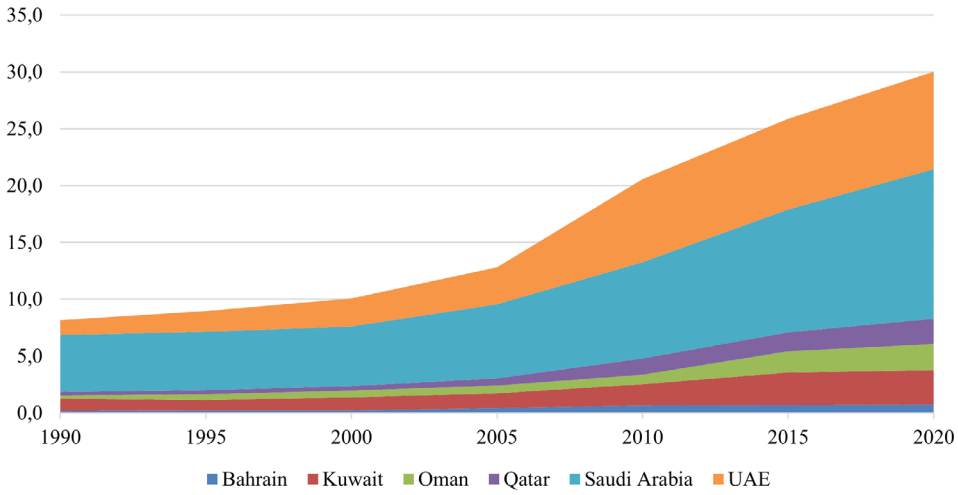


Figure 17. Dynamics of migrants to the Gulf Cooperation Council, 1990–2020, million people

Source: UNDESA, Population Division (2020)

The increase in the flow of migrants to the Persian Gulf countries (Bahrain, Qatar, Kuwait, UAE, Oman, Saudi Arabia) is mostly caused by the increase of migration flows from India, Bangladesh, and Pakistan. Although almost all migration to the region can be characterized as labor migration, its structure in the Persian Gulf countries is different: this mainly involves highly qualified personnel with an appropriate level of education from India, and low-skilled workers from Bangladesh and Pakistan.

Most of the countries in the specified groups are both countries of origin and countries of destination for migrants. For example, among high-income economies, the United Kingdom has become the host country for approximately 3.5 million immigrants, and at the same time was the country of origin for 4.7 million emigrants in 2022. Among middle-income economies, Turkey has a large economic migrant diaspora in Europe (1.9 million) out of a total of 3.5 million emigrants from the country, and at the same time hosts 3.4 million Syrian refugees and more than 2 million other migrants. Among low-income economies,

Nigeria is the host country for almost 1.3 million immigrants, and at the same time the country of origin for 1.7 million emigrants (Fleck, 2023).

It is characteristic that against the backdrop of global migration having grown by almost 4 times from 1960 to 2020 (from 72 to 281 million people; Fig. 12), the change in the share of migrants in the overall population structure has been insignificant: the share of persons born abroad (both migrants and naturalized citizens) grew from 2.4% of the global population in 1960 to 3.5% in 2020 (Fig. 18).

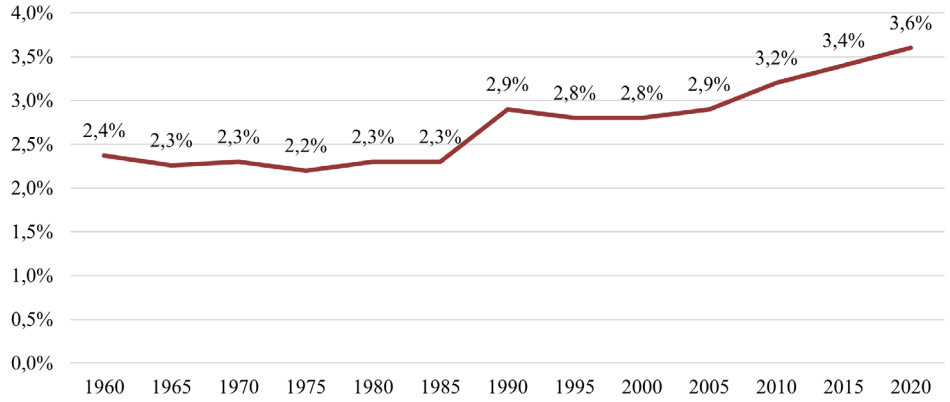


Figure 18. The share of international migrants in the total global population, 1960–2020, %

Source: World Bank (2023)

However, it should be taken into account that significant unevenness in demographic growth rates was observed in the second half of the 20th century: the global population grew by 156% between 1960 and 2020, while the population of high-income economies grew by only 58%, the population of middle-income economies increased by 177%, and the population of low-income economies grew by 383%. As a result, migration trends differ significantly between groups of countries. Thus, the share of emigrants in the total population of low-income economies has almost doubled since 1960 (Fig. 8).

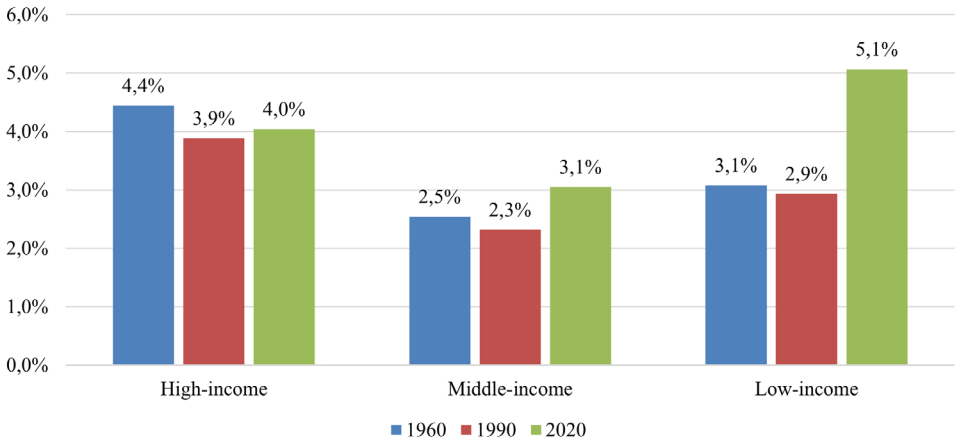


Figure 19. The share of emigrants in the populations of countries of origin by income level, 1960, 1990, 2020, %

Source: World Bank, 2023c, p. 46

The share of immigrants and naturalized citizens in the total population of high-income economies increased threefold during the specified period (Fig. 20).

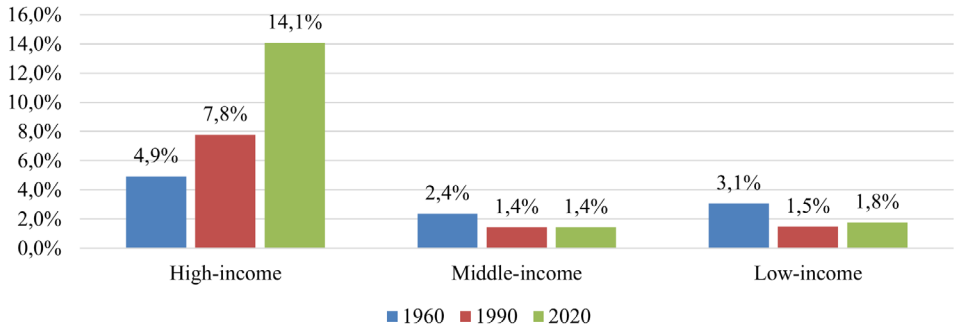


Figure 20. The share of immigrants in the population structure of host countries, by income level (1960, 1990, 2020), %

Source: World Bank, 2023

More than 40% of all international migrants in 2020 (115 million people) were born in Asia, and approximately 20% migrated primarily from six countries: India (the country of origin of the largest number of migrants), China, Bangladesh, Pakistan, the Philippines, and Afghanistan. Mexico is the second-most common migrant origin country in the world (McAuliffe& Triandafyllidou, 2021).

Since 1970, the main destination country for international migrants has been the USA: the number of people born abroad but living in the USA increased by almost 4 times during 1970–2020 – from 12 million to almost 51 million people. The second-most common host country – Germany – also increased this indicator: from 8.9 million in 1970 to 16 million in 2020 (McAuliffe& Triandafyllidou, 2021).

The largest share of emigrants comes from middle-income economies. These people do not belong to either the poorest or the richest strata of the population in their countries of origin, and have a motive and incentive to move. At the same time, in most countries only a small share of the population from the specified group emigrate to another country (Fig. 21).

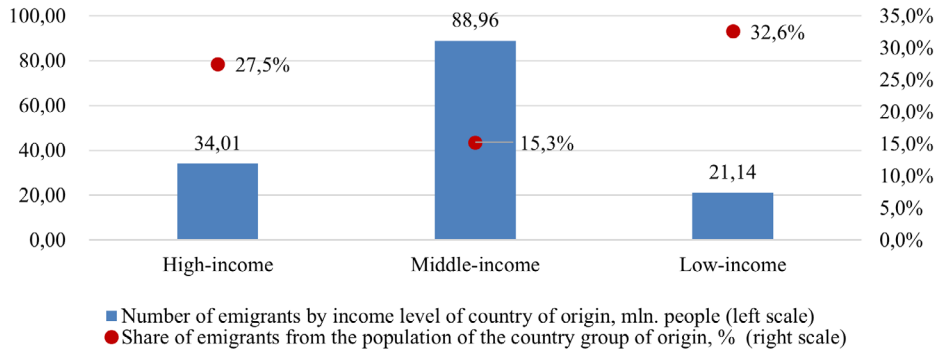


Figure 21. Number of emigrants by income level of country of origin (million people), and the share of emigrants from the population of the country of origin (%), 2020

Source: Calculations based on World Bank, 2023; UNDESA, Population Division, 2020

A characteristic feature of the development of international migration processes is the dominance of labor migration in structural migration flows. In the conditions of globalization, labor migration expands the spatial range of professional self-realization, forming the latent intentions of migration movements.

According to UN data (UNDESA, Population Division, 2020), the number of international migrants as of 2020 is 282 million people, of whom 252 million are aged 15 and older. The number of economically active migrants (aged 15 to 70) is

gradually increasing, while the share of economically active migrants in the total number of migrants remains almost unchanged: 78.9% in 1990, 81.5% in 2020 (Fig. 22).

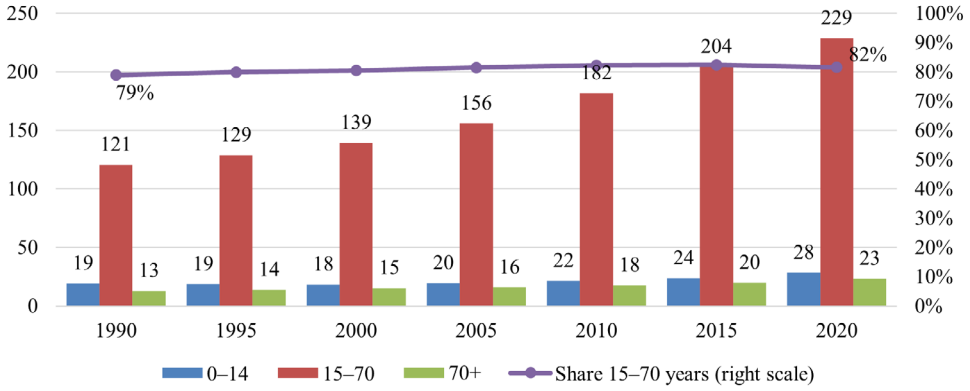


Figure 22. Distribution of international migrants by age group (million people), and share of migrants aged 15 to 70 in the total number of migrants (%), 1990–2020

Source: UNDESA, Population Division, 2020

It is characteristic that with an increase in the number of labor migrants, their share in the total number of working-age migrants constantly decreases: in 2013 – 72.7%, in 2017 – 70.0%, and in 2020 – 69.0% (ILO, 2015, 2018, 2021; Fig. 23).

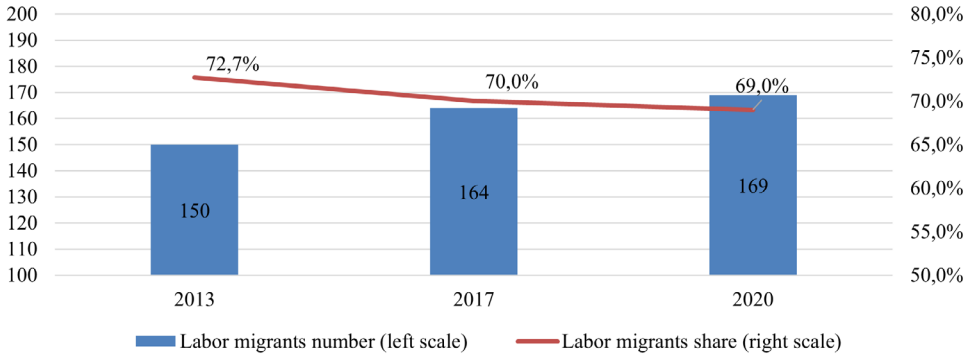


Figure 23. The number of labor migrants (million people) and the share of labor migrants in the total number of migrants of working age (%), 2013–2020

Source: ILO (2015, 2018, 2021)

Changes in the labor force participation rates of international migrants are usually caused by the same determinants that affect the non-migrant population. According to ILO forecasts, the general decline in the level of participation in the labor force which has been observed since 1990 will continue at least until 2030 (ILO, 2015; Krueger, 2017).

In 2020, 67% of labor migrants, or almost 113.9 million people, lived in high-income economies. Another 49 million labor migrants (29%) lived in middle-income economies, while 6.1 million (3.6%) lived in low-income economies.

The concentration of international labor migrants in upper-middle-income and high-income economies has remained stable in recent years: 86.4% in 2013, 86.5% in 2017, and 86.9% in 2020. However, two categories of countries have undergone noticeable changes over time: from 2013 to 2020, high-income economies showed a 7.3% decrease in the number of migrant workers (from 74.7% to 67.4%), while upper-middle-income economies showed an increase of 7.8% in the same period (from 11.7% to 19.5%; Fig. 24). This perceptible shift was likely influenced by economic growth in middle-income economies and changes in the legislative framework regulating labor migration in high-income economies (McAuliffe& Triandafyllidou, 2021).

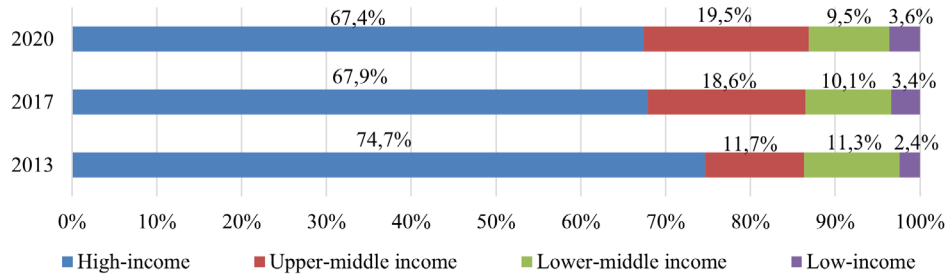


Figure 24. The structure of the distribution of labor migrants by host country income level, 2013–2020, %

Source: McAuliffe& Triandafyllidou (2021)

Regarding the share of migrant workers in the total labor force, it is insignificant

across low- (2.3%), lower- (1.4%), and upper-middle-income economies (2.2%), and much higher in high-income economies (18.2%; Fig. 25) (McAuliffe& Triandafyllidou, 2021).

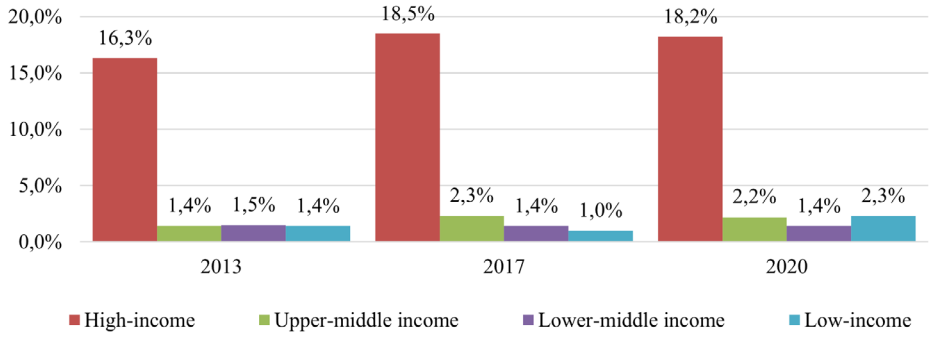


Figure 25. The share of labor migrants in the total workforce by country income level, 2013–2020, %

Source: McAuliffe& Triandafyllidou (2021)

In all groups of country income levels, the level of participation of international migrants in the labor force is higher than that of non-migrants, and this gap is especially significant in countries with a high level of income – 11.5% (Fig. 26).

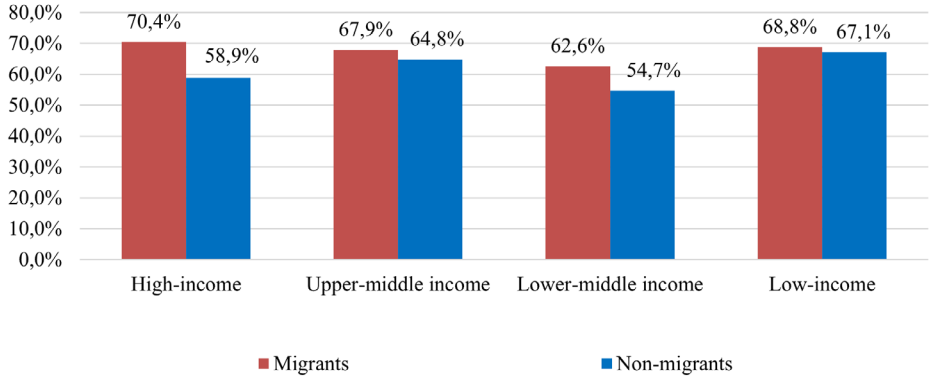


Figure 26. Labor force participation rate of migrants and non-migrants by country income level, 2022 (% of population aged 15 and over)

Source: World Bank (2023)

According to the OECD (2023), on average, almost 80% of migrants were

economically active in 2022, while more than 70% were employed and less than 8% were unemployed. In more than half of the OECD countries, the employment rate of migrants was at its highest level in more than two decades. In addition, this period showed faster growth in both the employment rate and the labor force participation rate among migrant women than men (a narrowing of the gender gap) in a number of countries.

The reasons for migration are different, as motives partly reflect countries' socio-economic conditions and the need for international protection. Movement patterns vary and are driven by the need to seek new economic opportunities in destination countries and the needs of those moving, including factors such as conflict and well-founded fears of persecution. However, in some situations people seek both opportunity and security.

The decision to migrate is complex and forces people to consider their options: stay, move within their own country, or migrate abroad. Some migrants decide to move on their own, while others do so with the support of a certain group – family or community. Many factors are taken into account in the decision to migrate, including both economic and personal considerations. Potential migrants compare their expected well-being under different situations and the corresponding costs of moving – both financial and non-financial. As a result, migrants choose the option that will allow them to achieve their goals faster, whether they relate to economic prospects, social and psychological well-being, or security.

The vast majority of migrants (more than 80%) move in search of better opportunities in the country of destination. Their movement trends are usually stable in the medium term. These migrants are driven mainly by considerations of higher potential wages and access to better services. Although they are not refugees, some of these migrants also move in search of a higher level of personal security, stronger rule of law, and a greater degree of personal freedom.

According to 2020 data, the vast majority of migrants and naturalized citizens

(around 80%) live in higher-income economies than their countries of origin. Where people come from largely determines where they go. But the main driver for movement is the demand for skills in the labor markets of destination countries, historical and geographical ties, and the costs of migration.

Most migrants from low-income economies migrate to other low-income economies or to middle-income economies, often because the cost of moving to high-income economies is prohibitively high. Migrants from middle-income economies often move to high-income economies. Similarly, many emigrants from high-income economies move to other high-income economies.

In terms of labor migration, these trends are very similar. At the same time, high indicators of labor migrant involvement in the economies of host countries indicate the crucial role of migrants in economic development. Ensuring stable economic growth in high-income economies is currently impossible without the labor potential of migrants. Low birth rates and an aging population in these countries force the implementation of appropriate migration policies to ensure a stable influx of highly skilled labor. An inappropriate and ineffective migration policy leads to social tension, political instability, and a decrease in the rate of economic development.

1.3. The global contours of the formation of migration policy

The phenomenon of international labor migration acquires new characteristics in contemporary conditions. Specifically, migration is becoming not only one of the factors and components of the globalization process, but also a means of solving economic problems, primarily for host countries. The mass nature of international migration reflects socio-economic changes, the manifestation of which must be considered when outlining the global contours of migration policy.

At present, international migration is driven by factors of the internal economic development of individual countries and the needs of global development

as a whole. At the same time, it serves as one of the objective prerequisites for the formation of an integrated global economic system.

In recent decades, the distribution of migration flows between countries of origin and destination countries has shown stable trends. Among destination countries, economically developed countries dominate. Over the past 20 years, the top 10 destination countries have consistently included the USA, Germany, the United Kingdom, France, Canada, and Australia (Fig. 27).

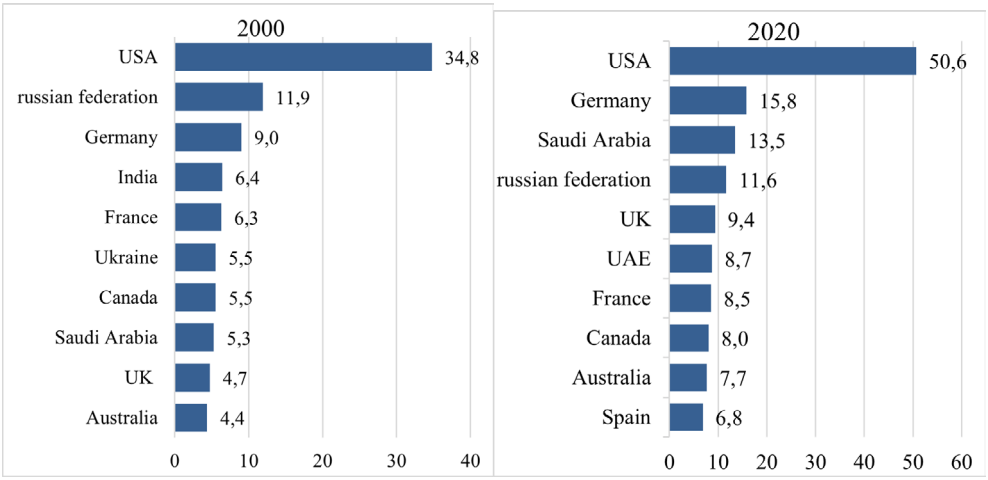


Figure 27. Top 10 destination countries for migrants, 2000 and 2020, million people

Source: UNDESA, Population Division (2020)

In developed countries, the overall structural labor force deficit is a result of a demographic transition, and requires substantial compensatory net immigration to maintain the economically active population. This leads to the intensification of international labor migration and, consequently, to the redistribution of labor resources on a global scale.

A pool of "permanent immigration" countries has formed – the USA, Canada, Australia, and New Zealand. Their migration policies are directly aimed at encouraging long-term migrant stays as a basis for economic growth. However, many conditions must be met for this to be effective. In the context of studying

the formation of the global contours of migration policy, it is also important to examine the experiences of Germany and France, as they are among the top 10 countries that host the highest number of migrants and have diverse experiences in implementing migration policies.

The importance of analyzing the migration policies of the USA, Canada, Australia, New Zealand, Germany, and France (Fig. 28) is determined by the commonality of state migration policy guidelines amid different migration characteristics in these countries.

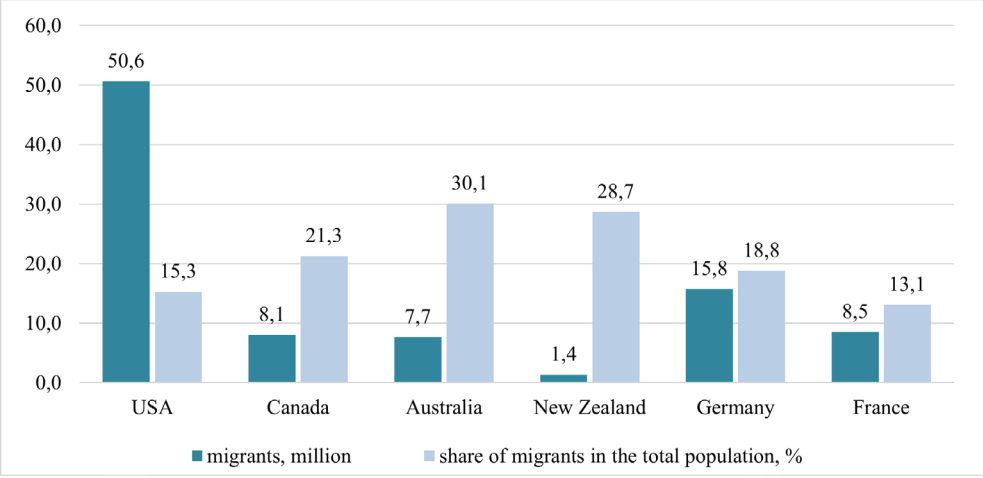


Figure 28. Number of international migrants in selected countries, 2020

Source: UNDESA, Population Division (2020)

The current migration policy of the **United States of America** is a complex system that, on the one hand, has stable components. On the other hand, it dynamically changes under global economic transformations. The primary objectives of US migration policy are the protection of national interests, national security, and the promotion of the effective functioning of the national labor market.

The United States is the largest host country in the world: in 2020, the number of international migrants in the USA (50.63 million people) was 3.2 times greater than the next country in the ranking – Germany (15.75 million people; Fig. 27).

The number of migrants in the USA has been constantly increasing over recent decades: according to the International Organization for Migration, during 1990–2020, the number of migrants in the country more than doubled – by 117%, or by 27.38 million people, from 23.25 to 50.63 million (Fig. 29).

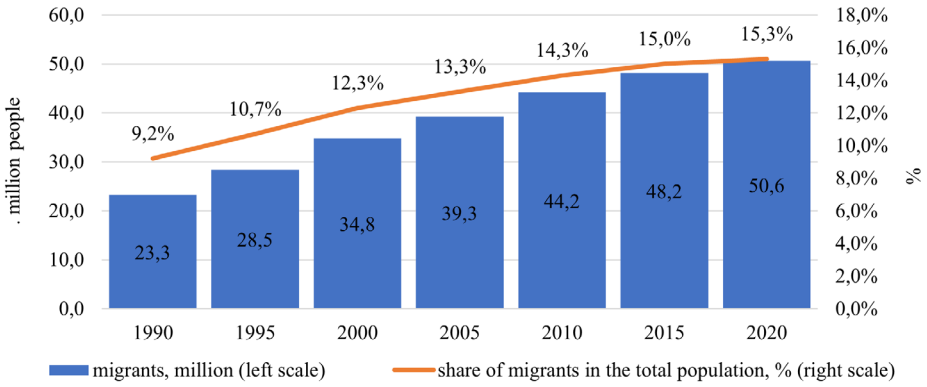


Figure 29. Dynamics of the number of international migrants and their share in the population of the USA, 1990–2020, million people, %

Source: UNDESA, Population Division (2020)

Against the backdrop of the USA labor force increasing from 127.4 million people in 1990 to 165.6 million people in 2020, the share of migrants in the structure of the country's labor force also grew (Fig. 30) – from 14.5% in 1990 to 24.8% in 2020 (UNDESA, Population Division, 2020).

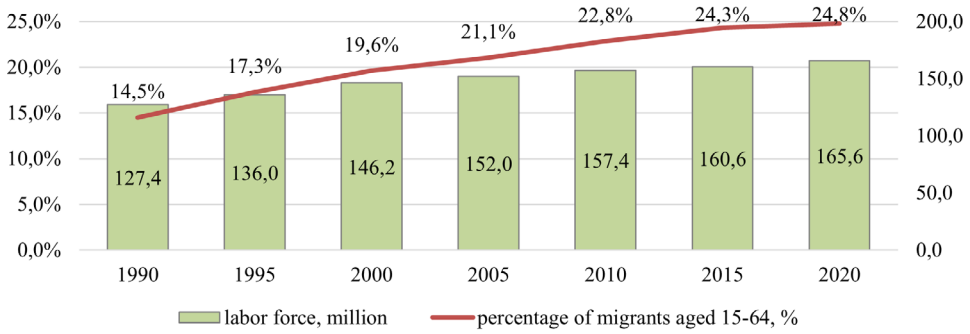


Figure 30. The US labor force and the percentage of migrants aged 15–64, 1990–2020, million, %

Source: World Bank (2023)

The volume of migration to the USA is influenced by the country's visa policy, which allows citizens of certain countries to travel to the USA without a visa if they meet specific requirements under American law. For citizens of all other countries, as well as for long-term immigration, a visa is required. The full list of requirements and special situations is available on the website of the US Department of State's Bureau of Consular Affairs (Travel.State.Gov, 2023).

Regarding the number of visas issued annually according to the US Immigration Act, there is a federal limit of 700,000. However, the country did not approach this migration limit in any year of the past decade (Koop, 2022).

In addition to the general federal immigration policy, the number of visas granted by the USA is also influenced by programs that reflect the interests of individual states. For example, the states of Maine, Maryland, Tennessee, and Virginia focus on attracting healthcare workers; the states of Utah, Minnesota, and Arizona focus on ensuring immigrants' access to higher education, etc. More and more states recognize the importance of immigrants for community development and invest in their well-being (Avilez, 2023).

In the period leading up to 2060, it is expected that the share of the US population that is American-born is going to grow by 20%. Meanwhile, the share of the population that is foreign-born is expected to jump by 58% (Koop, 2022).

Overall, US migration policy emphasizes the complexity and variety of visas for those who wish to come to the country. Detailed algorithms for obtaining different types of visas and their compliance with national requirements regarding the composition of immigrants allow an effective system of migration control to function at the national level, prioritizing the protection of national interests.

The implementation of **Canada's** migration policy is carried out at both the federal and regional (provincial) levels. Current immigration legislation in Canada provides for an orderly flow of migrants, and the migration system includes control over not only the number of individuals entering the country, but also the

categories of occupation that they represent. Primarily, this involves regulated, planned migration programs.

A defining feature of Canada is that its migration policy is fundamental to ensuring the country's economic growth, as it addresses issues of an aging population and labor shortages. Immigration is crucial for Canada's economy, accounting for 90% of the growth of the country's labor force (Bhabra, 2023). This constitutes three-quarters of the total population growth (3.7 million people). In 2022, Canada's population grew by more than 1 million people (+1,050,110 individuals), marking the highest annual population growth rate (+2.7%) since records began in 1957. Almost all of the recorded growth (95.9%) was due to international migration (Statistics Canada, 2023).

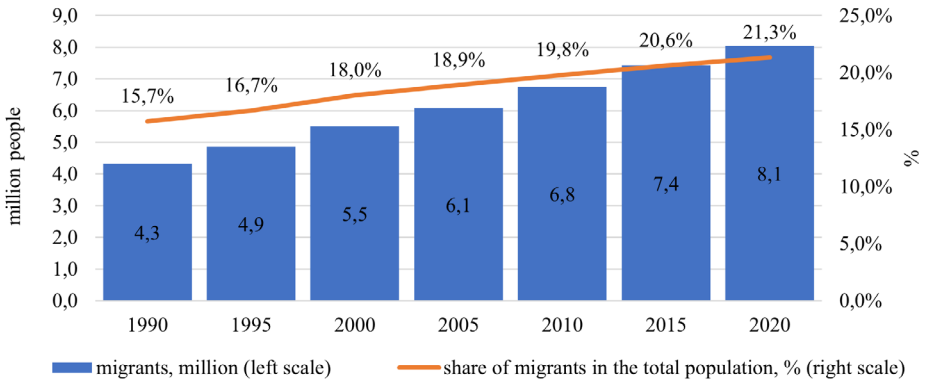


Figure 31. Dynamics of the number of international migrants and their share in the population of Canada, 1990–2020, million people, %

Source: UNDESA, Population Division (2020)

Canada ranked 7th in the world among destination countries for migrants in 2000, and 8th in 2020 (UNDESA, Population Division, 2020; Fig. 27). According to the International Organization for Migration, the share of migrants in Canada's total population in 2020 was 21.3% (the number of migrants exceeded 8.05 million people; UNDESA, Population Division, 2020; McAuliffe& Triandafyllidou, 2021), which is significantly higher than in the USA, the leading country in terms

of migrant inflow (15%; Fig. 28). The share of immigrants in Canada's labor force (Fig. 32) is higher than in the overall population. Since the 1980s, Canada's policy has aimed at implementing a strategy to enhance the country's competitiveness (Stakanov, 2017), facilitated by stimulating innovation and attracting highly skilled workers to key economic sectors.

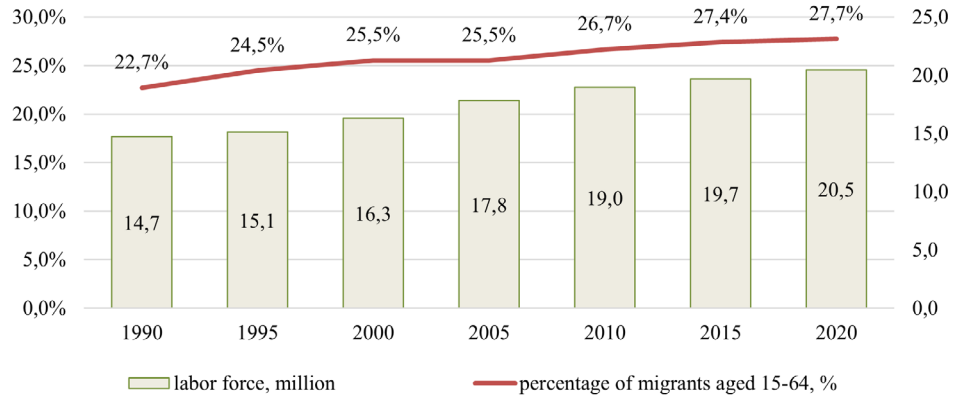


Figure 32. Canada's labor force and the percentage of migrants aged 15–64, 1990–2020, million, %

Source: World Bank (2023)

Currently, the annual immigration volume to Canada is around 500,000 people, and according to the country's Immigration Levels Plans, this trend will continue at least until 2025, with a focus on economic migration: the Ministry of Immigration, Refugees and Citizenship Canada (IRCC) plans to admit over 485,000 immigrants to Canada in 2024, and 500,000 immigrants in 2025 (Government of Canada, 2022).

Immigration in Canada is seen as a strategy aimed at attracting skilled workers to key sectors, including healthcare, manufacturing, and technology, in order to proactively address social and economic issues that the country may face in the coming decades. Canada implements a non-discriminatory and universal policy for admitting migrants. A severe labor shortage underpins the priorities of the development of the state's migration policy.

In recent years, several modern trends have emerged in Canada's migration regulation system. Specifically, the government is focusing on the digital transformation of data processing and customer service speed to expedite the review of immigration applications. Additionally, the competition for talent is intensifying to fill job vacancies in the labor market and promote economic development (Fragomen, 2023, pp. 4–7).

At the same time, the importance of regional economic immigration programs is growing in the context of ensuring the sustainable development of the country. Migration development plans indicate continued support for regions (provinces) in their efforts to attract qualified migrants to address labor shortages and demographic problems.

Canada's migration policy is aimed at strengthening the country's position as one of the most favorable places in the world for highly skilled labor. This forms the basis for further economic growth, unites families, and helps fulfill the country's humanitarian commitments (Izium & Shuba, 2021). Canada's immigration policy is considered one of the most advanced and progressive in the world: the national labor market demonstrates high foreigner engagement rates, indicating the high effectiveness of migration policy, while the government continuously improves migration regulation by introducing modernization and innovative approaches to managing migration flows (Stakanov, 2017).

Australia's migration policy is focused on attracting new residents in response to contemporary challenges related to the development of the economic system amidst digital transformations and an aging population, while considering the diversity of immigrants, including their cultures and nationalities. Currently, Australia's migration policy is a complex and dynamic system that is constantly being improved. The goals of Australia's migration policy include attracting migrants whose qualifications and professional skills meet the needs of the Australian economy, actively combating illegal migration by establishing stricter

requirements in migration legislation, and promoting the principles of cultural diversity.

According to the International Organization for Migration, the number of migrants in Australia nearly doubled from 3.96 to 7.69 million people from 1990 to 2020 (Fig. 33), increasing from 23.3% to 30.1% of the total population during this period (UNDESA, Population Division, 2020).

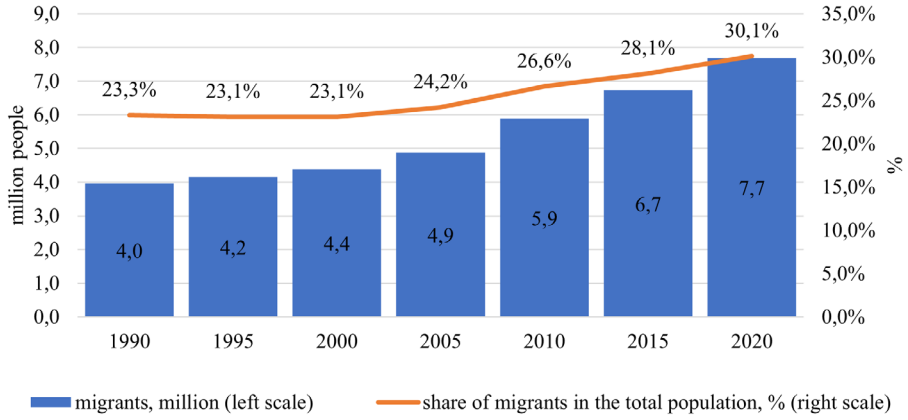


Figure 33. Dynamics of the number of international migrants and their share in the population of Australia, 1990–2020, million people, %

Source: UNDESA, Population Division (2020)

The majority of migration is labor migration: according to the priorities of the state's migration policy, the share of migrants in the labor force began to increase rapidly from 2005, rising from 35.7% to 42.7% in 2020 (Fig. 34).

Moreover, the share of migrants in Australia's total population (30.1% in 2020) is significantly higher than in Canada, a country whose migration policy is also focused on attracting migrants (21.3%), particularly into the labor force (McAuliffe& Triandafyllidou (eds.), 2021) (Fig. 33).

A key element of Australia's system for regulating labor migration is the Skilled Occupation List (SOL), which outlines the professions for which migrants wishing to work in Australia can be accepted. The SOL is regularly updated in response to changes in the Australian labor market. Additionally, there is the

Priority Migration Skilled Occupation List (PMSOL), which is temporary: certain professions may be prioritized depending on the country's situation (Department of Home Affairs, n.d.-b).

Overall, Australia's migration system is designed to attract those who are already educated and have extensive work experience, as they can bring their children and work in one of the sectors the country needs workers in. Currently, Australia is focused on labor migration by actively increasing quotas for skilled visas: the number of skilled visas available under the migration program rose significantly in 2023 to 142,400, compared to 79,600 in 2022 (Chang, 2022).

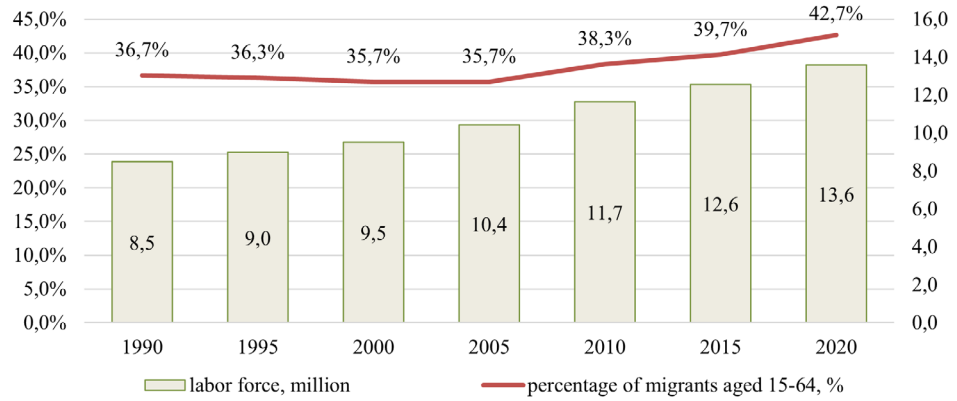


Figure 34. Australia's labor force and the percentage of migrants aged 15–64, 1990–2020, million, %

Source: World Bank (2023)

Several trends stand out in Australia's migration policy.

First, a specialized international labor mobility program – the Pacific Australia Labour Mobility (PALM) scheme – has been implemented. This program focuses on labor mobility opportunities for Pacific Island countries and Timor-Leste in Australia (Department of Foreign Affairs and Trade, n.d.).

Second, autonomous powers have been expanded, increasing the number of migration visas sponsored by states and territories.

Third, family reunification has been facilitated through the introduction of

demand-driven partner visas, with no limits on the number of such visas.

Fourth, the order of document processing for visa issuance has changed based on national and regional labor market priorities (Department of Home Affairs, n.d.-a).

In general, Australia's migration policy is characterized by the following comprehensive features:

1. A formalized immigration procedure: clear and public guidelines regarding who the country expects (in terms of age, marital status, educational background, and the presence of children), with minimal government intervention in residence permit issuance, supported by online systems.
2. A consistent increase in migrant share: ensuring a small but consistent annual increase in the share of individuals the country attracts, primarily in the employment sector.
3. A public information campaign: a well-thought-out information campaign to support migration, explaining its necessity, the lack of threat to society, and its economic benefits, with zero tolerance for illegal migration.
4. A clear citizenship acquisition program: a clear program for acquiring citizenship after meeting certain criteria (residence, property, or a combination thereof).

In conclusion, Australia's migration policy is designed to attract and integrate skilled migrants effectively, addressing both economic needs and demographic challenges while promoting cultural diversity and maintaining stringent controls against illegal migration. This comprehensive and adaptive approach underscores Australia's commitment to fostering a robust and dynamic migration system that contributes positively to its economic and social landscape.

New Zealand is among the countries that receive the most migrants globally, with immigration processes being one of the main drivers of the country's economic growth and a crucial factor in the development of New Zealand society. Currently, New Zealand's migration policy represents a complex and dynamic

system that has ensured a high level of sanctioned immigration per capita over a long period. According to the International Organization for Migration, from 1990 to 2020, the number of migrants in New Zealand more than doubled (Fig. 35), growing from 518,000 to 1.382 million people, while their share of the population almost doubled, from 15.2% to 28.7% (UNDESA, Population Division, 2020).

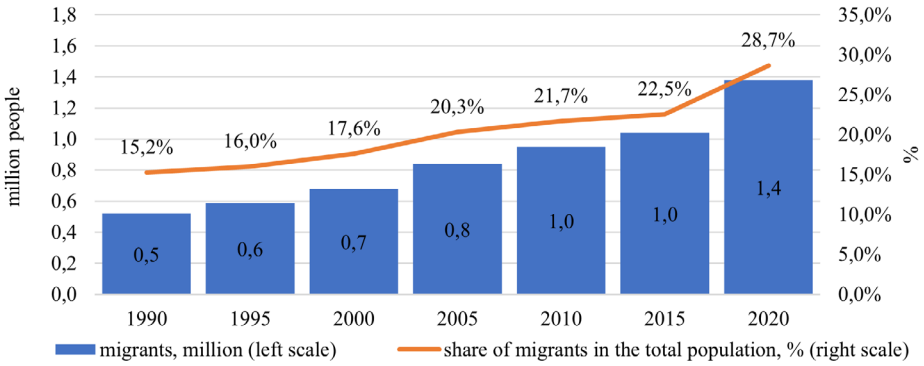


Figure 35. Dynamics of the number of international migrants and their share in the population of New Zealand, 1990–2020, million people, %

Source: UNDESA, Population Division (2020)

The bulk of migration is labor migration, with the share of migrants in the labor force increasing over the last 30 years: from 23.5% in 1990 to 37.7% in 2020 (Fig. 36). According to OECD data, the percentage of the population born abroad in New Zealand is among the highest of all OECD countries: 26.8% of New Zealand residents were born abroad, placing New Zealand between Australia (29.9%) and the United States (13.6%) in this regard (OECD, 2024).

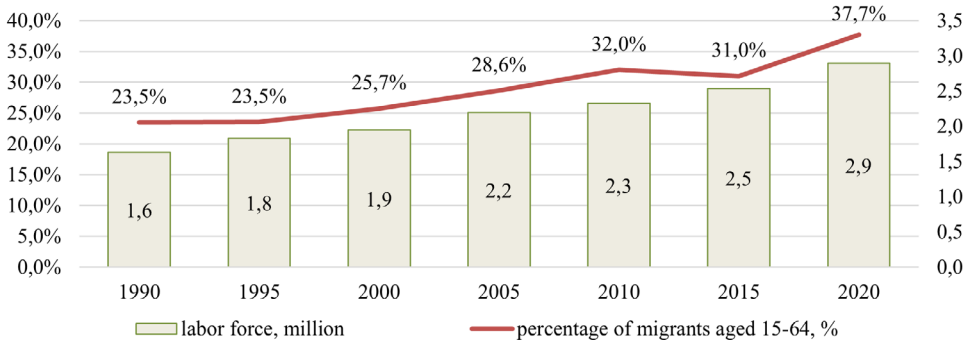


Figure 36. New Zealand's labor force and the percentage of migrants aged 15–64, 1990–2020, million, %

Source: World Bank (2023)

Migrants constituted 28.7% of New Zealand's total population in 2020 (McAuliffe& Triandafyllidou, 2021). This is higher than the rates in Canada (21.3%) and the USA (15%) (Fig. 28).

Overall, New Zealand's modern immigration policy has several goals, each aimed at providing significant social and economic benefits to the country. Since the mid-1980s, the government's active immigration policy has been aimed at (Bedford, 2003; New Zealand Immigration, n.d.):

- Human resource augmentation: selecting migrants who can quickly and effectively integrate their skills with professional opportunities in New Zealand. Since 1991, a points-based selection system has been used.
- The development of strong international relations: achieved through a system of bilateral agreements with countries in Europe, America, Asia, and Africa.
- The promotion of entrepreneurship and innovation: attracting migrants and business visitors with entrepreneurial skills and experience.
- Skill formation and an employment strategy: providing temporary work permits to address short-term skilled labor shortages.
- Family reunification: meeting the humanitarian needs of those with close family ties to New Zealand residents.
- The fulfillment of international obligations: through refugee programs,

approximately 700 asylum seekers are granted refugee status annually.

– The maintenance of high social cohesion: in an increasingly diverse multicultural society, New Zealand's immigrant selection system is non-discriminatory based on country of origin, but favors immigrants who are proficient in English and possess educational and professional qualifications recognized by the New Zealand Qualifications Authority and Professional Associations.

New Zealand's modern migration policy provides numerous opportunities for foreign citizens. Visa requirements, processing times, employment rights, and benefits for accompanying family members depend on the visa category. New Zealand operates a unified visa system, with all types of visas clearly coordinated with the goals of potential immigrants. Depending on these goals, different tools of the state's migration policy are used.

An important component of the country's migration system is the presence of the Green List, a list of professions in demand in New Zealand.

There is a clear recognition and acceptance in New Zealand society that it will become more diverse in terms of ethnic and cultural groups over the next 20 years. Immigration will continue to play a vital role in community diversification, particularly concerning immigration from Asian countries. There is a broad consensus in society that this should not be feared or resisted. There is an understanding that continued immigration at current or higher levels will have positive effects on the economy and society.

This approach to immigration policy partly reflects the growing recognition by New Zealand's leadership that the root causes of migration lie beyond the country's control, at the level of the global economy.

In conclusion, New Zealand's migration policy is geared towards attracting skilled migrants, fostering economic growth, and maintaining social cohesion. By implementing a comprehensive and adaptive approach, New Zealand ensures that immigration continues to provide significant benefits to both its economy

and society.

A distinctive migration policy feature of **Germany** is its response to having the oldest population in Europe and one of the lowest birth rates in the world (9.08% in 2022). To compensate for this shortage in skilled labor, Germany implements a comprehensive migration policy aimed at expanding pathways for the immigration of skilled workers from various countries.

At the current stage, the priority directions of Germany's migration policy concerning the goals of the Global Compact for Safe, Orderly, and Regular Migration include:

- integration (social and economic);
- access to the German labor market;
- preventing and combating extremism;
- addressing the root causes of illegal migration.

Between 1990 and 2020 (Fig. 37), the number of migrants residing in Germany steadily increased – by 4.3 million people, or 72%, by 2015, and then by another 5.6 million people, or 6.3%, over the next 5 years. The proportion of international migrants in the population structure increased by 11.3% over 30 years (UNDESA, Population Division, 2020).

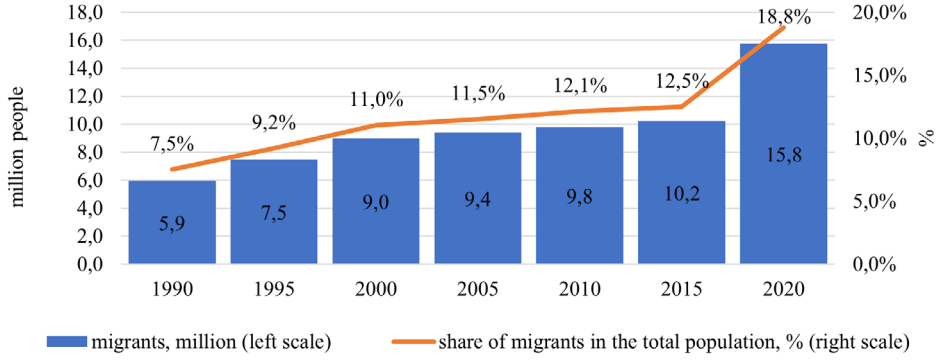


Figure 37. Dynamics of the number of international migrants and their share in the population of Germany, 1990–2020, million people, %

Source: UNDESA, Population Division (2020)

Germany is one of the most attractive Western European countries for immigration. In recent years, it has accepted more immigrants than the rest of Europe combined, and has been characterized by a consistently positive migration balance. Germany ranked third among the main destination countries for international migrants in 2000; it had moved up to second place globally by 2020 (Fig. 27). According to the Federal Statistical Office of Germany (Destatis), in 2022, 23.8 million people (29% of the population) had migrant backgrounds, and the number of foreign citizens was 13.4 million (Destatis, 2023).

Most international migration consists of labor migrants, whose share in the German labor force increased from 13.2% in 1990 to 26.3% in 2020 (Fig. 38). From 1990 to 2015, the proportion of international migrants in the labor force increased by 6.5% (from 13.2% to 19.7%), and over the next 5 years (2015–2020), it increased by 6.6% (from 19.7% to 26.3%) (World Bank, 2023).

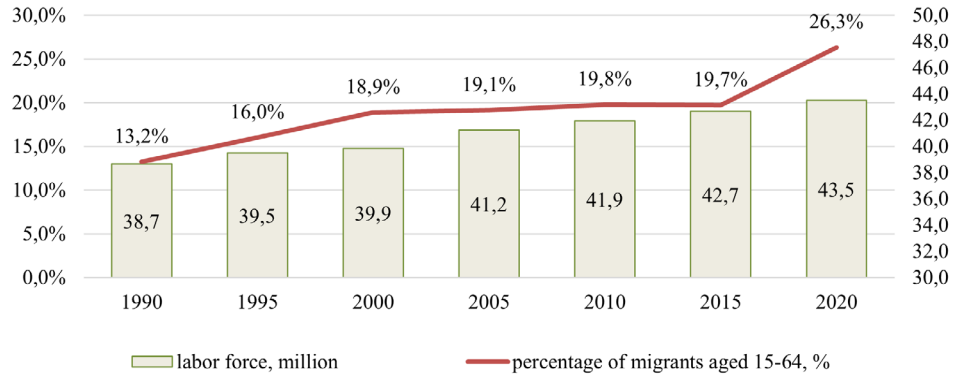


Figure 38. Germany's labor force and the percentage of migrants aged 15–64, 1990–2020, million, %

Source: World Bank (2023)

Germany has a clear and transparent set of rules and regulations regarding migration. The need for a visa depends on the country of origin and the purpose of arrival. For example, EU citizens do not need a visa to visit, reside, or work in Germany.

Employment for migrants in Germany is possible in two ways:

– unregulated professions: employment without the recognition of professional qualifications (e.g., fruit and vegetable picking, work in greenhouses).
– regulated professions: employment with mandatory recognition of professional qualifications.

Besides the complex of regulated professions, Germany has identified a list of niche (shortage) professions. The country currently needs well-trained workers in almost all sectors, with high demand particularly for doctors, nursing staff, IT specialists, engineers, and heating technology experts (Giehle, 2022; Make it in Germany, n.d.-a; Anerkennung in Deutschland, n.d.).

To compensate for the shortage of skilled labor and stimulate the attraction of qualified immigrants, Germany seeks new tools to regulate labor resource flows. This includes the introduction of a new immigration law – the new Skilled Immigration Act – which creates and expands pathways for the immigration of skilled workers from non-EU countries. As a result of this reform, skilled workers will find it easier to immigrate to Germany, and refugees will be able to obtain work permits more quickly. Among other measures, a points-based system based on the Canadian model is planned, as well as the simplification of the recognition of foreign professional qualifications (Make it in Germany, n.d.-b).

Key features of Germany's modern migration policy include the following:

1. The promotion of labor migration considering criteria such as age, qualifications, professional experience, and language proficiency;
2. The facilitation of foreigner integration: simplifying citizenship procedures and providing state social assistance in defined cases;
3. The stimulation of qualified workers to overcome national labor market challenges;
4. The availability of different types of temporary and permanent residency permits;
5. An EU blue card, the most common type of temporary residence permit

for labor migration;

6. The reduction of illegal immigration: strengthening measures to decrease the number of illegal immigrants and simplifying deportation procedures.

In conclusion, Germany has maintained an open labor market for skilled workers in recent years and continues to implement new rules to attract international talent. The main goals of modern migration policy in Germany are to overcome the shortage of skilled labor in the national labor market, reduce the financial burden associated with migration on the state and federal states, and minimize illegal migration.

A characteristic feature of **France** is its high standard of living amidst an aging population. Although, unlike most European countries, France has a stable birth rate (the total fertility rate was 1.83 children per woman in 2020, 1.84 in 2021, 1.79 in 2022, and 1.68 in 2023; Statista Research Department, 2023b; INSEE, 2024a), this does not resolve demographic issues. The percentage of the population over 65 years of age is increasing, while the share of those aged 15–64 is decreasing. Therefore, the use of migration levers to influence the population structure is becoming increasingly significant at the state level.

In the 2000 global ranking of destination countries for international migrants, France ranked fifth (with 6.28 million international migrants), and it was in eighth place by 2020 (8.53 million) (Fig. 27).

The number of international migrants in France steadily increased between 1990 and 2020 (Fig. 39), growing by 2.63 million and raising the share of migrants in the country's population by almost 3% – from 10.4% in 1990 to 13.1% in 2020 (UNDESA, Population Division, 2020). For comparison, the share of immigrants in France in 1968 was 6.5% (INSEE, 2024b).

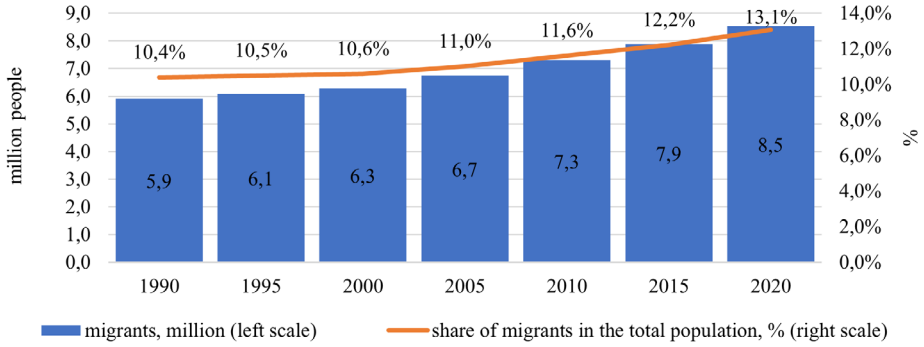


Figure 39. Dynamics of the number of international migrants and their share in the population of France, 1990–2020, million people, %

Source: UNDESA, Population Division (2020)

Among immigrants living in France in 2022, 48.2% were born in Africa, 32.3% in Europe, and 14% in Asia. The main countries of origin of immigrants are Algeria (12.5%), Morocco (11.9%), Portugal (8.2%), Tunisia (4.7%), Italy (4.0%), Spain (3.5%), and Turkey (3.3%) (INSEE, 2024b). With the increase in the number of migrants in the country starting from 2005, the share of migrants in the labor force has also risen – from 17.6% in 1990 to 20.0% in 2020 (Fig. 40). According to the National Institute of Statistics and Economic Studies of France (INSEE), immigrants held every tenth job in the country in 2020 (Picart, 2023).

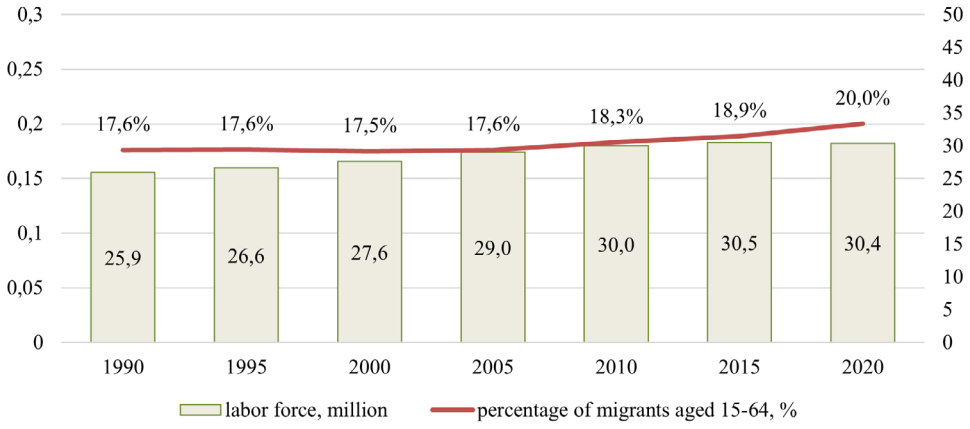


Figure 40. France's labor force and the percentage of migrants aged 15–64, 1990–2020, million, %

Source: World Bank (2023)

The majority of residence permits in France were issued to citizens of countries outside the European Union, the European Economic Area, and Switzerland – 316,200 in 2022. Moreover, from 2011 to 2022, the share of residence permits issued for economic reasons nearly doubled: from 17,700 to 51,700, an increase of 193%, or from 9% to 16% of the total number of residence permits (Ministère de l'intérieur et des Outre-mer, 2023).

It is noteworthy that at the beginning of 2023, the majority of employers (61%) expected difficulties in hiring (3.1% more compared to 2022) across most professions, especially in the hospitality and catering sector, industry, construction, healthcare, and social work (EURES, 2023). Concurrently, the issue of the increasing number of refugees is becoming more pressing. In the third quarter of 2023, the number of asylum applications accepted at the first instance in France (10,515 applications) was the highest since 2014. These figures have sharply risen since the end of 2020, reflecting the European migration crisis that began in 2015 (Statista Research Department, 2023a).

Foreign nationals wishing to enter France need an entry visa (short-term or long-term), unless they are on the list of exceptions. The type of visa required depends on the duration of stay and the purpose of the visit: tourism, work, study, or family.

In 2022, France continued measures aimed at simplifying the employment conditions for skilled labor migrants, particularly through the possibility of conducting online procedures to obtain the "Passport Talent" residence permit (EMN France, 2023). Throughout 2023, France took steps to enhance the effectiveness of its state migration policy, particularly regarding the simplification of asylum application procedures and the deportation of criminals or radicalized foreigners, and easing the acquisition of residence permits for migrants working in sectors with labor shortages.

Thus, the current migration policy of France is a comprehensive system that

combines directive and democratic management methods. It aims to enhance the effectiveness of measures in regulating legal migration while simultaneously strengthening the effectiveness of measures related to combating illegal migration.

In December 2023, certain components of the migration policy were updated in the Immigration Law, which addresses the needs of protecting France's national interests, particularly by simplifying the deportation of illegal migrants and tightening the conditions for receiving state aid.

The analysis of the migration policies of the USA, Canada, Australia, and New Zealand (countries of "permanent immigration"), as well as Germany and France (among the top 10 in terms of migrant influx) allows a set of common features to be identified in the migration policies of these countries:

- the protection of national economic interests;
- the priority of skilled immigration;
- the identification of priority sectors for attracting migrants;
- the decentralization of migration policy implementation;
- the involvement of accredited employers in addressing labor resource needs;
- a points-based system for immigrant admission;
- the prevention of illegal migration.

It can be concluded that the migration policy of these countries is directly aimed at encouraging the long-term stays of skilled migrants, which is recognized as one of the crucial foundations of their economic growth. The commonality in the directions of the migration policies of the studied countries occurs due to the dependence of their labor resource on foreign labor, particularly regarding highly skilled workers. This reinforces the labor resource factor of international migration and determines the nature of global labor resource needs amidst the global labor resource crisis. Given the scale and direction of migration movements, international migration acts as a systemic precondition for significant

transformations in the global labor resource space. This is the basis of the modern contours of the migration policies of countries, and determines the necessity of further in-depth research in this area.

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CHAPTER II. UKRAINE'S ECONOMIC SECURITY: CHANGES IN THE SECURITY POSITION AND STRATEGIC PRIORITIES

2.1. Modern scientific and methodological approaches to monitoring a country's economic security

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Abstract. *In the system of ensuring economic security, a significant role is played by assessing its level in order to further determine the security situation and develop measures for managing the security component of the socio-economic development of countries. The first part of this chapter is devoted to the systematization of existing scientific and methodological approaches to the analysis of economic security and the monitoring of the security situation in order to improve the methodological apparatus for assessing the level of national economic security and the security situation as a whole, which will strengthen the efficiency of economic policy measures in the field of security management and the sustainability of socio-economic development.*

The authors systematize the features of economic security assessment and prove that the process of economic security assessment should be based on a system of interrelated elements, namely: the direction of assessment, the nature of assessment, assessment tools, and assessment results. It has been determined that in the system of evaluation, it is advisable to highlight such aspects of evaluation as: the security environment and its parameters (determinants); the system of threats and security risks; the security situation and the level of security; the nature of the assessment, which determines its type (qualitative analysis, descriptive analysis, quantitative analysis); the type of assessment, which determines the use of a specific assessment tool that is then represented by a combination of different methods of analysis (the method of expert assessments, the scenario analysis method, indicative methods, questionnaire methods, multidimensional analysis, modeling and forecasting methods, factor analysis, etc.); and the result of the assessment, which is expressed in the form of a presentation of the analysis results (analytical report, strategic plan,

survey results, expert forecasts, security indices, forecast and modeled security level assessments, security profiles, risk matrices, risk profiles, etc.).

Based on the results of the analysis, a comprehensive approach to the assessment of economic security is proposed, which includes a combination of different emphases regarding the assessment of elements of the economic security system at different hierarchical levels (global, regional, and national), namely: the assessment of the global security environment through the analysis of threats and risks; the multi-criteria assessment of countries' positions in the global economic environment; the comparative analysis of regional security complexes; and the analysis of national peculiarities of the economic security system, which will allow a comprehensive, diverse vision of the features and peculiarities of the security system of national economies operating in the conditions of rapid transformations of the global environment to be obtained.

Keywords: *economic security, security assessment, approaches to assessing economic security, assessment elements, monitoring of security situation, the security environment, risks and threats.*

Introduction

The modern security environment is characterized by a rather high level of uncertainty and variability, which makes it impossible to predict and forecast events, phenomena, and changes in the processes taking place. This therefore requires the constant improvement of approaches and tools for analysis and strategic planning in order to ensure the national security of countries, in particular the economic component thereof.

In the system of ensuring economic security, an important place is occupied by the assessment of its current level in order to further determine the security situation and develop measures to manage the security component of the

socio-economic development of countries, regional groups, regions, etc. The absence of generally accepted approaches to such an assessment determines the relevance of scientific research in this area and the emergence of various methods, techniques, and tools for analyzing economic security.

The aim of this research is to develop scientific and methodological approaches to the analysis, assessment, and monitoring of economic security.

The main objectives of the research, which determine its logic and design, are as follows:

- systematize approaches to the definition of economic security and consider the essence of the concept of economic security in the formation of methodological assessment tools;w
- define the features of the economic security assessment process;
- design a structural and logical scheme of the elements of the economic security assessment process;
- develop an improved integrated scientific and methodological approach to economic security assessment based on a combination of the focuses and elements of assessment at different hierarchical levels of security.

Primary Results

The complexity and multidimensionality of the assessment of economic security occurs due to the complexity of the concept of "economic security" on the one hand, and the interconnectedness and interdependence of the economic subsystem with other functional components (political, social, environmental) on the other. The complexity of the concept of economic security determines the existence of different approaches to its understanding and, consequently, further assessment.

Economic security is the ability of countries to adapt to new opportunities and changes in the global economy paired with their ability to absorb shocks and successfully resist the risks of economic development, while also ensuring economic

competitiveness and social productivity. Thus, economic security goes beyond purely economic concepts based on "growth" or "development," and touches upon aspects related to social and environmental protection, technological progress, globalization, etc. (Șerban & Jianu, 2023).

At the macro level, "economic security" is defined as "a balanced endogenous and exogenous state of the national economy functioning, in which the there is a risk of imbalances within acceptable limits determined by organizational and legal norms without violating the established principles of social dialogue is kept" (Raczkowski, 2012).

An alternative definition of economic security which can be used to explain processes at the meso- and macro-levels interprets it as "a state of development of the economic system that ensures high efficiency of its functioning through the rational use of internal factors of development and the ability to effectively deal with external pressures that may lead to development disruptions" (Wysokińska-Senkus & Raczkowski, 2013)

The study of modern approaches to the definition of socio-economic security shows that the evolution of the theory is manifested in the following concepts:

- defining security in the context of the socio-economic development of the country, not only from the point of view of protecting state interests;
- distinguishing between internal and external risks and threats to security, while recognizing the methodological complexity of such a division due to the interdependence of the latter;
- the need to define threshold (critical) security indicators to obtain an effective tool for identifying the most vulnerable factors of the economic system in order to improve the efficiency of state economic policy;
- taking into account security threats (economic, social, demographic, technological, environmental) when formulating a program of the socio-economic development of the state.

It should be noted that security assessment and monitoring is possible only if

clear relationships between the economic security situation and patterns of the socio-economic development of the country are identified. At the same time, a one-dimensional understanding of the relationship between economic security and socio-economic development is impossible: there is no single relation, but many different relations with diverse consequences. This issue became key in the discussion raised by Stern and Öjendal (2010), which allowed the authors to establish the relationship between security and development in the form of *six narratives*: development/security as a modern narrative; the deepening and humanizing of development/security; development/security as an impossibility; post-development/security; development/security as a method of governance; and development/security as a globalized approach. Each narrative defines a unique approach to analyzing and assessing socio-economic development and security, but they are united by the fact that security and development are considered mutually reinforcing: reciprocity is no longer possible if development does not take place and/or security is not guaranteed.

From the authors' point of view, the peculiarities of the economic security assessment process are determined by the following factors:

- economic security is a complex and systemic concept – therefore, its assessment should be based on the application of a systemic approach, taking into account structural components (security subsystems) and the relationship between them;
- economic security can be assessed from the position of a static approach – it is possible to record and describe the security situation at a certain point in time, using methods of descriptive analysis, expert assessments, and statistical data analysis;
- the high level of uncertainty of economic development causes rapid changes in the parameters of the socio-economic, political, and legal environment, which in turn affects economic security by accelerating the dynamics of its components and indicators. This, accordingly, requires supplementing the static approach with dynamic methods of analysis and the introduction of

a continuous monitoring system;
- the comprehensive assessment of economic security requires a combination of qualitative (descriptive) and quantitative (calculated) methods of analysis and evaluation, which will allow the state of security (critical, unsatisfactory, unsafe, optimal, etc.) to be identified and the quantitative level to be determined within a certain range (usually 0–1, 0–100, etc.), which can be further used to model the impact of economic security on indicators of the socio-economic development of countries;
- security assessment is impossible without taking into account threats and risks, so risk measurement methods should also play a significant role in the economic security assessment system.

The most common methods of measuring the level of economic security are the construction of security indices using multidimensional assessment methods and various methods of constructing composite (integrated) indicators. It should be noted that such indices may cover the concept of economic security in general, including local components (security sub-indices) in the structure of the generalized economic security index (Ministry for Economic Development and Trade of Ukraine, 2013; Hubareva, 2015b; Hrybienko, 2020; Vlasyuk, 2011; Kravchuk, 2020), or they may reflect the specifics of assessing individual components of economic security, in particular financial (Varnaliy, 2020), social (Novikova, 2018), foreign trade (Haustova & Hryhorova-Berenda, 2013), debt (Chentukov et al., 2021), and demographic factors (Hrybinenko et al., 2020).

The differences between such indices are: the level of data aggregation and the structure of the composite security index, which may include 2–3 or more sublevels (hierarchical components); the direct set of indicators (security parameters) that serve as measures of the security level or situation; and the methodological tools, in particular, the methods of normalization, standardization, and aggregation of data used in the direct calculation of the composite index or its subindices.

In some studies, the results of the calculation of security indices are

accompanied by the determination of the limit (critical) values of both the security indicators themselves and the composite security index using statistical tools, which allows the level of security to be determined and risk zones to be identified (Kharazishvili & Dron, 2014; Kharazishvili, 2019).

It should also be noted that one area of the formation of the economic security system and its direct assessment is the identification and evaluation of risks and threats to security. As a result, the conceptual basis of national security management is closely correlated with the concept of risks.

Thus, the analysis of some scientific approaches (Briguglio et al., 2006; Cordina, 2004) confirms the necessity of consolidating the concepts of risk, vulnerability, resilience, and economic security in terms of forming a systemic assessment of the security of socio-economic development and identifying the determinants of development that contribute to enhancing a country's ability to respond to internal and especially external shocks.

EU documents also emphasize the link between security and resilience, with the socio-economic aspect of resilience defined as "the capacity to respond to economic shocks and to achieve long-term structural change in an inclusive and equitable manner." This comprises three sub-categories: "inequality and social consequences of transition" (risk of poverty, level of social exclusion, and level of household savings); "health, education and work" (long-term unemployment rate); and "economic and financial stability and resilience" (ratio of public debt and public investment to GDP) (European Commission, 2021).

At the request of the Dutch government, RAND Europe experts have developed an analytical approach that takes into account the impact of risks on the national and global economy under the pressure of global and regional development trends that pose threats to economic security. The ability of national governments to respond to a combination of endogenous and exogenous factors will determine their ability to implement policies that promote economic security.

Under this approach, risk vectors include: ownership structure; cybersecurity; dependence on natural resources; dependence on suppliers; government intervention; corruption and the shadow economy; and socio-economic inequality (Retter et al., 2020).

The world's leading economies include risk assessment in their strategic security documents as a basis for sustainable security development. For example, the draft EU Economic Security Strategy, entitled "An EU approach to enhance economic security," specifies that the purpose of the strategy is to provide a framework for reliable risk assessment and management for economic security at the EU, national, and business levels. This is especially relevant at the current period in time, when these risks are rapidly evolving and merging with national security issues, and thus affecting the security situation accordingly (European Commission, 2023). It is also noted that the main types of risks faced by the European economy are: risks to the resilience of supply chains, including energy security (risks of unavailability or shortage of critical products or inputs in the EU); risks to critical infrastructure (pipeline systems, submarine cables, electricity generation, transport, electronic communication networks) and cybersecurity systems; risks related to technological security and technology leakage; and the risk of the weaponization of economic dependencies or economic coercion.

When assessing the key characteristics of the commercial and economic security system, the USA considers the security situation through the prism of domains that are crucial to the sustainable growth of the economy (critical manufacturing and industrial security; telecommunications, cybersecurity, and data protection; intellectual property rights protection; transportation and logistics; research and development of new technologies; positioning, navigation, and timing infrastructure; energy networks; health and medicine; food and nutrition) (U.S. Department of Homeland Security, 2020). At the same time, these domains are analyzed from the perspective of identifying risks to their effective

development and sustainable functioning. Risk identification and evaluation allows the development of measures to manage economic security.

There is no doubt that the risks generated in the economic sphere affect the geopolitical and technological environment and escalate security issues. The degree to which each risk affects the macroeconomic environment of a country naturally depends on the country's governance model (e.g., democracy or autocracy), regulatory environment and the stability of regulatory institutions, state ownership structure, degree of economic openness, level of the shadow economy, corruption, etc.

Taking into account the abovementioned aspects, a structural and logical scheme of the economic security assessment process is formed, according to which the logic of interrelationships between elements of the assessment process is constructed (Fig. 1).

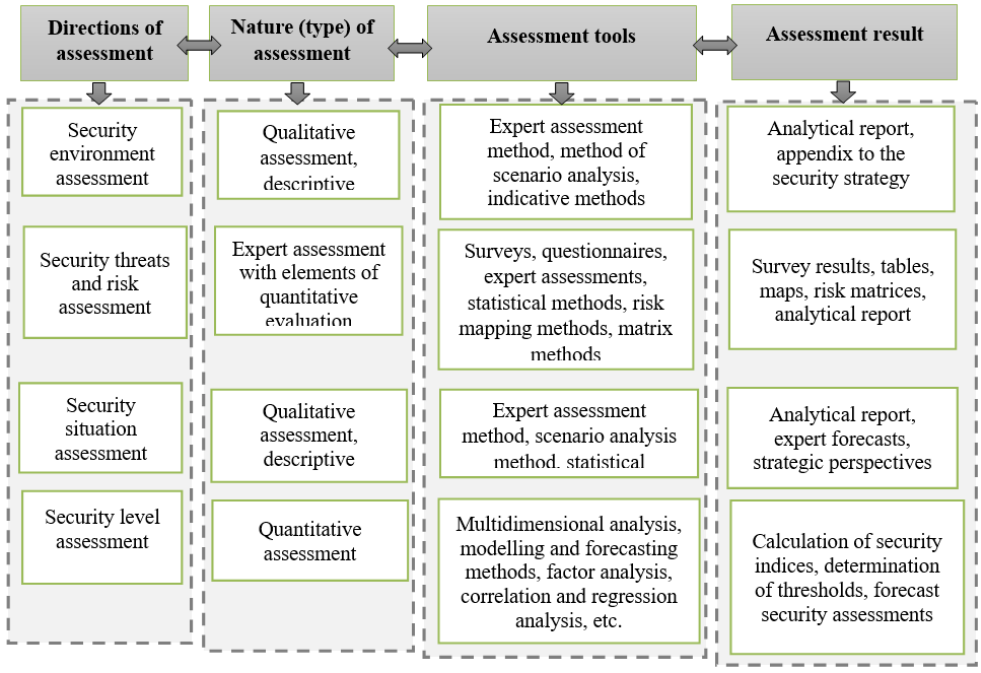


Figure 1. Interrelations between elements of the economic security assessment process

Source: developed by the authors

Thus, the process of economic security assessment should be based on the consistent consideration of four elements: direction of assessment; nature (type) of assessment; assessment tool; and assessment result. The direction of the security assessment correlates with the object (individual, business entity/enterprise, country, macro-region, association of countries, etc.) and the hierarchical level of security (global, regional, national). Accordingly, this determines the nature (type) of the assessment, which in turn determines the choice of the most effective assessment tools, the use of which allows certain results of the security assessment to be obtained.

In the system of assessment directions, such assessment focuses as the security environment, the system of security threats and risks, the security situation, and the level of security can be distinguished. The nature of the assessment determines its type – in particular, substantive (qualitative), descriptive, including statistical descriptive assessment, or quantitative analysis (conducting relevant analytical calculations). Depending on the type of assessment, a specific assessment tool is used, which is a combination of various analysis methods, including expert evaluation, scenario analysis, indicative methods, survey methods, descriptive statistics, multidimensional analysis, modelling and forecasting methods, factor analysis, correlation and regression analysis, and other methods. The assessment result is expressed in the form of the presentation of the results, which may be in the form of a document, such as an analytical report, strategic plan, or a substantive section of the wider strategy. The latter is presented in the form of survey results, the forecasts and opinions of experts, or calculations – in particular, security indices, their thresholds, optimal levels, and both forecast and modelled (optimized) estimates.

The first scientific papers on methodological approaches to assessing the level of economic security appeared at the end of the 20th century, and their further development led to the identification of two main approaches to assessment:

indicative and functional (Solodovnik, 2021). The *indicative approach* involves determining the level of security by comparing the current values of security indicators with their threshold values. As a result, the greater the deviations detected, the lower the level of security, and vice versa. The highest level of security is achieved when the entire set of indicators is within the threshold values, and the threshold value of each indicator is achieved without prejudice to the others (Muntiyan, 1999; Hubareva, 2015a). The *functional approach* involves combining different components and aspects of security in the structure of composite indicators of economic security based on selected functional components.

The functional approach was developed in the *methodology of integrated security assessment*, which involves the calculation of an integrated security index that can combine a whole system of diverse security indicators.

Increased uncertainty and the growth of crisis phenomena in economic systems necessitate a review of existing approaches and the development of new methods, including the *scenario approach* (Solodovnik, 2021). A *scenario* is a document of an analytical and descriptive nature, which describes the logical sequence of object development in the future based on scientific hypotheses and assumptions that reflect the main directions of its development (Horbulin & Kachinsky, 2010). At the same time, a scenario is an assessment of an event's possible development that connects changes in the functioning conditions of the object and management system with relevant variables or factors (Hubareva, 2015a). Thus, the scenario approach involves a multivariate situational consideration of the economic security system, focusing on uncertainty in assessing the situation. The development of scenarios involves the use of expert assessments, simulation modelling, and cognitive modelling. Estimates obtained through scenario modelling are aimed at substantiating various options for applying economic and financial mechanisms that reduce negative impacts on the economic system.

The use of this approach makes it possible to assess economic security in the

medium- and long-term and with a medium or high degree of uncertainty. However, its use requires the organization of interaction between highly qualified experts in various fields in setting and solving complex problems of ensuring economic security using modern mathematical modelling tools (Solodovnik, 2021).

A comparative description of the approaches outlined above is provided in Table 1.

In any of these approaches, the key role in security situation analysis and when monitoring the level of security belongs to security indicators, which are (usually) quantitative or qualitative measures (metrics) used to measure and assess the degree of stability, resilience, and efficiency of the country's economic system. Such indicators help to determine the level of economic security and its ability to resist internal and external challenges, and to deal with threats and risks.

Table 1. A comparison between the characteristics of approaches to assessing economic security

Source: compiled by the authors

Approach	Pros	Cons
Indicative	Simplicity Can be used at different levels (region, country, group of countries)	The necessity of a profound analysis in order to develop a system of thresholds
Functional	Assessment comprehensiveness Possibility to form and change a set of indicators Ease of calculations	No single approach to identifying functional components A huge number of possible indicators, which complicates the selection process
Integral	Availability of generally accepted design methods (stages) Comprehensive and generalized nature of the assessment Possibility to take into account different weightings of individual indicators	The choice of standardization methods for single indicators and methods of their aggregation affects the assessment result, which requires additional substantiation

Scenario	The ability to obtain different valuation alternatives, taking into account uncertainty Assessment in the short, medium, and long term	Complexity of analysis and evaluation The necessity of involving specialists from various fields to participate in the analysis Proficiency in the application of different mathematical modelling methods

Indicators comprise the methodological basis for monitoring the level and state of economic security, as they provide specific quantitative data used to measure and evaluate certain aspects or processes that affect the security situation. The results of data analysis based on indicators allow economic security strategies to be developed, targets to be set and tracked, efficiency to be evaluated, threats to be identified in time and their impacts to be prevented, trends and interrelationships between different indicators to be forecasted and monitored, decisions to be substantiated, etc. In general, the indicators combine to create a comprehensive vision of the country's economic security and help economists, analysts, specialists in various fields, and government agencies to understand and improve economic management strategies, including security strategies.

Ukraine has officially approved the Methodological Recommendations for Assessing the Level of Economic Security, which defines a set of assessment indicators formed on the basis of such principles as representativeness, reliability, and accessibility. An analysis of the peculiarities of the construction of the indicator system in the methodology showed that it includes 128 security indicators, of which 32 (25%) are financial security indicators. The system of indicators also includes 16 indicators of manufacturing security, 15 indicators of social security, 12 indicators of macroeconomic security, 11 indicators of foreign economic and food security, 10 indicators of energy security, and 7 indicators of demographic security. Among the financial indicators, 7 are banking sector security indicators, 4 non-banking sector security indicators, 4 budget security indicators, 5 debt security indicators, and 6 currency and monetary security indicators (Ministry for Economic Development and Trade of Ukraine, 2013).

From the point of view of their impact on the level of security, 3 types of indicators can be distinguished: a *stimulator indicator*, which has a direct connection with the integrated security assessment, i.e., it increases security; a *destimulator indicator*, which has an inverse correlation with the level of security, i.e., it weakens the security state; and a *mixed indicator*, which is a stimulator up to a certain indicator value, and in case of further increase turns into a destimulator of the security situation. In the system of economic security indicators of Ukraine (according to the official methodology), 54 indicators, or 40.3%, are stimulators; 38 indicators, or 28.4%, are destimulators; and 42 indicators, or 31.4%, are mixed indicators . The highest number of stimulating indicators exist in such subcomponents as investment and innovation and food security, while destimulators prevail among financial and social security indicators.

From the point of view of measuring security, a system of indicators is represented as a set of ranges of values, which generally vary from 0 to 1 (or from 0 to 100%), divided into a certain number of ranges. In particular, five ranges are highlighted in the methodology, where the boundaries of each interval denote the critical, dangerous, unsatisfactory, satisfactory, and optimal value of the security situation.

At the international level, there are also certain sets of indicators that can serve as security indicators. For example, the IMF has developed a system of 40 financial stability indicators composed of 25 indicators for the deposit corporations sector (including 12 core indicators) and 15 indicators for depository corporations sector clients (IMF, 2019). These indicators measure the current financial condition and resilience of the country's financial institutions from the deposit corporations sector, insurance corporations, pension funds, and other financial corporations in general.

The IMF, together with the World Bank, has developed the Debt Sustainability Framework, which measures the level of debt sustainability and security, on the

basis of which recommendations for managing a country's debt policy can be developed (IMF, 2023). This system includes indicators such as total debt, the ratio of debt to country's income, the ratio of debt to export revenues, the ratio of debt service payments to country's income, an indicator of risk assessment related to the need to repay debt obligations and attract new debt, debt obligations' distribution by maturity, and others.

The World Bank has developed a system of financial inclusion indicators which are used to measure the level of access to financial services and inclusion in the financial system of various segments of the population and businesses in the world: The Global Findex Database (World Bank, 2024a). As part of the World development indicator statistical database, the World Bank also collects and publishes countries' socio-economic development indicators, which are presented on the World Bank (2024b) Open Data platform. These include: GDP, GDP per capita, GDP growth rate, inflation and unemployment rates, manufacturing and agriculture in GDP, gross capital formation in GDP, tax payments in GDP, domestic credit provided by the financial sector in GDP, external debt, external debt service payments, personal remittances, foreign direct investment, and others.

The National Bank of Ukraine, as part of its methods for assessing the level of financial stability and sustainability, identifies a list of indicators that can be used to measure the level of financial stability (for example, the level of non-performing loans in the economy, debt burden ratios, the ratio of loans to collateral, and many others), as well as comprehensive indicators that allow the current situation in the financial sector to be assessed, but does not provide a forecast of further developments (National Bank of Ukraine, 2024a). An example of a composite indicator developed by the National Bank is the Financial Stress Index (FSI), which is periodically calculated and published to reflect the level of stress in the financial sector of Ukraine (FSI ranges from 0–1, where 0 is no stress and 1 is the highest level of stress). In addition to assessing the level of stress, the FSI allows the depth

and duration of periods of financial market instability to be measured, the effectiveness of anti-crisis measures to be assessed, and the nature of financial system shocks to be determined (National Bank of Ukraine, 2024b).

This study proposes a *comprehensive approach to assessing economic security*, which includes a combination of different focuses for assessing the elements of the economic security system at different hierarchical levels (global, regional, and national). This involves: the assessment of the global security environment through threat and risk analysis; the multidimentional assessment of countries' positions in the global economic environment; the comparative analysis of regional security complexes; the assessment of the security aspects of countries' cooperation within regional associations; and the analysis of national peculiarities of the economic security system (Fig. 2).

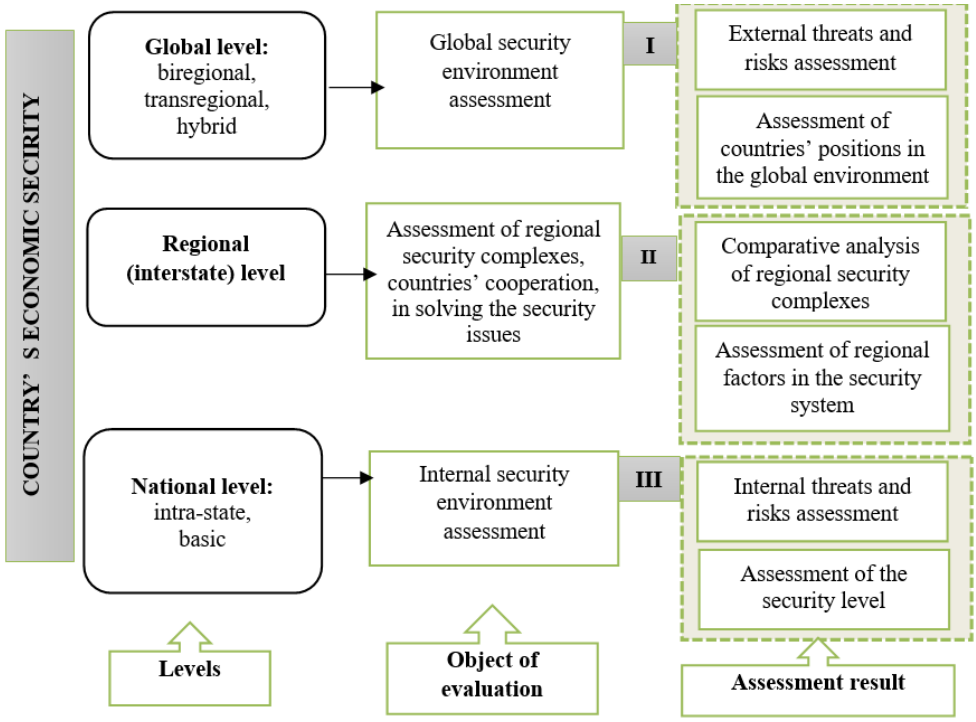


Figure 2. The logic of an integrated approach to assessing economic security

Source: developed by the authors

As for the assessment of risks and threats, at the international level, country risk assessment is carried out by international institutions and private agencies that apply certain methodological approaches to comprehensive risk assessment, which are used to form country ratings in terms of secure development. Examples of such estimates the Business Environment Risk Index (BERI, 2023), Political and Country Risk (Control Risks Group Holdings, 2023), Euromoney Country Risk (ECR) (Euromoney, 2023), and the EIU national risk model (EIU, 2023). Among the most well-known integrated indices used to measure the level of country risk is the International Country Risk Guide (ICRG) methodology, which has been used to calculate a comprehensive assessment of country risk since the 1980s (The PRS Group, 2023). The ICRG index includes 22 indicators grouped into 3 subcategories of risk: political, economic, and financial.

The systematization of risk assessment methods depending on the input conditions and features of the overall assessment process – namely, consideration of probability, consequences, risk level, etc. – is presented in the ISO/IEC 31010.2019 Risk Management – Risk Assessment Techniques international standard (ISO, 2019). Among the risk assessment methods used are the following: hazard analysis and performance, hazard analysis and critical control points, structured what-if method, scenario analysis, root cause analysis, failure mode and effect analysis, cause and effect analysis, Monte Carlo simulation modelling, Bayesian statistics and Bayesian networks, cause and effect matrix method, and multi-criteria decision analysis.

The World Economic Forum (2023) annually provides a comprehensive and meaningful assessment of global risks based on a survey of experts (from across academia, business, government, the international community, and civil society) by publishing the Global Risks Report, which reflects the changes taking place in the global security environment under the influence of various threats. The World Economic Forum considers the risks of the global security environment in

5 main groups (economic, social, geopolitical, technological, and environmental), examining them from the point of view of the probability of occurrence and the degree of impact on the sustainability of economic development of all countries around the world. According to the results of the latest Global Risks Report 2024 (World Economic Forum, 2024), in the long term, environmental risks remain the main risks, and include extreme weather events, critical changes to the Earth system, biodiversity loss and ecosystem collapse, and natural resource shortage, which are ranked in the first four places in the ranking of the main long-term risks. Technological risks (misinformation and disinformation, adverse outcomes of AI technologies, and cyber insecurity) and social risks (involuntary migration, societal polarization) are also identified in the top 10 main risks.

It should be noted that, in general, *expert assessment* is one of the most common tools for collecting data for the purpose of identifying and further analyzing risks and threats to the security environment. The use of a questionnaire survey method allows various parameters of risk to be taken into account, including the probability of occurrence, the strength of impact on the security of socio-economic development, priority, and the period of potential impact on security.

The use of a scoring scale for risk parameters allows further quantitative estimates for risks to be obtained, which will allow them to be ranked and compared according to various criteria. An example of possible scoring scales is given in Table 2.

Table 2. Scale of criteria for assessing security threats and risks

Probability	Impact	Priority	Period of potential impact
1 – very low	1 – minor	1 – high, requires immediate action (implementation of measures) to respond to the actual risk of occurrence at the current time	1 – short-term (within 2 years)
2 – low	2 – minimal	2 – medium, requires recommendations/plans for further response actions	2 – medium-term (within 5 years)

3 – medium	3 – moderate	3 – low, no response action is required, the risk is acceptable for the given period of time	3 – long-term (within 10 years or more)
4 – high	4 – significant		
5 – very high	5 – catastrophic		

Source: compiled by the authors

The use of such scales when surveying experts on risk assessment allows: the scoring (quantitative) and substantive (qualitative) characteristics of threats and risks to be obtained; risks to be ranked by probability, impact, priority, and time (based on the calculation of the average score obtained from the experts who participated in the survey); a comparative analysis of risks of different categories to be conducted; and conclusions to be drawn about the significance and prevalence of risks of different natures.

The assessment of countries' positions in the global environment (stage 1, Fig. 2) can be based on the analysis of countries according to key global rankings compiled by international organizations, foundations, research and consulting companies, etc. This allows various aspects of the functioning of national economies to be identified in terms of economic, political, social, environmental, and other aspects, determining the overall success, efficiency, and quality of development.

The second stage of an integrated approach to assessing economic security involves a comparative analysis of regional security complexes (RSCs), taking into account the level of cooperation between countries in the system of economic security. The *comparative analysis of RSCs* should be based on such criteria as: conditions of formation; development potential, including natural resource-based, scientific and technological, industrial, socio-demographic, security environment-related, and threats that cause it; as well as the peculiarities of institutional support for economic security. Within the framework of regional complexes, integration interaction is strengthened, restrictions on the movement of goods and services and production factors are reduced, and additional prerequisites are

created for the growth of the competitive potential of countries and the enhancement of opportunities for ensuring sustainable development.

In this regard, the foreign trade component of economic security is the most accurate criterion for measuring the benefits or risks of strengthening foreign trade relations, including under the influence of deepening integration processes. For Ukraine, in the current conditions and in the future post-war period, it is the intensification of European integration that is seen as a significant stimulus for the effective recovery of the country's economy.

At the third stage (national level of security), within the logical structure of an integrated approach to assessing economic security, it is advisable to analyze national peculiarities of the formation and maintenance of the economic security system – for example, for Ukraine, to identify internal factors of the security environment, patterns of their development, outline strategic directions for improving the economic security system, etc.

Conclusions

The process of economic security assessment is based on a system of the following interconnected elements: assessment direction, nature (type) of assessment, assessment tools, and assessment results. In this case, the system of assessment directions can distinguish such assessment focuses as: the security environment, the system of security threats and risks, the security situation, and the level of security; the nature of the assessment, which determines its type (qualitative analysis, descriptive analysis, quantitative analysis); and the type of assessment, which determines the use of specific assessment tools and is represented by a combination of different analysis methods (method of expert assessments, method of scenario analysis, indicative methods, questionnaire methods, multidimensional analysis, modelling and forecasting methods, and factor analysis).

The proposed integrated approach to assessing economic security includes a

combination of different focuses for assessing the elements of the economic security system at different hierarchical levels (global, regional, and national). This is composed of: the assessment of the global security environment through the analysis of threats and risks; the multicriteria assessment of the positions of countries in the global economic environment; the comparative analysis of regional security complexes; and the assessment of countries' interaction in the economic security system by analyzing the national peculiarities of the economic security system, which will allow a comprehensive and multifaceted vision of the features and characteristics of the economic security system of national economies operating in the context of rapid transformations of the global environment to be obtained.

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2.2. Recent changes in Ukraine's security position

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Abstract. *The second part of this chapter is devoted to the assessment of the Ukrainian economy's secure development, taking into account the determinants of the development of the European and global security environment. Based on a comprehensive approach to assessing and monitoring the level of economic security, in particular on the basis of a multi-criteria assessment of countries' positions in the global economic environment, calculations are made to determine the security positions of Ukraine and their corresponding changes.*

The calculations are based on the algorithm developed by the authors for assessing the positions of countries in the global security environment, which includes the following stages: the assessment of positions and their changes in key international rankings, systematized by categories of global security risks (economic, social, political, technological, environmental); the evaluation of generalized estimates of indices of key international rankings and statistical indicators of country variation and differentiation; the calculation of structural characteristics of distribution (positioning of countries) in international ratings; the calculation of integrated indices of countries' leadership positions in the global environment, the use of which in the security assessment system allows us to determine and justify the preconditions for improving the sustainability of development and strengthening the security positions of countries.

It is determined that the most well-known international rankings, which reflect the level of leadership potential and sustainability of countries' development within the world, are based on such indices as: the Easy Doing Index, the Economic Freedom Index, the Sustainable Development Goals Index, the Global Sustainable Competitiveness Index, and the KOF Index of Globalization (all of which concern the economic component of countries' security development); the Human Development Index, The Legatum Prosperity Index, the Social Progress Index, and the World Happiness Index (social component); The Corruption Perceptions Index, the Democracy Index, the Global Peace Index, and The Fragile States Index (political

component); the Global Innovation Index, the Global Knowledge Index, and the Global Cybersecurity Index (technological component); and the Environmental Performance Index and Green Growth Index (environmental component).

A comprehensive accounting of these indices and their estimates allows us to calculate the integrated indicator of Ukraine's leadership positions in comparison with the EU countries and, accordingly, to determine the areas of development that are most significant from the point of view of secure economic development in the context of the formation of vulnerabilities. Therefore, these areas require the greatest attention when developing strategic measures for managing economic security.

Keywords: secure development, countries security positions, global environment, international ranking, integrated index, leadership positions, leadership potential.

Introduction

Global environmental threats pose additional risks to the security and sustainability of the economic development of the national economy and, accordingly, affect the country's position in the global economy, strengthening or weakening competitive advantages and impeding the potential for economic growth and development in the absence of effective adaptation mechanisms.

A comprehensive approach to the assessment and monitoring of the economic security situation, combining different assessment focuses at different hierarchical levels of security, has many advantages, one of which is the possibility of a multidimensional analysis of national economic security systems which interact within regional security complexes and form the landscape of the global economic security system. Within this approach, one of the objects of assessment is the global security environment. The features and determinants of its development and transformation affect the state of national economic security systems and countries' security positions within regional security complexes.

This paper proposes to study the changes in Ukraine's security position on the basis of a comprehensive approach, in which one of the stages of the assessment is the analysis of the position of countries in the global environment, using the results of the ranking of countries in the framework of key global ratings compiled by international organizations, foundations, research and consulting companies, and other institutions. These ratings are based on the calculation of the relevant global indices, which are ranked according to their scores in the rating, making it possible to compare countries in terms of efficiency, competitiveness, quality of life, prosperity, innovation, political stability, and other factors, and to identify the most successful countries that are undisputed leaders in the global environment and, accordingly, have the highest levels of sustainability and security.

Taking into account the thesis that the analysis of the level of economic security should form the basis for the effective assessment and management of economic security risks at the regional (for example, the European regional security complex), national (for example, the national security of individual EU countries), and business (microeconomic, represented by the interests of economic entities and the population) levels, it is advisable to analyze ratings based on their preliminary classification by spheres (components) of security, which in turn correlate with categories of global risks (economic, social, geopolitical, technological, and environmental) facing the world today according to the reports of the World Economic Forum (2023, 2024).

This research aims to develop and test an algorithm for assessing the integrated indices of leadership positions of countries in the global environment.

The main objectives of the study, which determine its logic and design, are as follows:

1. The systematization of global rankings of countries by security spheres (economic, social, geopolitical, technological, and environmental), which correlate with the key global risks of economic development.

2. The development of methodological tools to assess the leadership positions of countries in the global environment, based on the appropriate algorithm for forming an integrated index.
3. The calculation of the integrated index of Ukraine's leadership positions in comparison with EU countries (European regional security complex), which will allow the areas of development that are most significant in terms of forming vulnerabilities in the security of economic development and thus require the greatest attention in the development of strategic measures for economic security management to be identified.

As for the methodology, the study uses the method of calculating multidimensional averages, including the construction of a composite indicator: the integrated index of the country's leadership positions. Statistical methods for assessing dynamics and descriptive statistics are also used.

Primary results

As a result of systematization, a system of key global ratings was formed, which are relevant (at the time of the study, in 2023) and are updated annually (Table 1). It should be noted that these ratings on various components of security allow us to compare countries in the following areas: *economic*, regarding aspects of business efficiency and transparency and the clarity of the regulatory environment for economic activity, the level of economic freedom, the level of sustainable competitiveness, the level of globalization, and the effectiveness of the implementation of sustainable development goals; *social*, regarding indicators of the well-being and quality of life of the population, which are measured in indices of human development potential, global prosperity, social progress, and happiness; *political*, regarding the stability of the legal system, the system of general public administration, and compliance with law and order, comprehensively assessing the indices of the perception of corruption, democracy, peace, and fragility of states; *technological*, regarding the possibilities of innovative development and

the use of knowledge and innovation, as well as protection against cyber threats; and *environmental*, regarding environmental efficiency and success in the field of green growth.

Table 1. Main global rankings of countries

Global rating (index)	Developer	Aim
Economic component of security		
Doing Business Index (from the year of 2022 Business Ready Index), **DBI**	World Bank Group	To compare countries with regard to the ease of doing business and the availability of clear, transparent and effective regulatory rules for economic activity
Economic Freedom Index, **EFI**	Heritage Foundation	To measure the development of economic freedom in countries around the world
Sustainable Development Goals Index, **SDGI**	Sustainable Development Solutions Network	To measure the progress of countries in achieving the sustainable development goals
Global Sustainable Competitiveness Index, **GSCI**	SolAbility	To measure the level of competitive development of countries on the basis of sustainable development and the combination of economic factors with environmental and social dimensions
Globalization Index, **KOF**	KOF Swiss Economic Institute	To compare countries by level of globalization in three dimensions: economic, social, and political
Social component of security		
Human Development Index, **HDI**	UN Development Programme	To compare countries in terms of living standards, literacy, education, and longevity as the main components of human development
Global Prosperity Index, **GPI**	Legatum Centre for National Prosperity	To measure the achievements of countries around the world in terms of their welfare and prosperity
Social Progress Index, **SPI**	Social Progress Imperative	To compare the progress of countries in ensuring social progress

World Happiness Index, **WHI**	Sustainable Development Solutions Network (Gallup World Poll data)	To compare countries around the world by the level of happiness and well-being as important criteria for public policy
Political component of security		
Corruption Perceptions Index, **CPI**	Transparency International	To measure the level of perception of corruption in the public sector and identify the most and least corrupt countries in the world
Democracy Index, **DI**	Economist Intelligence Unit	To compare countries around the world according to the level of democracy development and classify them into 4 types (full democracies, flawed democracies, hybrid regimes, and authoritarian regimes)
Global Peace Index, **GPI**	Institute for Economics & Peace	To evaluate countries by the level of security of living, including the occurrence and scale of conflicts (domestic and international), the level of stability and security within the state, and the level of state militarization
Fragile States Index, **FSI**	Fund for Peace	To rank countries by the level of stability, assessing the ability of the country's government to control the country's territorial integrity
Technological component of security		
Global Innovation Index, **GII**	World Intellectual Property Organization	To measure the level of innovative potential of countries around the world
Global Knowledge Index, **GKI**	UN Development Program and Mohammed bin Rashid Al Maktoum Knowledge Foundation	To measure the level of the knowledge economy, comparing countries by their ability to generate and use innovations
Global Cybersecurity Index **GCSI**	International Telecommunication Union	To measures the level of countries' readiness to ensure cybersecurity
Environmental component of security		
Environmental Performance Index, **EPI**	Yale Center for Environmental Law & Policy	To conduct a comparative analysis of the environmental policy indicators of countries

Green Growth Index, **GGI**	Global Green Growth Institute	To measure of the achievement of green growth goals in the areas of efficient and sustainable use of resources, protection of natural capital, green economic opportunities, and social inclusion

Source: compiled by the authors based on Doing Business Data (2023); Economic Freedom Index (2023); Sustainable Development Goal Index (2022); Global Sustainable Competitiveness Index (2023); KOF Globalisation Index, 2023); Human Development Index (2023); Legatum Prosperity Index (2023); Social Progress Index (2023); World Happiness Index (2023); Corruption Perceptions Index (2022); Fragile States Index (2023);

The Global Knowledge Index (2022); Global Cybersecurity Index (2020); Environmental Performance Index (2023); Green Growth Index (2023)

Based on the research of Karpenko (2023), an algorithm for the further analysis of country estimates according to key global ratings is formed as follows (Fig. 1).

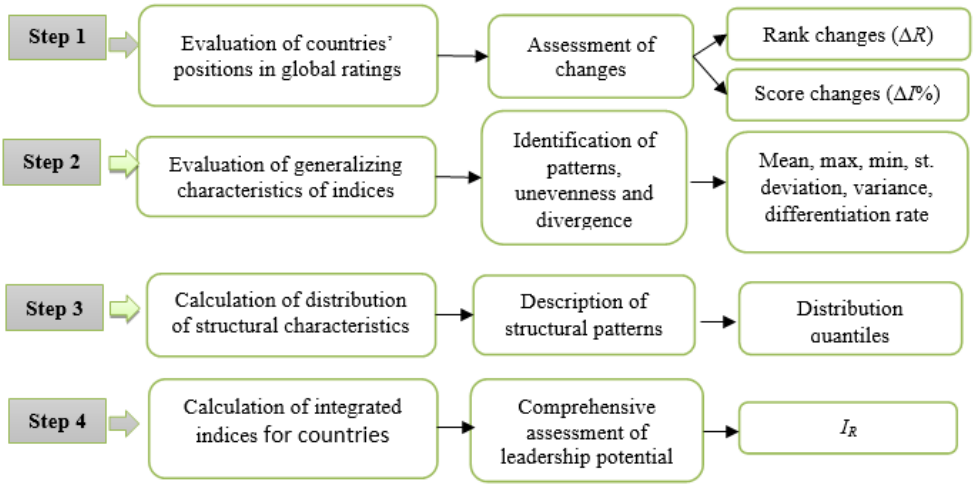


Figure 1. Algorithm for assessing the positions of countries in the global environment

Source: developed by the authors

The *first step* involves the evaluation of countries' positions in the ratings given in Table 1 on the basis of the analysis of index and rank, as well as using methods for dynamic series analysis and the evaluation of changes in position (ΔR) and indices (ΔI%):

$$\Delta R = R_1 - R_0$$

where: R_1 – the rank at the current period in time (the last relevant ranking);

R_0 – the rank at the base period in time (data from previous ratings).

If $\Delta R = 0$, the position has not changed, 0; if $\Delta R > 0$, the position has deteriorated, ↓; if $\Delta R < 0$, the position has improved, ↑. The loss of positions can logically be seen as a deterioration in a country's development conditions, a decrease in stability, and an increase in unstable conditions or events, which is evidence of a weakening of economic security, and vice versa.

$$\Delta I\% = \frac{(I_1 - I_0)}{I_0} \times 100$$

where: I_1 is the index score for the current period of time (the latest relevant rating); I_0 is the index score for the base period of time (data from previous ratings).

If $\Delta I\% = 0$, then there are no changes; $\Delta I\% > 0$ represents an increase in the index level; while $\Delta I\% < 0$ illustrates decrease in the index level. An increase in the level of the index (even if the position is unchanged or insignificant) is evidence of the country's increasing success (or achievements, or efficiency) in the area analyzed within the international ranking, which can also be assessed as a prerequisite for improving the sustainability of development and strengthening security positions, and vice versa.

The *second step* is to assess generalized estimates of indices within key international ratings and statistical indicators of the variation and differentiation of the sample of countries (for example, within the regional security complex).

As part of this stage, it is advisable to calculate the mean value of the index () for the sample of countries, which allows the central tendency to be determined and, accordingly, enables the comparison of countries relative to the mean, identifying more and less efficient economies. The minimum (I_{min}) and maximum (Imax) values of the index allow the absolute leader country and countries outside of the sample to be identified, and permit the *range of data variation* (the growth of which is evidence of an increase in heterogeneity and asymmetry) to

be determined. *Standard deviation* (σ) and the *coefficient of variation* (*V*σ) are also measures of heterogeneity, the growth of which is a negative factor in the functioning of the sample (for example, countries within regional security complexes). Finally, the differentiation rate (*d*) estimates the maximum level of difference between countries according to the index scores.

The formulas for calculating the indicators are presented below:

$$\sigma = \sqrt{\frac{\sum(I-\bar{I})^2}{n}} \quad (1)$$

$$V\sigma = \frac{\sigma}{\bar{I}} \times 100 \quad (2)$$

$$d = \frac{Imax}{Imin} \quad (3)$$

The *third stage* involves the calculation of the structural distribution characteristics (positioning of countries) in the global ratings. From the point of view of statistical analysis, the structural distribution characteristics are the quantiles of the distribution, in particular quartiles (dividing the aggregated data into four equal parts), quintiles (five equal parts), and deciles (ten equal parts). As a result of the assessment of the first (starting from the beginning of the rating) structural characteristics obtained on the basis of ranks, it is possible to compare the results of the rating by top 10%, top 20%, and top 25% of leading countries, which also allows them to be classified as countries with a sufficiently high ability to ensure sustainability and secure development.

Finally, at the last stage it is possible to form and calculate the integrated indices for countries' leadership positions. It should be noted that the integrated index of leadership positions is a generalizing composite indicator that provides a multidimensional comparative assessment of a particular country in terms of

achieving the most effective development (leadership) relative to other countries within a global environment or regional complex.

At the first stage of designing this index, it is necessary to determine its structure based on the system of global ratings (Fig. 2).

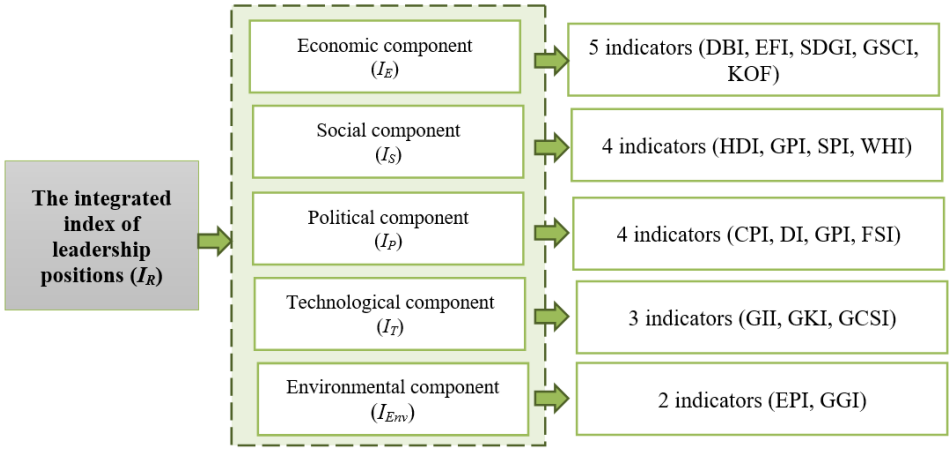


Figure 2. The structure of an integrated index of countries' leadership positions in the global environment

Source: developed by the authors

As a result, the integrated index is composed of 5 sub-components (economic, social, political, technological, and environmental) that include 18 indicators, which are scores of a certain country in each ranking as follows: 5 indices of the economic component; 4 of the social and political; 3 of the technological; and 2 environmental.

Among the rating scores (indices), there are not only stimulators (where the growth of their values improves the effectiveness of the country's development and vice versa), but also destimulators (where the growth of index values causes a deterioration in the country's development efficiency). The indicators that are destimulators include the Global Peace Index and the Fragile States Index.

Based on the algorithms for the formation of complex integral indicators existing in the practice of economic research (OECD, 2008), the calculation consisted

of the following stages:

- firstly, the choice of methods for standardizing input data (indicators);
- secondly, the choice of how to aggregate standardized data.

There are different methods that are used to bring parameters that differ to comparable forms – namely, the ranking method, the standardization method (z-scores, comparison relative to the average level, and standard deviation), the min-max method (comparison with the max and min values of the indicator), the method of comparison with the average level of the indicator, the method of comparison with the highest value of the indicator (max value), the method of categorical scaling, the method of cyclic indicators, and others (OECD, 2008; Freudenberg, 2003; Nilsson, 2000).

Since the purpose of the index is to form a generalizing characteristic of countries' positions in the global environment, the most optimal method of standardization is to compare with the global average level of indicators.

Thus, the following formulas are proposed for standardization:

$$SI_i = \frac{Iij}{Iiw} \quad \text{(for stimulators} \qquad (4)$$

$$SI_i = \frac{Iiw}{Iij} \quad \text{(for destimulators)} \quad (5)$$

where: – index value from the i-th rating for the j-th country; – the average global value of the index from the i-th rating.

The main methods of aggregation include linear (additive – the integrated score is in the form of an arithmetic mean) and geometric (multiplicative – the integrated score is calculated as a geometric mean). As for the weighting methods, their range is quite wide, including the use of weight levels, the method of expert opinions, the method of principal components, methods of factor analysis, including the determination of correlations, etc. (OECD, 2008).

To aggregate standardized data, the method of geometric aggregation with

equal weights was used, which implies the calculation of the geometric mean:

$$I_R = \sqrt[m]{\prod_{i=1}^{m} SIi} \qquad (6)$$

As a result, the integrated indicator is calculated according to the following formula:

$$I_R = \sqrt[5]{\mathrm{I_E} \times \mathrm{I}_S \times \mathrm{I}_P \times \mathrm{I}_T \times \mathrm{I}_{Env}} \quad (7)$$

If $I_R > 1$, this indicates that the generalized assessment of the country's position in the global environment is higher (better) compared to the global average. The more I_R deviates from one, the greater the leadership potential of the country.

Conversely, if $I_R < 1$, the generalized positions of the country in the global environment are unsatisfactory – that is, lower (worse) compared to the global average. The more I_R approaches zero, the less role the country plays in the system of global economic relations, and the prerequisites for ensuring stability and secure development are worse.

According to the above, the analysis of integrated indices should include an assessment of the I_R indices themselves and the degree of deviation ($\Delta R = I_R - 1$).

The proposed algorithm was tested on the example of Ukraine, the key vector of development of which is European integration, and where achievements in the field of ensuring economic security are possible only if the country cooperates within the European regional security complex on the basis of the coherence of goals, strategic objectives, and targets.

For the EU countries, one of the strategic priorities in terms of both development and ensuring economic security is to increase the level of competitiveness of countries by increasing the stability of the European economy, strengthening innovative and industrial potential, maintaining technological leadership, and the active development of digital and green economies. As noted in the draft EU Economic Security Strategy, this priority can be achieved by deepening the

common market, investing in the economy of the future through smart macroeconomic policies and cohesion policies, and investing in human capital, in particular by improving the skills of the European workforce. This will require the diversification of supply sources and export markets, as well as investment in the development of the research and industrial base in strategic areas such as modern semiconductors, quantum computing, biotechnology, zero-output industries, clean energy, and important raw materials (European Commission, 2023). One of the strategic tasks of the EU in terms of economic security is to maintain leadership positions in the global economic system and to ensure the maximum preservation of leadership potential.

Based on the proposed methodology (algorithm), a sample of EU countries was analyzed using the global rating system for the 2017–2023 period. Summarizing the results of the study allows us to state that EU countries: have seen significant achievements in ensuring conditions and ease of doing business; possess predominantly free or moderately free economic systems; are more than 80% successful in achieving the sustainable development goals; have the most sustainable competitive economies, but have not yet achieved the highest level of sustainability in providing competitive advantages; are the world's most globalized economies; have a high or very high level of human development; are included in the first two groups (of six possible) of countries in terms of prosperity and well-being; are happy or moderately happy nations; have the lowest or average levels of perception of corruption, have achieved the greatest success in the fight against corruption, and have strong institutions and an effectively functioning democratic system; have a very high level of peace and security and stable socio-political systems; are among the 50 most innovative economies in the world, characterized by a high level of development of the knowledge economy; have developed cyber defense systems; are characterized by the most effective results of environmental policy implementation; and lead the rating of green economies in the world,

having high rates of green growth.

The statistical analysis of variation and differentiation in the leading positions of the EU countries, the results of which are given in Table 3, allows us to draw a number of further conclusions.

Table 3. Assessment of EU countries' variations in indicators by global indices

Source: authors' calculations

Indicator (scale)		Mean	Min	Max	St. deviation	Variance coefficient	Differentiation rate
Economic	DBI (0–100)	76.21	66.10	85.30	4.38	5.75	1.29
	EFI (0–100)	70.54	56.90	82.00	6.03	8.54	1.44
	SDGI (0–100)	80.16	72.49	86.76	3.29	4.10	1.20
	GSCI (0–100)	53.21	46.07	60.67	3.63	6.82	1.32
	KOF (0–100)	84.00	76.79	90.48	3.75	4.47	1.18
Social	HDI (0–1)	0.90	0.80	0.95	0.04	4.55	1.19
	GPI (0–100)	75.19	65.55	84.55	5.60	7.45	1.29
	SPI (0–100)	84.72	76.81	90.54	3.82	4.51	1.18
	WHI (0–10)	6.63	5.47	7.80	0.56	8.38	1.43
Political	CPI (0–100)	63.63	42.00	90.00	13.90	21.84	2.14
	DI (0–10)	7.89	6.45	9.39	0.89	11.29	1.46
	GPI (1–5)	1.55	1.31	1.94	0.18	11.78	1.48
	FSI (0–100)	35.36	16.00	57.00	12.71	35.94	3.56
Technological	GII (0–100)	45.59	34.11	61.56	8.23	18.06	1.80
	GKI (0–100)	59.56	48.83	66.96	4.96	8.32	1.37
	GCSI (0–100)	91.28	67.38	99.48	8.62	9.44	1.48
Ecological	EPI (0–100)	61.57	50.40	77.90	7.68	12.48	1.55
	GGI (0–100)	68.47	50.72	77.78	5.85	8.54	1.53

Firstly, comparing the average values of EU indices, it can be noted that the smallest estimates – represented by a low result and the need to concentrate

efforts in these areas – are obtained for the Global Sustainable Competitiveness Index, the Global Innovation Index, and the Global Knowledge Index. For other global indices, average estimates are above 60% of the maximum possible value.

Secondly, the aggregate of EU countries is heterogeneous according to the index of fragile states (variation above 33%). According to the remaining indices, EU countries are homogeneous. Moderate variation is observed in political indices, including the Corruption Perceptions Index, the Democracy Index, the Global Peace Index, the Global Innovation Index, and the Environmental Performance Index. Greater variation is evidence of heterogeneity and asymmetry of development.

Thirdly, the greatest differentiation in EU countries is revealed by the Corruption Perception Index and the Fragile States Index. According to the remaining indices, differentiation is insignificant. An increase in the level of differentiation worsens the average European estimates and positions, increasing uneven development.

The risks of losing leadership positions are associated not only with internal transformations within the European region, but also with external factors that are formed under the influence of development trends in other countries in the global competitive environment. Norway, Great Britain, Switzerland, and Iceland (in some ratings) are among the other countries that have competitive advantages in relation to the EU countries in the global environment. The United States is the absolute leader in the Global Knowledge Index rating and the Global Cybersecurity Index rating, and is also among the top ten countries in terms of ease of doing business. Among the countries of the Asia-Pacific region, Singapore, Taiwan, Hong Kong, Korea, New Zealand, and Japan hold the leading positions.

The calculation of the structural characteristics of the distribution of EU countries within global rankings (Table 4) also allow us to provide a generalized assessment of the peculiarities of the formation of leadership potential. Thus, on

average, 35.4% of EU countries are in the top 10% of the most effective (by various criteria) countries in the world in this area. The EU countries have the highest level of leadership potential according to such ratings (and corresponding indices) as the Sustainable Development Goals Index (48.1% of EU countries in the top 10%), the Sustainable Competitiveness Index (44.4%), the KOF Globalization Index (55.6%), the Fragile States Index (40.7%), the Environmental Performance Index (51.9%), and the Green Growth Index (44.4%).

Table 4. Analysis of the structural characteristics of the EU countries' distribution in global ratings

Source: authors' calculations

Structural characteristics	Number of the EU countries																	
	Economic					Social				Political				Technological			Ecological	
	DBI	EFI	SDGI	GSCI	KOF	HDI	GPI	SPI	WHI	CPI	DI	GPI	FSI	GII	GKI	GCSI	EPI	GGI
1st decile (top 10%)	5	10	13	12	15	8	8	9	6	9	7	10	11	6	8	9	14	12
1st quintile (top 20%)	12	16	22	22	27	21	19	22	14	14	16	20	20	12	15	20	24	23
1st quartile (top 25%)	18	21	25	26	27	25	24	26	18	19	21	22	23	18	21	21	25	24

On average, 69.8% of the EU countries are in the first quintile of the distribution in global ratings (top 20% of the ranking leaders). The EU countries have the highest level of leadership potential for the Sustainable Development Goals Index (81.5% of EU countries in the top 20%), the Sustainable Competitiveness Index (81.5%), the KOF Globalization Index (100%), the Human Development Index (77.8%), the Social Progress Index (81.5%), the Environmental Performance Index (88.9%), and the Green Growth Index (85.2%).

Moreover, 83.1% of EU countries are in the first quartile of the distribution (the top 25% of the ranking leaders) on average, with more than 90% of EU countries taking leading positions in such rankings as the Sustainable Development Goals Index (92.6%), the Sustainable Competitiveness Index (96.3%), the KOF

Globalization Index (100%), the Social Progress Index (96.3%), and the Environmental Performance Index (92.6%).

Unlike the EU countries, Ukraine's position in the global environment is not so significant and indicates a very low level of leadership potential, especially when positioned in the European region. However, in some rankings – in particular, in terms of achieving sustainable development goals, global sustainable competitiveness, globalization, social progress, and environmental efficiency – Ukraine is among the top 30% most successful countries in the world, which is a fairly high result.

The analysis of Ukraine's position in global rankings and the assessment of changes over the past 5 years resulted in the data presented in Table 5.

Table 5. Assessment of Ukraine's position in global rankings

Source: authors' calculations based on ratings data

Indices		Data ratings (2020–2023)		Data ratings (2017–2018)		Changes	
		score	rank (global)	score	rank (global)	score, %	Rank (↑ or ↓ points)
Economic	DBI	70.2	64	63.90	80	9.86	↑16
	EFI	54.1	130	48.1	166	12.47	↑36
	SDGI	76.52	38	72.9	39	4.97	↑1
	GSCI	46.9	49	44.7	74	4.90	↑25
	KOF	73.0	44	70.24	45	3.90	↑1
Social	HDI	77.3	77	75.1	88	2.93	↑11
	GPI	58.84	74	52.86	103	11.31	↑29
	SPI	74.170	52	76.5	56	–3.05	↑4
	WHI	5.071	92	4.096	132	23.81	↑40
Political	CPI	33	116	30	130	10.00	↑14
	DI	5.42	87	5.69	83	–4.75	↓4
	GPI	3.043	157	3.113	152	–2.25	↓5
	FSI	95.9	18	74.0	90	29.59	↑72

Technological	GII	31.02	57	37.6	50	–17.50	↓7
	GKI	46.49	63	46.3	61	0.41	↓2
	GCSI	65.93	78	50.1	58	31.60	↓20
Ecological	EPI	49.6	52	52.9	109	–6.24	↑57
	GGI	57.31	64	57.32	…	–0.02	…

Ukraine has the weakest positions, and therefore the lowest level of development efficiency, in terms of the Economic Freedom Index, the Global Peace Index, the Fragile States Index, the Corruption Perceptions Index, and the World Happiness Index. In other words, imperfections in the political and legal environment, political instability, and weaknesses in the institutional support for development reduce the country's potential for sustainable economic growth. The assessment of changes in the country's position over the last 5 years shows that the country has strengthened its position in most ratings, with the greatest success in achieving environmental efficiency (+57 positions from 109th to 52nd place in the ranking), ensuring a higher level of happiness (+40 positions from 132nd to 92nd place in the ranking), increasing the level of economic freedom (+36 positions from 166th to 136th place in the ranking), and ensuring prosperity (+29 positions from 103rd to 74th place in the ranking). At the same time, the country moved up 72 places in the Fragile States Index (from 90th to 18th position), which indicates increased instability and insecurity, mainly due to war in the country. Ukraine also lost some positions, which are not very significant, in the Democracy Index, the Global Peace Index, the Global Innovation Index, and the Knowledge Index.

In general, if we classify the country according to global rankings, Ukraine is a country with: a predominantly unfree economy; a high level of human development; high results in achieving social progress (2nd group of countries out of 6); a 77% achievement level regarding sustainable development goals; a high level of globalization in the political, social, and economic areas; an average level of innovation development and efficiency of the knowledge economy; and a moderate

level of prosperity and happiness.

Table 6. A comparative analysis of the integrated indices of leadership positions of Ukraine in the European and global environment

Source: authors' calculations

Indices		Ukraine	World	EU	I_R (world)		I_R (EU)		Δ (world)		Δ (EU)	
Economic	**DBI**	70.20	63.63	76.21	1.103		0.921		10.3		–7.9	
	EFI	54.10	59.32	70.54	0.912		0.767		–8.8		–23.3	
	SDGI	76.52	66.69	80.16	1.147		0.955		14.7		–4.5	
	GSCI	46.89	43.21	53.21	1.085		0.881		8.5		–11.9	
	KOF	72.98	61.06	84.00	1.195	1.084	0.869	0.876	19.5	8.4	–13.1	–12.4
Social	**HDI**	0.77	0.73	0.90	1.056		0.863		5.6		–13.7	
	GPI	58.84	58.06	75.19	0.992		0.783		–0.8		–21.7	
	SPI	74.17	65.24	84.72	1.137		0.875		13.7		–12.5	
	WHI	5.07	5.54	6.63	0.915	1.022	0.765	0.820	–8.5	2.2	–23.5	–18.0
Political	**CPI**	33.00	43.00	63.63	0.767		0.519		–23.3		–48.1	
	DI	5.42	5.29	7.89	1.025		0.687		2.5		–31.3	
	GPI	3.04	2.10	1.55	0.690		0.510		–31.0		–49.0	
	FSI	95.90	65.83	35.36	0.686	0.781	0.369	0.509	–31.4	–21.9	–63.1	–49.1
Technological	**GII**	31.02	34.39	45.59	1.305		0.680		30.5		–32.0	
	GKI	46.49	46.47	59.56	1.277		0.781		27.7		–21.9	
	GCSI	65.93	51.89	91.28	1.751	1.429	0.722	0.727	75.1	42.9	–27.8	–27.3
Ecological	**EPI**	49.60	34.35	61.57	1.442		0.806		44.2		–19.4	
	GGI	57.31	55.72	68.47	1.233	1.334	0.837	0.821	23.3	33.4	–16.3	–17.9

On average, compared to the rest of the world, Ukraine's integrated position in the global environment is higher in all components except for the political and legal areas. The highest integrated score is for the technological component (1.429), which means that Ukraine has a 42.9% more competitive innovation system, more developed knowledge economy, and enhanced ability to generate and use information and communication technologies. The environmental component of the integrated index equals 1.334, which shows that Ukraine's achievements in sustainable environmental development and green growth are 33.4% higher than

the average for the rest of the world. In the economic component, with an index score of 1.084, Ukraine's position is 8.4% higher, but the country lags behind by 8.8% in terms of economic freedom, which remains low. The social component of the index is 1.022, which means that Ukraine's integrated position is only 2.2% higher than the global average, and this is mainly due to success in achieving social progress, while Ukraine's position in terms of prosperity and happiness is lower than the global average. Accordingly, it is the political and legal factors that pose threats to sustainability and security, and the country's position is rather unstable and low, as calculations show, with Ukraine lagging behind the rest of the world by 21.9% on average, mainly due to the lack of peace and stability.

When compared to EU countries, Ukraine's integrated positions are the lowest, with calculations showing a lag both in all rating scores (indices) and in integrated position indices. The weakest positions are in the political and legal area – in particular, the stability of the political and legal environment, lagging behind the EU countries by an average of 49.1%. The integrated index for the technological component is 0.727, showing shows that Ukraine's innovation capabilities are 27.3% lower than those of the EU countries. Ukraine's position relative to the EU is 18% weaker in the social component, 17.9% less effective in building a sustainable green economy, and 12.4% less effective in the economic component. Ukraine sees the most significant bottlenecks in shaping its leadership position in the European space in the Corruption Perceptions Index, the Peace Index, the Fragile States Index, the Democracy Index, and the Global Innovation Index.

Conclusions

This article proposes an algorithm for assessing the leadership positions of countries in the global environment, which includes the following steps: an assessment of positions and their changes in key global rankings, systematized by categories of security risks (economic, social, political, legal, technological,

environmental); an assessment of generalized estimates of indices of key global rankings and statistical indicators of the variation and differentiation of countries; a calculation of the structural characteristics of distribution (positioning of countries) in global rankings; and a calculation of the integrated indices of leadership positions of countries. It should be noted that this algorithm is one of the most effective tools for assessing the factors of the impact of the global security environment on countries' positions and resilience.

The research conducted using this algorithm allows us to determine that, on the one hand, Ukraine's integrated position in the global environment is higher than the average (taking into account the totality of all countries) in all components, except for the political and legal area. In particular, Ukraine has a more competitive innovation system, a more developed knowledge economy, the ability to generate and use information and communication technologies, and 33.4% higher achievements in the field of sustainable environmental development and green growth. Political and legal factors pose the main threats to sustainability and security, with the country's position 21.9% lower than the rest of the world (according to the global average). On the other hand, compared to the EU countries, Ukraine's integrated position in the European environment is lowest, with a lag in all components, the largest of which are in the political, legal, and technological areas.

Accordingly, Ukraine's security positions and their changes in the European and global economic environment will primarily be influenced by: military and political instability and, accordingly, geopolitical risks; the intensification of the use of the information space as an instrument of influence, information wars, increased cybercrime, and the inability to provide a high level of protection; growing socio-economic inequality and the further growth of migration, as well as environmental security issues resulting from the spread of ecocide, especially in Ukraine as a result of military operations; and the ineffectiveness of international

cooperation in solving global environmental problems.

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2.3. Ensuring the national economic security of Ukraine in the context of major global transformations

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Abstract. *The third section of this chapter is devoted to the justification of scientific and practical approaches to ensuring the security of national economies in*

the context of deepening global transformations based on the analysis of the current global economic security landscape. This involves defining the factors, conditions, and patterns that will determine the configuration of national security systems and that must be taken into account when implementing countries' economic security policies.

Challenges and risks for the national economic security of countries, and Ukraine in particular, caused by the influence of current transformations of the global environment are identified. The contradictions of the current global economic security landscape, which determine the evolution of approaches to economic security policy development, are highlighted, namely: the relationship between national security and an open economy, the opposition of a unilateral approach to multilateralism, and the need to take into account China's strategy.

Recommendations for improving the quality characteristics of national security systems, considering their growing dependence on global conditions, are justified based on the identification of the components of the economic security system, structural and qualitative requirements for it, and factors of the global positioning of countries that influence security policy. The need for increased flexibility of the national policy of ensuring economic security as an important requirement for the security system are highlighted, given rapid changes in the security environment and the appearance of new security challenges and threats. Based on a comparison of the top 10 global risks that will have the greatest impact on countries' national security in the next 2 and 10 years, a conclusion is drawn towards a significant difference in the impact of risks in the short and long terms, as well as the appearance of new security risks. Taking into consideration the growing influence of global transformations on countries' security systems, the importance of international cooperation in solving problems of ensuring economic security is indicated, and recommendations on the development of regional security complexes are provided.

Keywords: *economic security, global transformations, security risks, national*

security system, security policy, regional security complexes.

Introduction

The experience of security systems' functioning in different countries and regions of the world demonstrates the increasing importance of "soft" security parameters, including economic security. In particular, within the framework of the functioning of regional security complexes, a gradual expansion of the functionality of international institutions in the field of ensuring the security of national and regional economies is noted. Alongside this, the security focus of countries' national policies is still largely concentrated around the "hard" components of security, and the systems for ensuring economic security are in the initial stages of formation in many countries.

In general, economic security issues, as a rule, become actualized either: after economic crises, which are either regional or global in scale and which cause the imbalance of national economies; because of the appearance of new challenges for the global economy; or due to the exacerbation of contradictions between actors. Thus, the increasing relevance of the security agenda in 2018–2019 was a consequence of the trade war between the United States and China, as the world's largest economies, and the corresponding increase in tension in global trade. In 2020–2021, a new challenge for global economic security was posed by the COVID-19 pandemic. Since 2022, the full-scale war unleashed by the Russian Federation against Ukraine has exacerbated risks not only for regional security (in particular, in terms of the migration crisis and energy security), but also for the global economy (in particular, in terms of the food crisis). Thus, studies devoted to ensuring the security of national economies in terms of the impact of global transformations are becoming increasingly important.

This study is aimed at the justification of scientific and practical approaches to ensuring the security of national economies, Ukraine in particular, in the context

of deepening global transformations.

To achieve the purpose of the paper, the following research objectives are outlined: to analyze the current landscape of global economic security; to define factors, conditions, and patterns that will determine the configuration of national security systems and that have to be taken into account when implementing countries' policies of ensuring economic security; and to provide recommendations towards improving the quality of national security systems, Ukraine's in particular, considering their growing dependence on the global environment.

To meet these objectives, general and specific research methods are used, including: historical and logical methods, methods of analysis and synthesis, and structural and functional analysis (to study the current landscape of global economic security, to define global risks which have the greatest impact on national security, and to assess the evolution of economic globalization processes, respectively); the methods of generalization and abstraction; and a systematic approach (to identify components and factors determining the configuration of the national economic security system, to justify the importance of international cooperation in solving problems of ensuring economic security, and to develop recommendations on the development of regional security complexes).

The analysis of relevant studies devoted to issues of ensuring economic security in the global environment demonstrates that they are mainly focused on the individual components of national economic security, i.e., risks and threats to the security of national economies. In particular, researchers investigate individual measures to ensure specific components of national economic security (Benson et al., 2023; Kratz et al., 2022), along with identifying challenges to national (Ghiretti, 2023) and regional security (Parakhonskyi et al., 2014).

Recently, growing research interest has been observed in the field of proving the advisability of international mechanisms of ensuring economic security. A number of authors consider the current state of regional and global security and

provide a justification of the global approach towards ensuring economic security (Beal, 2022; Lishchynskyi & Lyzun, 2020; Syrotiuk et al., 2024).

Despite a number of studies on this issue, the possibilities of improving the configuration of the national system of economic security, taking into account the current security landscape alongside global and regional challenges to countries' secure economic development, still require further justification.

Results

In recent years, there has been some progress in recognizing the importance of the economic component of national security. This, first of all, is manifested in building institutional and normative grounds for ensuring the security of the national economy, i.e., the establishment of specialized state bodies, the adoption of legislative documents, and the development of relevant strategic plans. Thus, the position of Minister of Economic Security has been introduced in the Japanese government, and a legislative act on economic security is in the process of being adopted. In 2021, Ukraine adopted the Strategy of Economic Security of Ukraine for the period until 2025 (President of Ukraine, 2021a). Since the same year, the Economic Security Bureau has been operating in the country, the mission of which is to ensure a safe direction for the economy of Ukraine (the invulnerability of the national economy to external and internal threats) through the identification of probable risk zones in the economy, which lead to its shadowing, with the aim of their leveling and countermeasures offenses affecting the functioning of the national economy.

In addition to security bodies, countries create narrow-profile institutions (both internal and international), the functionality of which is aimed at facilitating support for the components of security. In Australia, to minimize vulnerabilities in supply chains, the Government has incorporated the Office of Supply Chain Resilience; moreover, in partnership with India and Japan, the country joined the regional Supply Chain Sustainability Initiative, which takes care of the

joint solution of relevant problematic issues that may negatively affect the economic security of these states.

The experience of security policy implementation by leading countries shows that the main factors in the development of appropriate security strategies are national security interests related to the country's competitive advantages in certain sectors of global trade, the security of investments (in particular, foreign), and the provision of supply chains. Economic security has come to the forefront of policy discussions around the world as a series of crises – most recently the COVID-19 pandemic and the full-scale war in Ukraine – have disrupted global supply chains. Governments around the world are looking for ways to make their countries less vulnerable to such disruptions, especially now that rising geopolitical tensions are adding new uncertainties. Uncertainty and nationalism increasingly define the global economic agenda. Recent global shocks – from pandemic supply chain challenges to the war in Ukraine, the rise of nationalism, and authoritarian governments – have put security and sustainability at the center of economic security policies around the world. If advanced economies such as the USA, European countries, and Japan once saw China's competitiveness as an economic opportunity, now they see it as a security threat. The risks associated with certain economic relations are spreading rapidly in the current geopolitical and technological environment, and are increasingly merging with security concerns. This is why countries must develop a comprehensive approach to jointly identify, assess, and manage risks for their economic security.

In countries' economic security strategies in the near future, in particular in the EU, the following risks related to the current global transformations should be taken into account:

- risks to the sustainability of supply chains, including energy security;
- risks for the physical and cyber security of critical infrastructure;
- risks related to technology security and technology outflow;

– risks of using economic dependence or economic coercion as a weapon.

China's intensive subsidization of its enterprises, active industrial policy, strategic use of foreign policy to achieve economic goals, and the transformation of economic relations into weapons to put pressure on third countries all combine to stimulate the expansion of economic security measures and their implementation into security strategies. Such a policy includes the inspection of investments (if necessary, blocking investments that pose a threat to security) and strengthening export control (to control the export of goods and services for dual civilian and military purposes) (Ghiretti, 2023).

Countries are adopting ever-larger and more sophisticated toolkits to protect their security and strategic assets and to diversify their supply chains, ensuring that they are not exposed to security risks and that their economies are resilient to shocks and threats from third countries. Countries have unilaterally implemented a wide range of instruments with different functions and effects. Just 5 years ago, unilateral economic security measures were far fewer and weaker.

The evolution of economic security policy development is based on three main contradictions. The unilateral policy of economic security is gaining momentum all over the world and its scope is expanding, in some cases ignoring the multilateral system and its international institutions. The future of a global system based on national rules – in which priority is given to an extended interpretation of national security and stability, rather than global economic benefits, at the expense of ad hoc cooperation and coordination in areas of common interest to individual countries – leads to significant disagreements. Current debates about economic security policies, such as outgoing investment screening, export controls, and supply chain sustainability, arise from three main contradictions. The first is the need to balance the protection of national security with the desire to maintain an open economy. The second contradiction arises in the contrast between unilateral and multilateral policy-making. The third is related to the

approach to China, in which geopolitical differences as a feature of the current global economic security landscape matter significantly (Fig. 1).

1. National security versus an open economy

Many countries feel a certain incoherence between the tasks of ensuring an appropriate level of economic security and simultaneously maintaining sufficient openness of the national economy. Japan is fully aware of the tension between protecting its assets and supply chains from vulnerability (through patent protection and strengthening basic infrastructure) while at the same time wanting to remain an active participant in a liberalized trading system. Similarly, the US emphasizes its willingness to work with partners to strengthen and diversify the entire supply chain ecosystem in the long term, while making clear that self-defense against China's threats is central to its economic security policy of supply chain resilience and strengthening trade regulatory measures against perceived unfair foreign trade practices.

Although national security is a common denominator in the development of economic security policy and strategy, the interpretation of the term by governments and the scope of its application vary widely. Politicians are increasingly leaning toward a concept of national security that includes resilience. The proliferation of dual-use technologies is one of the challenges that force countries to expand their concepts of national security. China, for example, pursues a policy of merging civil and military technologies that blurs the line between the two. China also uses its economic power to influence the decisions and behaviors of other actors. This, in turn, has encouraged other countries to consider sustainability a national security priority in order to make their economies as resilient as possible to external challenges and risks and to include sustainability issues in their economic security strategies. However, economic security is in the area of foreign economic policy, which does not have internal institutional support in most countries. This is why the priority of economic security should be reflected,

first of all, in the country's institutional environment.

2. A unilateral versus a multilateral approach

The logic of stability and the need to be less dependent on the Chinese market caused a new wave of unilateral economic security measures and industrial policies in countries around the world. However, if the focus is solely on the advantages for the domestic market, without consulting partners, then these measures can cause harm. Recent examples of the consequences of unsettled unilateral measures include new US semiconductor export controls and the Inflation Reduction Act, which have created significant challenges for EU partners. The Inflation Reduction Act, for example, encourages European companies to relocate operations to the USA. The EU and the USA are trying to solve these problems, but their existence demonstrates how uncoordinated policies can have wide-ranging unintended consequences for partners. Currently, coordination can take place in exclusive formats such as the G7 or the Trade and Technology Council; conversely, a multilateral economic security framework could offer a platform not only for coordinating initiatives and responses, but also for introducing a new concept of collective economic security.

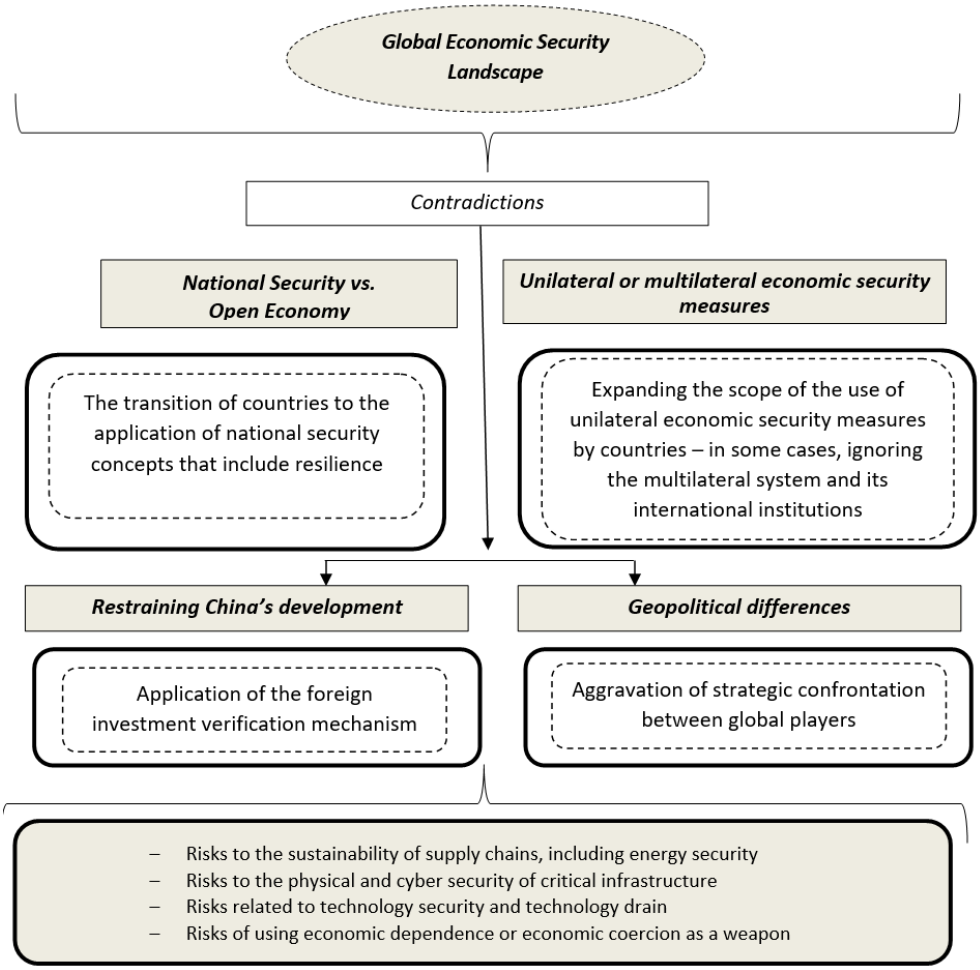


Figure 1. The main contradictions of the current global economic security landscape

Source: developed by the authors

3. The consideration of China's strategy

For all countries, the issue of economic security is only indirectly related to China officially – it concerns China only if the latter acts in violation of their policies. However, the USA is creating economic security rules that reflect its China strategy and directly target China. The new US export controls on semiconductors aimed at exporting products, services, knowledge, and labor to China are a prime example of an approach to economic security based on the desire to

surpass China and contain its development. The difference in these approaches can partly be explained by differences in the official approaches of state governments to China. In its latest national security strategy, the US officially recognized China as a national security threat. Other countries follow the official position that China is not seen as a threat to national security.

Another option for a new vision of economic security policies and strategies, which requires a structural rethinking of the rules of globalization, is the discussion of the verification of foreign investments. Foreign direct investment verification provides a positive basis for discussing these contradictions. Largely in response to China's perceived predatory investment model, most advanced economies are now weeding out foreign investment, albeit with wide variations in regimes. However, no country officially verifies foreign investments – for example, European firms investing in China. Since the mid-2010s, foreign investment screening mechanisms have grown in number and scope and are now increasingly the norm, but this has taken many years and significant effort.

It should also be noted that the verification of foreign investments faces additional obstacles. Small restrictions are already in place in Japan and South Korea. These are remnants of the economic system that existed before countries began to open up their economies, which is why today they cover rather limited areas – foreign banks, weapons production, and drugs.

The US government, on the other hand, is proposing new restrictions aimed at previously unrestricted capital outflows to countries such as China, Iran, and North Korea. The European Commission reviewed this policy in 2023 and revised the foreign direct investment screening rules. Thus, while the end result may seem identical, the "verification systems" in Japan and South Korea, the system proposed by the US, and the model on the EU agenda are the results of two opposite processes and incentives.

It should be noted that the economic openness of Japan and South Korea has

been influenced by new considerations about economic security, and these countries are also now weighing the possibility and feasibility of screening foreign investment before adopting new economic security policies. In 2020, South Korea revised the Act on Prevention of Divulgence and Protection of Industrial Technology (UNCTAD, 2020), which regulates not only foreign mergers and acquisitions of domestic basic technologies, but also the export of basic technologies that have received government support at the R&D stage. Japan passed the Economic Security Promotion Act to protect supply chains for its economy and protect domestic innovation.

The National Critical Capabilities Defense Act (2021), proposed by US lawmakers, aims to protect US technological know-how and prevent Chinese technology from being supported by US capital and knowledge. With its latest export control measures, the US has made it clear that it is not shying away from anti-China regulations. As for the EU, it will continue to choose non-country-specific (country-independent) policies, including any future foreign investment screening mechanism (Benson et al., 2023). The screening of foreign investment should focus on sensitive technologies and strategic sectors. Without a specific geographic target, the EU's investment screening efforts will be more time-consuming and capital-intensive, as any destination country could theoretically be screened. Thus, the EU should first narrow the focus to only direct investment and target it to specific sectors and/or goods. A Rhodium Group report (Kratz et al., 2022) showed that large European foreign investments in China are concentrated in certain sectors, such as automobile, food processing and distribution, pharmaceuticals and biotechnology, and the chemical industry. The primary goal is to focus on the quality and quantity of investments. Analysis should include both large investments and small investments in sensitive technologies and strategic industries, which can help the EU to perceive a clearer picture of what is happening. Eventually, the EU can take a balanced decision on whether such a

new instrument is needed and what it should look like. Despite differences in purpose, it is advisable for countries to coordinate their actions with other partners to avoid the undesirable consequences of unilaterally adopting uncoordinated foreign investment screening policies.

Some European foreign investments may pose a risk to EU security. This is why the emphasis should be divided between national security as it is and stability. For example, EU investment in China's automobile sector may not pose a direct security threat (Sebastian, 2022), but at a time when the EU is trying to better manage overdependence, this investment could increase the EU's dependence on China, which is known to use economic coercion. Although this does not apply to all sectors and may not pose an immediate security threat, over-reliance limits the EU's room for maneuver.

In this regard, the discussion on foreign investment can help to shape the EU's economic security framework, which places more emphasis on sustainability and allows for choices, minimizing constraints in the event of disruptions. This approach will be based on longer-term issues of open strategic autonomy rather than immediate security considerations, and should become a basis for all EU economic security policy.

However, it is important to understand that much of the over-dependence of European companies on China cannot be mitigated by foreign investment screening, which covers only a very limited proportion of Chinese companies. Many, though not all, of the new restrictions adopted by the US, EU, UK, Australia, Japan, and South Korea are in response to China's expanding global presence, its perceived unfair economic competitiveness, and its use of economic coercion at various levels.

The amount of attention paid to economic security in China has also been growing rapidly in recent years. Economic security is the cornerstone of China's comprehensive concept of national security (Drinhausen & Legarda, 2022), and

national security is perceived as the basis of China's economic development. China's new measures to ensure economic security are closely related to its relations at the international level, especially with the United States. However, they are the result of China's efforts to strengthen the regulatory framework. For example, China adopted the Foreign Sanctions Act in 2021 to protect itself from potential US primary and secondary sanctions and to provide legal justification for existing practices. If China continues to develop restrictive measures, including weighing-in on US actions, it is likely to adjust its own foreign investment screening tool in response to the adoption of US outbound investment screening. Party and state leader Xi Jinping has called foreign investment a matter of national security. As Beijing tries to stimulate domestic innovation and domestic technology production, and the US clearly targets Chinese innovation in its policies, one can expect new restrictive measures.

In 2018, China introduced a form of foreign investment screening mechanism – the Administrative Measures for Enterprise Overseas Investment. This is currently limited to countries that do not have diplomatic relations with China, that are experiencing internal turmoil, or that have been affected by sanctions imposed by China. Deals worth less than $300 million are tax-exempt, but so are foreign subsidies to Chinese companies. Measures also apply to sensitive industries (including the military industry, communications, media, real estate, energy, and illegal industries such as pornography). The wording of the regulation leaves room for its future expansion – for example, for its application in other sectors and countries.

4. Geopolitical disagreements

Over the past 10 years or so, economic fortunes have favored northern Europe. The Scandinavian countries, as well as Germany, Poland, and even the UK, can boast of decent growth and employment. In contrast, the South was shaken first by the euro crisis of 2010–2012 and the subsequent painful adjustment, and

then by the COVID-19 pandemic, which hit tourism-dependent economies more strongly than others (Piddubnyi, 2023).

At the same time, it should be noted that the growth of the Eurozone GDP in 2023 by only 0.8% highlighted the problems of European leaders, in particular Germany and France. This was related to both the difficult refusal of Russian energy carriers and close trade ties with China, which also found itself in a crisis situation.

The political crisis, constant changes in government, the unfavorable situation in global markets, and other factors led to the fact that the UK GDP grew by only 0.6% in 2023 (in 2022, it grew by 3.9%).

The margin of safety for the USA after the 2020 crisis turned out to be stronger than that of other Western countries. In 2023, US GDP grew by around 2.4%, although this is far from the levels of the indicators of economic recovery in previous years. The current government managed to overcome 40-year-high inflation, but the citizens of the US are still dissatisfied with the rapid increase in prices. The situation for the population is worsened by regular rate raising by the Federal Reserve System, which makes credit funds more expensive. According to the results of various polls, only around 35% of Americans approve of the current economic policy. GDP growth in 2024 is forecast at the level of 2%–2.3%.

China has stopped setting fantasy goals for economic growth in the range of 8%–10% of GDP. Instead, the Chinese government expects a more realistic 5%, although the veracity of Chinese statistics is always questionable. During 2022–2023, a number of economic commentators began to make predictions about a crisis in China that could run so deep that it would drag the rest of the world down with it. This disaster has not yet occurred, but Beijing has faced obvious problems: an aging population, falling birth rates, declining labor productivity, etc. To restore growth rates, business needs to be given more freedom, but in 2024, the Chinese Communist government will not be ready for this.

In 2024, the economy of the aggressor country will continue a large-scale military transition: defense costs will increase by 70% to the level of 6% of GDP. Despite sanctions, the country receives enough income from the sale of energy, which allows it to finance the war and maintain a satisfactory level of well-being for its citizens. According to various estimates, the war costs Putin approximately $100 billion per year – it is difficult to maintain this level of spending for a long time, while simultaneously mobilizing hundreds of thousands of able-bodied citizens. A country with an unhealthy demographic situation, rampant corruption, and under the influence of harsh sanctions will not be able to exist for a long time without visible economic troubles. Russia's GDP growth in 2023 was 1.2%, but the structure of investments has already radically changed in the direction of the military industry.

Therefore, one can note the following main factors of influence on global geopolitical disagreements:

- Geopolitical processes. The Russian-Ukrainian war, escalation in the Middle East, piracy in the Red Sea, etc., will cause global supply chains to change.
- The change of political elites. In 2024, more than 70 elections will be held in countries with a total population of 4.2 billion people. In particular, changes of power in the USA and the EU can significantly affect the economic policy of the world's most influential players.
- The change in the energy map of the world.
- The formation of a bipolar world will put before a number of countries the issue of joining one of the centers of power. Analysts believe that India, Brazil, Turkey, and Saudi Arabia will continue to avoid an unequivocal choice, having the aim – as long as possible – of benefitting from cooperation with both sides and increasing their weight in the world. However, India's rapprochement with the US is considered inevitable against China's likely continuation of slowly distancing from Moscow's aggression. This will only proceed within certain limits due to Beijing's perception of the threat from

> the AUKUS block. The probability of a Chinese attack on Taiwan is small, as well as the entry of Belarus into full-scale hostilities with Ukraine. China will seek to expand support in the Global South by promoting the expansion of the BRICS informal platform. Almost half of the world's population will go to the polls this year – presidents and parliaments will be elected in more than 50 countries. Presidents will be elected in the USA, and have already been appointed in Russia. The 27 countries of the EU will elect a new European Parliament. In parallel, presidential or parliamentary elections will be held in some EU countries – Austria, Belgium, Lithuania, Slovakia, Portugal, Romania, Croatia, and Finland. Elections will also be held in India, Indonesia, Mexico, and South Korea. Russia's allies will reassign power in Iran.

For Russia, elections in other countries are an avenue for global external aggression, a way to sow chaos, inflame conflicts within countries, and use democratic tools, in particular freedom of media and speech, to bring about war by political methods. The threat of famine in poor countries has decreased thanks to exports from Ukraine and the weakening of the Russian Black Sea Fleet, which is no longer capable of completely blocking ports. However, the level of supply on the market is still insufficient, and the rise in food and fertilizer prices will shake the situation in certain regions, in particular in the Middle East and Africa. In West Africa, one should expect new attempts at military coups in the zone of former French influence.

The main factor of global attention will remain the Russia-Ukraine war. Its results will also influence China's decision on the Taiwan question and its attempts to resolve it militarily. A third theater of hostilities as part of the global confrontation is being activated in the Middle East and Africa. There will be further aggravation of the strategic confrontation between global players. At the economic level, while recovery is possible in certain industries and regions, the global system will continue to be in crisis (Syrotiuk et al., 2024).

Thus, the global economic security landscape is becoming increasingly complex and is being supplemented by new economic security measures – in particular, those introduced by developing countries to protect national security and stability. The changing environment represents the responses of countries to the challenges and threats of the external environment, which are exacerbated by geopolitical disagreements, changes in supply chains, climate change, and the intensification of crises, in particular in the energy sector. Today, the following main contradictions shape the economic security agenda around the world: the balance between security and the economy; protecting and strengthening internal economic security while avoiding unintended external effects; the approach to the China issue; and geopolitical differences.

Obviously, the degree and nature of the impact of global transformations on the security environments of countries is differentiated. This is determined, first of all, by the general level of the country's inclusion in globalization processes. Experts of the Swiss Economic Institute at the Federal University of Technology in Zurich calculate the Globalization Index, providing a quantitative assessment of the level of globalization of the global, regional, and individual national economies, and carry out appropriate measurements in terms of the economic, political, and social components of globalization processes (KOF Swiss Economic Institute, 2021). In turn, economic globalization is evaluated according to two components of globalization – trade and finance.

By the mid-1980s, the economic globalization of the world lagged behind the general level of globalization, taking into account the economic, political, and social components. In 1974, these two indices of globalization practically leveled off, after which the faster deepening of the globalization of the economy was observed. From that time until today, the level of economic globalization has exceeded the general level of globalization of the world (Fig. 2).

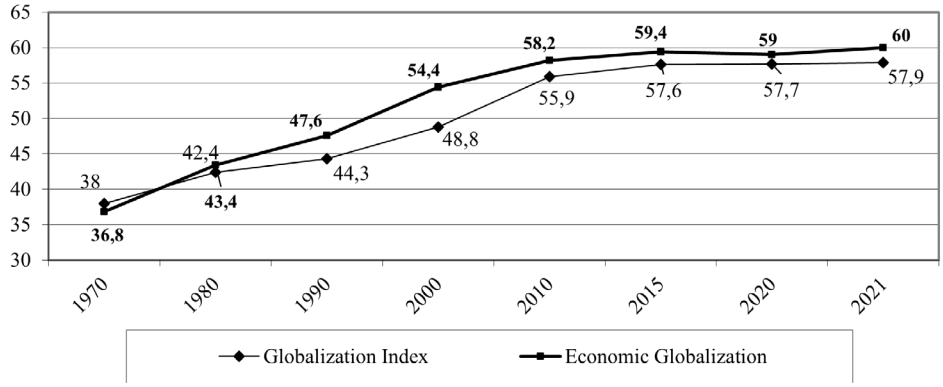


Figure 2. The level of overall and economic globalization of the world, 1970–2021

Source: KOF Swiss Economic Institute (2021)

From the point of view of the influence of global factors on regional economic security and their consideration in shaping the relevant regional security complexes, it is important to understand the degree of involvement of regions of the world in the course of globalization processes. According to the values of the KOF Globalization Index, the regions of the world are both at significantly differentiated levels of globalization and demonstrate different rates of progress in this respect (Table 1).

Table 1. The level of economic globalization of regions, 1970–2021.

Source: KOF Swiss Economic Institute (2021).

Region	**1970**	**1980**	**1990**	**2000**	**2010**	**2020**	**2021**
Europe and Central Asia	48.09	54.27	56.96	65.93	70.28	72.28	73.00
East Asia and Pacific	36.09	41.81	47.35	55.06	59.73	60.44	60.68
North America	48.35	53.52	56.89	65.79	64.93	66.23	66.42
Latin America and Caribbean	35.16	38.99	42.58	50.50	53.27	53.64	54.58
South Asia	24.35	26.24	29.27	34.45	40.66	38.93	39.50
Middle East and North Africa	40.65	47.21	48.58	55.79	61.21	59.24	59.80
Sub-Saharan Africa	30.03	33.20	35.49	41.83	44.08	44.45	44.67

The East Asia and Pacific region shows the greatest progress in increasing the level of economic globalization (the globalization index increased by 1.7 times from 1970 to 2021), while the North America region showed the least (1.4 times). In the regions of Europe and Central Asia, East Asia and the Pacific, and North America, the level of economic globalization today exceeds the overall level of globalization of the world. In the regions of Latin America and the Caribbean, and the Middle East and North Africa, it is almost at the same level as the global average. In the regions of South Asia and Sub-Saharan Africa, whose rate of inclusion in globalization processes lags far behind other regions, global transformations will have a less noticeable impact on the security environment.

The level of globalization of the Ukrainian economy in the last 15 years has exceeded the corresponding global averages (for comparison: 2010 – world 58.2, Ukraine 61.2; 2021 – world 60.0, Ukraine 62.4). At the same time, in terms of financial globalization, Ukraine has significantly lagged behind the global indicator (2010 – world 57.7, Ukraine 51.4; 2021 – world 60.3, Ukraine 53.3). Alongside this, the level of trade globalization of the Ukrainian economy has steadily exceeded the level of financial globalization (Fig. 3).

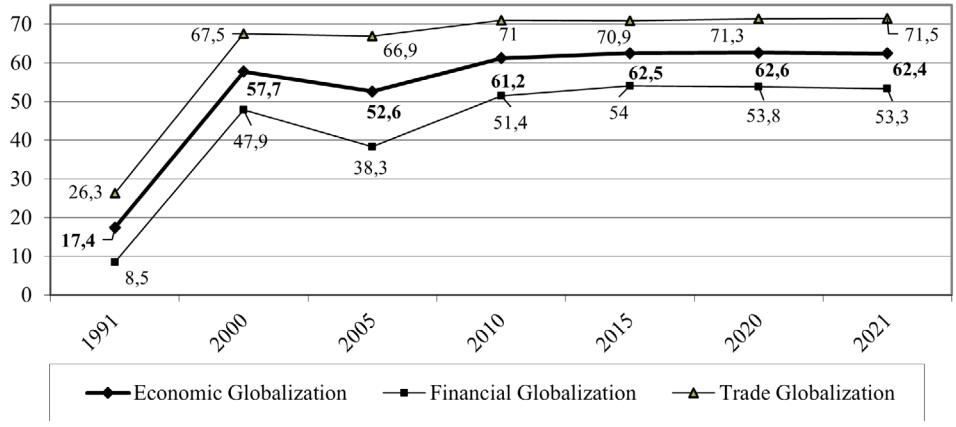


Figure 3. The level of economic globalization of Ukraine, including trade and financial components, 1991–2022

Source: KOF Swiss Economic Institute (2021)

Taking into account global transformations and the contradictions of the current global economic security landscape, the configuration of national security systems will be determined by factors and conditions that must be taken into account when implementing the policy of ensuring the economic security of countries, including Ukraine (Fig. 4).

Currently, practical measures to regulate economic security are concentrated by the majority of leading countries in the areas of ensuring national interests in the field of international trade, controlling investment flows, and ensuring supply chains. At the same time, this approach represents a rather narrow perception of economic security, which should be expanded by recognizing the importance of other security spheres (in particular, those that are components of economic security in accordance with the normative legal acts of Ukraine). Methodological recommendations for calculating the level of economic security of Ukraine define the following components: production, demographic, energy, foreign economic, investment and innovation, macroeconomic, food, social, financial (banking, security of the non-banking sector, debt, budget, currency, monetary credit) (Order No. 1277 of the Ministry of Economic Development and Trade of Ukraine, 2013).

Offensive and defensive security policies are extreme manifestations of economic security management regimes. Alongside them, the de-facto regime of national economic security is usually mixed in nature and requires a balance between defensive and offensive policies depending on the specific situation in the country. Moreover, the state can pursue a unified approach (offensive or defensive) when implementing measures to support all components of economic security or a differentiated approach (when some of the components of security are provided by measures of a defensive nature, and others are of an offensive nature).

One of the factors that determine the nature of security policy and, in particular, the state's predisposition to defensive or offensive security policy, is the

country's position in the world economy (leader, strong player, weak player, or outsider).

An influential factor that will determine the contours of national security policy is the country's position in relation to existing regional security complexes. For countries that clearly belong to a certain existing regional security complex, it is logical to be actively included in security initiatives at the level of interstate cooperation within the region. For buffer states that separate regions and, as a rule, have geostrategic importance for actors from different regions, this task becomes much more difficult. For instance, the problems of national security in Ukraine, which is characterized by being at the intersection of two spaces – European and post-Soviet – are difficult to consider separately from the security problems of both regions. The experience of Ukraine has shown that being under the divergent influence of two regional security complexes and feeling the corresponding pressure makes it difficult for buffer states to maintain neutrality and balance between the respective complexes. For a long time, the uncertainty of Ukraine's foreign economic and political course in solving regional security problems did not provide an opportunity to effectively counteract the destructive consequences of such multidirectional pressure (Parakhonskyi et al., 2014). Therefore, it is important for such states to choose within which region they will build their national security complexes.

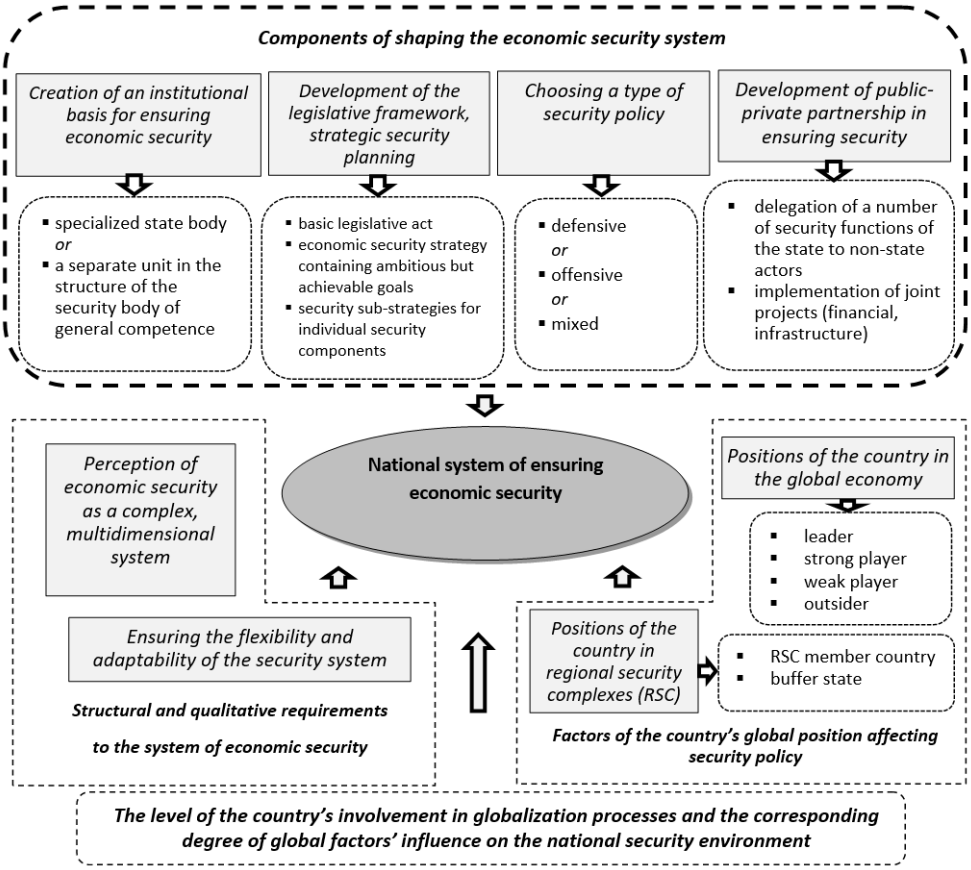


Figure 4. Components and factors determining the configuration of the national economic security system

Source: developed by the authors

In the direction of the development of the institutional provision of economic security, it is advisable to establish specialized state institutions that will take care of the economic component of security (such as the Economic Security Bureau of Ukraine). If the practice of security management is preserved at the level of public bodies with a broad profile, there is a risk that their security functionality will traditionally gravitate towards military and defense security issues.

Special attention should be paid to public-private partnership in ensuring certain aspects of economic security. The practice of delegating certain state functions, including security functions, to non-state (private) entities is not new in

the world. Currently, Ukraine's strategic documents provide for the development of public-private partnerships in the following security areas: creating an effective security system and ensuring the stability of critical infrastructure; modernizing transport infrastructure; and developing the defense-industrial complex (Markieieva & Rozvadovskyi, 2021, 2022). Regarding economic security, this is especially relevant for those security areas in which the private sector plays a decisive role (for example, the IT industry). Therefore, it is necessary that governments realize their role in regulating public-private partnerships, since economies sometimes have to balance between rather contradictory goals: on the one hand, trying to protect themselves (for example, to mitigate threats such as cyber attacks), and at the same time trying to develop (in particular, using the achievements of technical and technological progress).

The conditions in which the current security environment is being formed impose new requirements on national security systems. This, in particular, is related to the increased flexibility of the national policy of ensuring economic security. This requirement is related to the fact that the national security system must respond adaptively to rapid changes in the security environment and the emergence of new security challenges and threats. A comparison of the top 10 global risks which will have the greatest impact on the national security of countries in the next 2 and 10 years, as identified by the World Economic Forum, shows a significant difference in the impact of risks in the short and long term, and also demonstrates the emergence of new risks (Table 2).

Table 2. Top 10 global risks ranked by severity in the short and long term, 2023–2024

Source: compiled by the author based on World Economic Forum (2023, 2024).

2 years		10 years		
Rank	**Risks**	**Rank**	**Risks**	**Change of the rank**
2023				
1	Cost of living crisis	1	Failure to mitigate climate change	↑
2	Natural disasters and extreme weather events	2	Failure of climate-change adaptation	↑
3	Geoeconomic confrontation	3	Natural disasters and extreme weather events	↓
4	Failure to mitigate climate change	4	Biodiversity loss and ecosystem collapse	new
5	Erosion of social cohesion and societal polarization	5	Large-scale involuntary migration	↑
6	Large-scale environmental damage incidents	6	Natural resource crises	↑
7	Failure of climate change adaptation	7	Erosion of social cohesion and societal polarization	↓
8	Widespread cybercrime and cyber insecurity	8	Widespread cybercrime and cyber insecurity	no changes
9	Natural resource crises	9	Geoeconomic confrontation	↓
10	Large-scale involuntary migration	10	Large-scale environmental damage incidents	↓
2024				
1	Misinformation and disinformation*	1	Extreme weather events	↑
2	Extreme weather events	2	Critical change to Earth systems*	new
3	Societal polarization	3	Biodiversity loss and ecosystem collapse	new
4	Cyber insecurity	4	Natural resource shortages*	new
5	Interstate armed conflict*	5	Misinformation and disinformation*	↓
6	Lack of economic opportunity*	6	Adverse outcomes of AI technologies*	new
7	Inflation*	7	Involuntary migration	↑
8	Involuntary migration	8	Cyber insecurity	↓

9	Economic downturn*	9	Societal polarization	↓
10	Pollution	10	Pollution	no changes

** New risks that entered the top 10 in 2024 but were absent among the top 10 risks in 2023.*

Security risks are not only differentiated in the short and long term, but also change rapidly over time. According to the results of WEF expert assessments conducted in 2024, the top 10 global risks included several fundamentally new risks that were not considered among the most influential in 2023 – misinformation and disinformation, lack of economic opportunities, interstate armed conflict, adverse outcomes of AI technologies, etc.

In recent years, economic security has finally begun to be recognized at the state and international level as a separate component of national security, which requires its own approaches to its regulation and support. This was a consequence of the transformation in the definition of the phenomenon of security itself and the expansion of its content from a narrow perception purely in the military, defense, and political contexts. At the same time, the social and political sphere continues to demonstrate a close connection to economic security. On the one hand, factors of a social, political, and military nature continue to exert a noticeable influence on the economic security environment. In particular, there is an increased risk that geopolitical fragmentation will cause geoeconomic wars and increase the risk of conflict between competing states (especially between leading states). On the other hand, economic policy today is used as an element of geopolitical confrontation (in particular, as a defensive tool to increase the self-sufficiency and independence of states, and as an offensive policy tool to restrain the expansion of competing countries).

The increase in spending on the military industry and the introduction of new technologies in the production of military products in an increasing number of countries, which has been noted recently, could provoke a global arms race, and

in the long term exacerbate military conflicts with the deployment of the latest weapons, having devastating consequences for the global economy. It is important that this new context of economic security is promptly taken into account at the level of international arms control institutions. Accordingly, the demand for flexibility should be placed not only on national security systems, but also on international mechanisms for ensuring economic security.

Effective work to ensure the economic security of countries is determined, first of all, by the efficiency of national security systems. At the same time, the security systems of countries today are under the growing influence of global transformations, which create brand new conditions of the security environment and often become a source of challenges and threats to economic security. This complicates the functioning of national economic security systems and increases the importance of international cooperation in this respect.

Today, there is a sufficiently large number of international institutions operating in the world, which directly or indirectly take care of the security issues of Member States. However, the efficiency of interstate dialogue and the effectiveness of their security activities are ambiguously assessed even by participating countries. For instance, the United Kingdom considers the OECD as the most effective coordinating organization for the development of multilateral approaches to economic stability and security (Beal, 2022). In turn, the United States, as one of the leading members of the most influential international institutions, proves the advantages of the G7 forum, as well as the Quadrilateral Security Dialogue. The latter is a strategic initiative between the USA, Japan, Australia, and India to jointly solve security problems in the Indo-Pacific region (Smith, 2021). The de-jure activity of this initiative is aimed at developing partnership between participating states taking into account common interests, promoting free trade and the peaceful settlement of disputes. The de-facto purpose of this strategic dialogue is more related to restraining China's expansion in the region.

In any case, given the large number of international security institutions, one needs to clarify what specific and complementary role each will play in achieving economic security goals, including the extent to which they can mediate agreements between competing states. Taking into account the complexity of building a fully fledged architecture of global economic security, a more realistic task is the formation of a developed network of regional security complexes and the active involvement of the countries of the respective regions in their functioning.

The study of the peculiarities of shaping regional economic security complexes demonstrates progress in the development of regional security complexes and the creation of an institutional basis for their functioning. At the same time, the level of institutional support for the activities of regional security complexes in different regions is significantly differentiated. This relates both to the presence in the regions of intergovernmental institutions of general and special competence in the field of security, and the effectiveness of their security activities. In addition, contradictions and disputes of a socio-political, military, and economic nature (in particular, the struggle for economic leadership in the region) between countries within the regional security complex often become obstacles to the proper integration of security issues.

Therefore, ensuring the security of the national economies of countries will increasingly depend on the efficiency of regional security complexes. This requires their further development in the following directions in particular:

1. It is advisable to define the regional security management structure based on the selection of an appropriate structure type. The current practice of regional security management includes approaches ranging from relatively informal to more institutionalized (regional balance of power and informal alliances, regional coherence, regional cooperative security, regional collective defense, regional collective security, pluralistic security community; Börzel & Risse, 2016). The implementation of the specified approaches to the management of regional

security is determined by the type of threats to regional security, the level of institutionalization, and the composition of actors (Lishchynskyi & Lyzun, 2020). Accordingly, the management of the regional security complex can be based on one type of structure, or have a mixed nature, relying on several types of regional security agreements.

2. The development of the regional security architecture requires the modernization of institutional support for the regional security complex in the following areas:

- arranging the distribution of security functions between interstate institutions operating in the same region;
- strengthening the security powers of existing regional organizations or creating new interstate initiatives with a purely security focus (currently, the management bodies of regional security complexes mainly work in the field of military, political, and defense-based security, and those involved in supporting economic security perform these functions rather indirectly).

3. In order to jointly solve specific narrow issues of economic security, the institutional bases of regional security complexes should be developed by creating a network of regional specialized institutions to ensure various components of security. Currently, the network of specialized regional initiatives to ensure financial security is the most highly developed. In some regions, there are also intergovernmental bodies on energy security, while in other areas of economic security the institutional base at the level of relevant regional organizations with narrow profiles is undeveloped.

Conclusions

In terms of current global transformations, the specific strategic priorities of the security development of individual national economies, in particular in Ukraine, will increasingly be determined by: the level of their involvement in global processes; their place in the world economy and their degree of appropriate

sensitivity to the conditions of the global economic security landscape; and the positions of countries in regional security complexes.

There are several contradictions in the current global economic security landscape which determine the evolution of approaches to economic security policy development. These issues include the relationship between national security and an open economy, the opposition of a unilateral approach to multilateralism, the need to take into account China's strategy, and geopolitical differences.

The proposed recommendations for improving the quality of national security systems take into account their growing dependence on the conditions of the global environment, and are based on: the identification of the components of the economic security system, structural and qualitative requirements for it, and factors in the global positioning of countries that influence security policy. An important requirement for any security system is the increased flexibility of national policies aimed at ensuring economic security, taking into consideration the rapid changes in the security environment and the appearance of new security challenges and threats.

The performance of a national security system will largely depend not only on its internal qualitative characteristics, but also on the efficiency of security activities at the level of international institutions, in particular through regional security complexes.

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2.4. Strategic priorities in the development of Ukraine's security

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Abstract. *In the fourth part of the chapter, it is substantiated that new tasks*

are being formed to ensure the security of national economies, which are undergoing strategic revision taking into account the russia-Ukraine war. The uncertainty and vulnerability of the current global environment are considered, which not only strengthen global challenges and exacerbate competition between states (global, regional) and regions, but also reveal the failure of collective means of resolving transnational problems, directly affecting the security of national economies.

Based on the results of the analysis of strategic documents related to ensuring the development of security, Ukraine's place in the system of priority actions of the EU–NATO strategic partnership is determined.

It is substantiated that effective work on ensuring the security of national economies is determined by the efficiency of national security systems, which are under the influence of global transformations. These changes create qualitatively new conditions in the security environment, and often become a source of challenges and threats to economic security. This, in turn, complicates the functioning of national economic security systems and increases the importance of international cooperation in this direction.

The existing system of support received by Ukraine is analyzed and directions of its further development are determined. The post-war reconstruction of Ukraine is identified as an important component of further progress towards Ukraine's membership in the EU and its involvement in the European security complex. The instrument to support and implement the latter should be the Program for Ukraine's recovery, reconstruction, and modernization in the context of preparing for the EU accession process and the transition to a green, digital, and inclusive economy (Ukraine Facility, 2024–2027).

This section also observes that by remaining outside NATO and the EU for a long time, Ukraine did not have the opportunity to be fully involved in the process of forming and developing a common European security architecture. Increasing Ukraine's participation in regional formats and initiatives will contribute to

strengthening both national and regional security.

Keywords: *economic security, security strategy, strategic security priorities, global challenges, global environment, European security complex.*

Introduction

The emergence of new challenges which intensify threats and increase risks to the formation of national economic security necessitates a review of strategic approaches to defining the economic component of national security. Over the past 5 years, the world has faced three powerful challenges that have heightened risks not only for regional security, but also for global security as a whole: the trade war between the world's largest economies, the US and China (2018–2019); the COVID-19 pandemic (2020–2021); and the 10-year war waged by russia against Ukraine, the most acute and full-scale phase of which began on February 24, 2022.

Global experience in the development of security strategies indicates that most countries focus on military-political and defense aspects of security, with the exception of the most highly developed countries, which concentrate on the economic component of security. The large-scale aggression against Ukraine marked the beginning of a new era of economic security, where security should be considered not as a separate component of research, but as an integral part of all aspects of the existence and development of any state in the world.

The theoretical justification for the formation of security systems at the regional level is embodied in the concept of regional security complexes (Buzan et al., 1998). This concept focuses on the issue of security formation at the regional level, where the security of each individual actor is closely interdependent on other actors in the region. The development of regionalism and new regional agreements after World War II contributed to the emergence of new regional orders. These regional orders differ in their identity (Katzenstein, 2005), and are

characterized by their own security mechanisms (Lake & Morgan, 1997). As a result, a multi-regional system of international relations is forming in the global economy, based on several regional orders (Hurrell, 2007).

The formation of the European regional security complex was directly linked to the development of political and economic integration processes in the region. The Lisbon Development Program and the Europe 2020 strategy demonstrated a lack of focus on the internal market and showed a discrepancy between declared goals and implemented programs for sustainable and inclusive growth (Renda, 2017), which led to the adoption of a new Global Strategy for the European Union's Foreign and Security Policy (European Union, 2016).

New geopolitical and geo-economic realities highlight the practical aspects of ensuring a high level of European regional security, and developing relevant security strategies for European countries in the context of Ukraine's Eurointegration course. The post-war reconstruction of Ukraine is an important component of further progress on the path towards Ukraine's membership in the EU and its integration into the European security complex.

The goal of this article is to determine the main priorities for Ukraine's security development in the context of the strategic tasks of the European regional security complex. To achieve this goal, general scientific and special research methods are used, namely: the methods of analysis, abstraction, and synthesis (to determine the essence of the security component of Ukraine's economic development); the method of retrospective analysis (to determine the main stages and strategic principles of Ukraine's security development since its independence); and comparative analysis (to determine the directions of strategic partnership within the framework of the European security complex in the context of current geopolitical risks).

Main results

The economic security of the state should be a significant element of national

security as a whole, and its provision should undoubtedly be taken into account in economic development planning. The existing legal framework allows for a retrospective analysis of the main state documents (strategies, programs, resolutions, laws) defining the strategic principles of the socio-economic development of Ukraine during its independence:

1991 – adoption of the first legislative document in the field of foreign economic activity – the Law of Ukraine on Foreign Economic Activity (Verkhovna Rada of the Ukrainian SSR, 1991), which contained exclusive principles and mechanisms for conducting foreign economic activity and had no section devoted to issues of the economic security of the state or economic entities;

1993 – Resolution of the Verkhovna Rada of Ukraine on the Main Directions of Ukraine's Foreign Policy (invalid in 2010) (Verkhovna Rada of Ukraine, 1993), which declared the creation and maintenance of the state system of national security, including economic, political, defense, and environmental security;

2002 – influenced by increased attention paid to security issues following the terrorist attack of September 11, 2001, in the President's Address to the Verkhovna Rada of Ukraine entitled "European choice. Conceptual principles of the strategy of economic and social development of Ukraine for 2002–2011" (President of Ukraine, 2002) it was noted that security should be considered in view of the new (at that time) geopolitical situation. This document emphasized the priority of Ukraine's integration into the EU and the prevention of contradictions with other strategic directions of the state's foreign policy and economic activities, including Russia, the United States, CIS countries, Central and Southeastern Europe, and other regions of the world;

2004 – by Decree of the President of Ukraine, the Strategy of Economic and Social Development of Ukraine Towards European Integration for 2004–2015 (Halchynskyi & Heiets, 2004) was approved (invalid as of July 7, 2015), in which the final section was devoted to the strategy of ensuring economic and

environmental security. This section emphasized the absence of a comprehensive system for organizing the economic security of the state in the country and the imperfect legal framework for it. The document also emphasized that there was no monitoring of security threats in the country – accordingly, they were not taken into account in the implementation of economic policy;

2007 – the first edition of the National Security Strategy of Ukraine was adopted, which was slightly updated in 2012 (President of Ukraine, 2007). Despite the fact that the goal stated in this document includes the formation of a stable and growing market economy, and that the global financial crisis is recognized as the main challenge to national security, the main attention in determining the main security threats and formulating strategic goals and objectives was focused on socio-political (both internal and external) and defense aspects of security, while the issues of economic security were addressed quite superficially;

2010 – in the Law of Ukraine on the Principles of Internal and External Policy (Verkhovna Rada of Ukraine, 2010), one of the main principles of internal policy was defined as the priority of protecting national interests, while one of the principles of foreign policy was identified as maintaining defense against the threat of force or its use against the territorial integrity or political independence of any foreign state. Economic policy in general was presented exclusively as directions of internal policy and a separate component among the principles of foreign policy – supporting the development of trade and the economic, scientific and technical, and investment cooperation of Ukraine with foreign states on the basis of mutual benefit and deepening integration;

2015 – in the Ukraine 2020 Sustainable Development Strategy (President of Ukraine, 2015b), it was determined that one of the four vectors of movement towards achieving the main goal – implementing European standards of living in Ukraine and bringing Ukraine up to leading positions in the world – is the security vector, the content of which consisted of ensuring guarantees of state, business,

and citizens' security, the protection of investments, and private property;

2015 – a new edition of the National Security Strategy of Ukraine was adopted (President of Ukraine, 2015a), in which the main threats to Ukraine's economic security were identified, including: low technological level of the economy, inefficient use of material resources, and irrational structure of industry; insufficient innovative component of economic development (including legislative); shadow economy; weak effectiveness in protecting the market from unfair competition; inefficient use of budget funds at various levels; dependence of the domestic market on external economic conditions; significant influence of foreign capital on the development of certain strategically important sectors of the national economy; and high currency risks;

2018 – the Law of Ukraine on National Security of Ukraine (Verkhovna Rada of Ukraine, 2018) was adopted, which established the basic principles of national security (mostly from the standpoint of defense issues) and defined the goals and bases of state policy aimed at guaranteeing effective protection against threats to every citizen and society as a whole;

2020 – in the National Security Strategy for 2020 (President of Ukraine, 2020), economic security is defined as a direction to ensure the priorities of national interests (sustainable development of the national economy and its integration into the European economic space), and among the security priorities are the development of human capital, counteraction of cyber threats, etc. The traditional list of security threats is complemented by rapid technological changes (primarily in energy and biotechnology), developments in the field of artificial intelligence, the likelihood of threats of biological origin, and the likelihood of the emergence and spread of both known and new infectious diseases. At the same time, as in previous editions, the Strategy for 2020 maintains a focus on the external and internal political components of security;

2021 – in the National Economic Strategy for the period up to 2030 (Cabinet

of Ministers of Ukraine, 2021c), which was adopted a year before the full-scale war of russia against Ukraine, the issue of economic security is mentioned exclusively in the mission and goal of the strategy, and national security through partnership and investment is named as one of the strategic orientations, principles, and values;

Thus, a retrospective analysis of the main documents on general issues of the economic development of Ukraine proves that security issues are usually recorded somewhat fragmentarily. For a long time, a separate document defining the strategic priorities of economic security formation was not adopted in the country.

The Strategy of Economic Security of Ukraine for the period up to 2025 became the first functional security strategy focusing on the economic component of national security. Unlike previous programmatic-strategic documents, where issues of economic security were reflected very briefly, often in a declarative and purely descriptive manner, this functional strategy contains analytical calculations that significantly enhance the substantiation of the positions it contains.

The real breakthrough in improving the process of strategic planning for Ukraine's economic security, both in terms of adopting programmatic-strategic documents and improving institutional support, occurred in 2021. The Strategy of Economic Security of Ukraine for the period up to 2025 (President of Ukraine, 2021), the Strategy of Energy Security (Cabinet of Ministers of Ukraine, 2021a), the Strategy of Environmental Security and Climate Change Adaptation for the period up to 2030 (Cabinet of Ministers of Ukraine, 2021b), and the Cybersecurity Strategy of Ukraine (President of Ukraine, 2021b) were all adopted in this year. A special economic state security institution, the Bureau of Economic Security, is being established in the country as the central executive authority, with its strategic goal being to ensure a secure direction for Ukraine's economy (i.e., the resilience of the national economy to external and internal threats) (Economic Security Bureau of Ukraine, n.d.).

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In the 3 years between the onset of the COVID-19 pandemic at the end of 2019 and the full-scale outbreak of the war in February 2022, Ukraine made some progress towards sustainable development in the following areas:

1) social (improvement of positions in the Human Development Index – 88th position in 2018, GDP per capita at purchasing power parity of $3,095 in 2018, reduction of poverty levels, reduction of negative population growth);
2) economic (increase in the level of per capita foreign trade turnover, improvement of positions in the Doing Business ranking, maintaining a share in global goods exports);
3) environmental (tendency to reduce technogenic load per unit of GDP, reduction of consumption of conventional fuel in oil equivalent and electricity per unit of GDP, increase in consumption of electricity from renewable sources).

With the onset of military operations in Ukraine, the country's economy experienced a contraction of more than 30% in 2022, according to UN experts. This was due to massive infrastructure destruction, the disruption of production and trade activities, the disruption of logistical chains, a significant reduction in the workforce, and population displacement (United Nations, 2023). Therefore, the need to improve the country's economic security strategy is evident, which is currently influenced by the following challenges and threats: the consequences of the COVID-19 pandemic, the war in the country and the associated food and energy crisis, a sharp increase in inflation, a growing debt burden, and climate change.

The adopted Strategy of Economic Security of Ukraine for the period up to

2025 requires restructuring and transforming key pathways to achieve goals and implement priorities of national interests in ensuring economic security. This is due, firstly, to the fact that implementation occurs under conditions of martial law, which is a qualitatively new challenge for the state's security system. Secondly, logically, in conditions of full-scale war, the state's main efforts are focused on military security and defense issues. However, there is already an urgent need to identify effective ways to restore and further ensure the security of the national economy in the post-war period in accordance with the strategic priorities of Ukraine's security development.

The implementation of Ukraine's European integration course, practically embodied in the Association Agreement between Ukraine and the EU, becomes a relevant and top-priority task in shaping and ensuring security at both national and regional levels by deepening political, economic, and security partnerships between Ukraine and the EU. As of the beginning of 2023, the level of implementation of the Association Agreement between Ukraine and the European Union on the part of Ukraine was 72%. The overall progress in fulfilling corresponding commitments by the Cabinet of Ministers of Ukraine was 70% for the 2014–2022 period. For the Verkhovna Rada of Ukraine, this figure stands at 61%, and for other state authorities, it is 59%.

According to Ukraine's Foreign Policy Strategy (President of Ukraine, 2021c), an important condition for improving the security environment in the country is the successful implementation of the European integration course for the development of the national economy, which, in turn, will significantly strengthen Ukraine's leadership position in the European region. Under current conditions and future prospects, joint partnership with the EU plays a key role in the security development of the national economy. The main factors of the security partnership between Ukraine and the EU include (Razumkov Center, 2021, p. 5):

– commonality and proximity of interests between Ukraine and the EU in

the security sphere;
- common assessment of security threats to the EU and national security in Ukraine;
- compatibility of values and the protection thereof;
- gradual increase in Ukraine's capabilities in ensuring European security.

In the system of international relations, for certain groups of countries, national security issues are interconnected. Thus, achieving security (counteracting relevant threats) becomes deeply intertwined with the issue of development. The theoretical justification for the formation of security systems at the regional level is embodied in the concept of regional security complexes (Buzan et al., 1998). This concept focuses on the formation of security at the level of geographic regions of the world, where the security of each individual actor is closely interdependent with other actors in the region. A Regional Security Complex (RSC) is defined as a group of states whose primary security interests are so closely interconnected that their national security systems cannot be considered separately from one another. The theory of regional security complexes, first proposed by Buzan and Wæver (2023, pp. 51–55), is based on identifying four interconnected levels of analysis:

1) the internal component of development within the states of the region (internal stability, etc.), which determines internal vulnerability;
2) interstate relations (regional level) between countries in the region;
3) the region's interaction with other regions (interregional level);
4) the role of global powers in the region, which determines the nature of interaction between global and regional security structures (global level).

Taking into account these levels of analysis, regional security complexes can develop in the direction of maintaining the status quo, which does not envisage any structural changes. However, it is more common for certain transformations to occur within regional security complexes, which are associated with the actions of internal or external factors. Accordingly, the structural transformation of the

regional security complex can be internal (deepening integration, confrontation between countries within the complex, etc.) or external (these transformations are primarily associated with changes in the composition of participants in the regional security complex). In any case, the basis for analyzing transformations is the state itself, which allows the vector of building regional security complexes to be determined. Bottom-up vectors emanate from the state, emphasizing its national interests in the regional formation, with corresponding common interests put to the fore. The nature of relations between regional and global levels of governance can, in turn, be defined as irrelevant, conflicting, or harmonious (Kacowicz, 2018).

The modern European collective defense system encompasses the following components: the Organization for Security and Cooperation in Europe, the EU, and NATO. For a long time, the Collective Security Treaty Organization was added to these components, uniting the countries of the Commonwealth of Independent States. Given the full-scale war unleashed by russia against Ukraine, the consideration of this component has lost its relevance. The intensification of complex cross-sectoral and transboundary security threats requires expanding cooperation to ensure security development at all levels. The spread of crisis phenomena (terrorist acts, the development of criminal networks, pandemics, etc.) has become an indicator of the stability of the existing security infrastructure and the effectiveness of crisis management systems.

The EU Security Union Strategy for the period 2020–2025 (European Commission, 2020) envisages strengthening the interconnection between internal and external security. With the adoption of the Security Union Strategy, four strategic priorities have been identified at the level of the entire integrated association:

– a secure environment ensuring the future, which includes protecting and enhancing the resilience of critical infrastructure (both physical and digital) through the activation of public-private partnerships and international

cooperation to strengthen cybersecurity;

- combatting evolving threats, involving the use of artificial intelligence and database work. Key measures envisage countering hybrid threats that weaken social cohesion through early monitoring, analysis, timely information dissemination, etc.;
- protecting Europeans from terrorism and organized crime, involving overcoming discrimination and radicalization in society, developing the judicial system, and developing programs to combat organized crime, criminal networks, drug trafficking, human trafficking, firearms smuggling, etc.;
- a strong European security ecosystem, where governments, law enforcement agencies, civil society organizations, and ordinary citizens share joint responsibility for shaping and ensuring security. Important tools for countering threats and minimizing risks include research and innovation; accordingly, the establishment of the EU Innovation Hub for Internal Security and the further development of cooperation with EU international partners are envisaged.

Conflicts and crises unfold in a very complex manner, and are usually unpredictable. russia has become a catalyst for war on the European continent, endangering the European security system. The attack on Ukraine on February 24, 2022, marked a paradigm shift in the EU's thinking about peace and security (European Union, 2022). In 2022, there was an update to the strategic documents of the EU (European Union, 2023) and NATO (2022b).

In the context of the russia-Ukraine war and against the backdrop of heightened modern geopolitical risks and complex security threats, the countries of the EU adopted a new strategic document in March 2022 – the Strategic Compass (A Strategic Compass for Security and Defence. For a European Union that protects its citizens, values, and interests and contributes to international peace and security; European Union, 2023). This substantiates the strengthening of the strategic autonomy of the integration association, which acts as an active global player. The program document presents a coordinated common strategic vision

of the EU's role in security and defense for the medium term, including: the assessment of the current strategic environment and threats and challenges to the EU; a coordinated common vision of actions in the field of security and defense; the identification of new ways and means to strengthen the collective security system; and the definition of clear directions for implementation and priority actions. The Strategic Compass aims to further strengthen the EU's role in crisis resolution using various instruments, particularly emphasizing the role of strategic partnership with NATO to ensure Euro-Atlantic security and protect the global order as a whole. Similarly, the importance and uniqueness of the EU as a NATO partner are underscored in the updated NATO Strategic Concept document (NATO, 2022a). NATO allies and EU members share common values and play complementary and coordinated roles in supporting peace, international order, and security. Non-EU Alliance members are also involved in EU defense efforts. The main goal of the NATO Strategic Concept, which was also adopted in the context of the war in Ukraine, is to ensure collective defense of its members based on a 360-degree approach. The main components of the new strategic document are defined as: deterrence and defense, crisis prevention and management, and security based on cooperation.

According to the Joint EU-NATO Declaration (NATO, 2023), among the key issues requiring joint and coordinated solutions are strengthening geostrategic competition, ensuring resilience and the protection of critical infrastructure, the proliferation of new and revolutionary technologies, space, the consequences of climate change, information manipulation and interference, etc. It should be emphasized that differences in the national policies of NATO member countries that are not EU members complicate the optimal and timely resolution of individual issues (ambivalence on specific issues, different priorities, etc.) and directly affect the development of the EU-NATO partnership, which does not meet the requirements of the current strategic landscape. The agreement on mutual issues will,

on the one hand, contribute to strengthening the defense agenda of the Atlantic Alliance and the security development of EU countries.

Analyzing the adopted documents – the Strategic Compass and the Strategic Concept – allows us to identify the main areas of EU-NATO strategic partnership and determine Ukraine's place in the system of priority actions of the EU and NATO (Table 1).

Table 1. Directions and priority actions of the EU Strategic Compass and the NATO Strategic Concept

Source: compiled based on European Union (2023); NATO (2022a)

The EU Strategic Compass		The NATO Strategic Concept	
Direction	**Priority actions**	**Priority actions**	**Direction**

Action	Establishment of a powerful rapid response capability for various types of crises (up to 5,000 military personnel). Conducting regular combat exercises, enhancing military mobility. Enhancement of EU missions and operations under the Common Security and Defence Policy. Ensuring an operational and flexible decision-making mechanism.	Combination of nuclear, conventional, and missile defense capabilities. Increasing global awareness, enhancing collective readiness for rapid response. Ensuring continuous presence on land, at sea, and in the air, countering terrorism. Development of effective crisis management tools. Counteracting hybrid operations and other hybrid tactics of states and non-state actors. Accelerating digital transformation, improving cyber defense. Supporting the safe use of and unhindered access to space and cyberspace. Containment and protection against all threats at sea. NATO's nuclear capability for the preservation of peace and the prevention and deterrence of aggression. Reducing strategic vulnerability and dependence.	**Containment and defense**
Security	Utilization of a hybrid toolkit and reaction force. Application of cybersecurity policy tools. Countering information manipulation and interference. EU's space strategy in the field of security and defense. Coordinated maritime presence.		
Investment	Enhancing technological and industrial defense capabilities. Developing technological defense innovations to reduce strategic dependencies. Increasing defense expenditures.	Coordinated increase in defense spending. The EU – an important and unique partner of NATO. Expansion of NATO for peace and stability in the Euro-Atlantic region. **Practical support for Ukraine's Euro-Atlantic aspirations.**	**Security based on cooperation**
Partnership	Strengthening the strategic partnership with NATO and the UN. Cooperation with regional partners (OSCE, African Union, ASEAN). **Continued support for Ukraine and its people jointly with international partners**. Activation of bilateral partnerships. Military assistance to partners through the European Peace Fund.	Investment in crisis response systems, support for civilian crisis management and operations, strengthening support for NATO partners. Increased assistance in building capacity for vulnerable partners.	**Prevention and crisis management**

The main areas of strategic partnership between the EU and NATO include:

- security and defense;
- countering hybrid threats through the coordinated and balanced deployment of rapid response forces, including the use of cyber tools;
- the protection of critical infrastructure, involving both state and private actors;
- innovation and investment in new defense and civilian technologies, including the application of artificial intelligence;
- "green" defense through the promotion of energy-efficient technologies

and addressing risks associated with climate change, among other factors.

The alignment of the main spheres of strategic partnership between the EU and NATO essentially defines the unity and coordination of actions aimed at countering and preventing crises and threats, including hybrid threats, to strengthen the architecture of European security and the international order as a whole. It is important for both the EU and NATO to develop partnerships bilaterally, with regional and global institutions, to achieve security objectives. NATO and the EU play complementary, consistent, and mutually reinforcing roles in enhancing security in Europe and beyond, supporting global peace and security.

The strategic priorities of EU security development require an appropriate update of the format of relations (Grant, 2022) with relevant EU partners (countries and regions). Expanding cooperation between the EU and the UN, OSCE, and ASEAN, deepening bilateral partnerships with the US, Canada, Norway, the UK, and Japan, and implementing joint programs with African, Asian, and Latin American countries are of significant importance. After lengthy and sometimes painful negotiations regarding Brexit, joint assistance to Ukraine has strengthened the alignment between the UK and the EU based on shared fundamental interests such as ensuring peace, protecting democratic values, etc. The UK closely cooperated with the EU and the US to coordinate packages of sanctions against russia. Given russia's military aggression on the one hand and certain inconsistencies in decision-making among EU countries on the other, defining the main directions of policy towards russia remains relevant. Among intra-regional issues, particular attention is required regarding the question of developing productive relations with the Western Balkans.

The war has increased defense spending worldwide. According to the Stockholm International Peace Research Institute (SIPRI, 2023), during the Cold War, NATO allies' defense spending typically averaged over 3% of GDP, with some significant variations. After the end of the Cold War, NATO countries significantly

reduced their defense spending. Over the period 2000-2022total EU spending on defense increased by 20%, the US by 66%. In contrast, since 2000, russian military spending has increased by 2.3 times, and Chinese spending has increased by 5.7 times. Against the backdrop of the war in Ukraine, global military spending increased by 3.7% in real terms in 2022, reaching a new high of $2.24 trillion. The bulk of spending (56%) is accounted for by three countries – the US, China, and russia. Looking at Ukraine's level of military spending, as shown in Table 2, despite the highest increase in its entire history of observation in 2022, the absolute volume of military spending is at only half that of the aggressor country. It is quite evident that without international assistance, achieving victory for the Ukrainian people will be extremely difficult.

Table 2. Military spending of Ukraine and russia in 2022

Source: compiled using SIPRI (2023)

Index	Ukraine	russia
Growth of military spending, %	640	9.2
Volume of military spending, billion $	44	86.4
Share of military spending in GDP (2022), %	34	4.1
Share of military spending in GDP (2021), %	3.2	3.7

The war on the European continent and the change in the international order have brought to the forefront the need for coordinated cooperation within the EU-NATO format (Brethous & Kovalčíková, 2023), which has a long history but requires a new level of partnership. There is an objective necessity to reconsider the EU's security, defense, and foreign policies, as well as to change its priorities on the continent and worldwide (NATO, 2023). The weakening of russia's geopolitical position does not prevent threats from the aggressor country, including nuclear provocations. It is important to emphasize that both strategic documents of the EU and NATO affirm unwavering support for the sovereignty and territorial integrity of Ukraine, as well as support for the Ukrainian people jointly

with international partners, including through additional political, financial, humanitarian, and material-technical assistance, and practical support for its Euro-Atlantic aspirations.

As a result of russia's active military phase on Ukrainian territory and the corresponding reaction from the European community, issues of unanimity and consensus in making joint decisions have become more acute. The war has strengthened EU solidarity in foreign and security policy, but the conflict has also revealed discrepancies among Member States. Even amidst the war, some countries (Austria, Bulgaria, Hungary, etc.) are reluctant to take a hardline position on russia, primarily due to their high level of energy dependence. Despite this, the EU has provided unprecedented humanitarian, political, financial, and military support to the Ukrainian people. As of May 2023 (European Commission, 2023b), extensive support had been provided to Ukraine and its people totaling over €70 billion, including €38 billion in economic assistance, €1.7 billion in humanitarian aid, and €15 billion in military support. EU countries have provided temporary protection to approximately 4 million people who have fled the country since the start of the war. Already amidst the war, Ukraine officially submitted its application for membership in the European Union on February 28, 2023, and on June 23, it was granted candidate status for EU membership.

The imposition of sanctions (11 packages as of July 2023) to restrict access to critical technologies and markets has significantly reduced the aggressor's ability to continue the war. Sanctions include diplomatic and visa restrictions and freezing assets against certain individuals and entities, including banks and financial institutions, companies in the military and defense sectors, the aviation, shipbuilding, and engineering industries, armed forces and militarized groups, as well as political parties and media disseminating disinformation. As of July 2023, sanctions apply to 1,551 individuals and 245 organizations responsible for undermining the territorial integrity, sovereignty, and independence of Ukraine

(European Council, 2024), and 70% of assets in the russian banking system are under sanctions. Economic sanctions include prohibiting SWIFT for certain russian banks, restricting russia's access to EU capital and financial markets, and banning transactions with the russian central bank, with €300 billion of its reserves blocked. Approximately €20 billion of assets of individuals and organizations under sanction have been frozen, and mechanisms are being developed to use frozen assets to support Ukraine's reconstruction. In the transport sector, sanctions include closing EU airspace to all russian aircraft, prohibiting russian road transport operators and the maritime transport of russian oil to third countries, and closing EU ports for russian ship transport. Additionally, there is a ban on the export of goods and resources that could enhance russia's industrial capabilities and on the import of goods that are strategically important for forming the aggressor country's economic potential (products of the mining and metallurgical industry, timber, synthetic rubber, plastics, etc.). An important component of economic sanctions is formed of restrictions in the energy sector, which are strategically important for the aggressor country's potential (banning the import of russian oil and coal, prohibiting investments in energy, etc.). In terms of providing services to russia or its citizens, there is a ban on architectural and engineering services, IT consulting, marketing research, opinion polling, legal consulting, and services related to intellectual property rights on commercial secrets. As a result, russia's GDP contraction in 2022 was 2.1% (European Council, 2023), and the process continues. The total volume of damage, losses, and needs by sectors is presented in Table 3.

Table 3. The total amount of damage, losses, and needs by sectors in the russian economy caused by sanctions (in billion $)

Source: World Bank; Government of Ukraine; European Union; United Nations (2023)

Sector	Damage[1]	Losses[2]	Needs[3]
Social sector			
Housing	50.4	17.2	68.6

Education and science	4.4	0.8	10.7
Healthcare	20.5	16.5	16.4
Social protection and livelihoods	0.2	4.2	41.8
Culture and tourism	2.6	15.2	6.9
Infrastructure sectors			
Energy and mineral extraction	10.6	27.2	47.0
Transportation	35.7	31.6	92.1
Telecommunications and digital technologies	1.6	1.6	4.5
Water supply and sanitation	2.2	7.5	7.1
Municipal services	2.4	3.0	5.7
Production sectors			
Agriculture	8.7	31.5	29.7
Trade and industry	10.9	85.8	23.2
Irrigation and water resource management	0.4	0.3	8.9
Financial sector and banking	0	6.8	6.8
Cross-cutting sectors			
Environmental protection, natural resource management, and forestry	1.5	0.5	1.5
Emergency response and civil protection	0.2	0.5	1.5
Justice and public administration	0.3	1.4	0.6
Management of explosive hazards	-	37.6	37.6
Total	134.7	289.1	410.6

[1]*Damage – direct expenses associated with the complete or partial destruction of physical assets and infrastructure; they are determined in monetary terms, with an assessment of the costs of replacement or repair of physical assets and infrastructure, taking into account the replacement value determined prior to the war.*

[2]*Losses – changes in economic flows due to the war; they are determined in monetary terms, for example, increased operational costs, foregone revenues of government/private sector, etc.*

[3]*Reconstruction needs – the cost associated with returning to the normal pre-war state through the implementation of relevant measures, including repair and restoration and upgrades related to the "build back better" principle (such as enhanced energy efficiency, modernization efforts, and sustainable development standards), as well as factors such as global inflation, price increases due to construction volume, higher insurance costs, etc. Needs are expressed in monetary terms according to market prices as of February 24, 2023.*

According to expert estimates from the World Bank (World Bank, 2023), the reconstruction and rebuilding needs of Ukraine over the 10 years from February 24, 2023, are estimated at $411 billion. In 2023, immediate needs for the restoration of critical infrastructure such as energy, housing, social services, and others, ensuring basic services for the most vulnerable populations, humanitarian

demining, and support for the private sector amount to $14 billion, which is nearly 3.5% of the total identified needs. The sectors most affected by combat actions are housing (38% of total incurred damage), transportation (26%), energy (8%), trade and industry (8%), and agriculture (6%).

To aid Ukraine, the European Commission has introduced a special 4-year program (2024–2027) called the Ukraine Facility (European Commission, 2023b), with a total budget of €50 billion. The program aims to financially support Ukraine's recovery, reconstruction, and modernization efforts in the context of its prospective EU membership and the transition to a green, digital, and inclusive economy. The main components of the program are as follows:

- Component I – financial support (in the form of grants and loans to the state), aimed at supporting the financial stability of Ukraine's public finances in line with the country's recovery, reconstruction, and modernization plan (structural reforms and investments, macro-financial stability, public governance reform, rule of law, anti-corruption efforts, etc.);
- Component II – special investment program (providing guarantees and blended financing combining EU loans and grants), aimed at attracting and mobilizing public and private investments for the reconstruction needs of Ukraine;
- Component III – technical assistance directed towards supporting municipalities, civil society, etc.

This program will replace the existing support system received by Ukraine (under the Macro-financial Assistance program (MFA+, Macro-financial Assistance) and the Neighbourhood, Development and International Cooperation Instrument (NDICI, Neighbourhood, Development and International Cooperation Instrument)) by introducing a unified, comprehensive, and flexible instrument with clear and transparent monitoring, audit, and control mechanisms on a project basis.

Support for reforms, reconstruction, and creating new conditions for economic

development in times of war in Ukraine, including the restoration of critically important infrastructure, is important from the perspective of generating revenues for the state budget, creating jobs, and returning forcibly displaced Ukrainians home. The post-war reconstruction of Ukraine is an important component of further progress towards Ukraine's membership in the EU and its integration into the European security complex.

Understanding the interdependence of the impact of hybrid threats on national economic security in the modern context of increasing geopolitical tension has led to a review of the strategic orientations for ensuring economic security. A comprehensive approach to the joint identification, assessment, and management of risks in the context of ensuring the economic security of the European Union has become the basis for the European Economic Security Strategy (European Commission, 2023a), discussions on which began in June 2023. Achieving economic security is envisaged through:

- ensuring high competitiveness of the union, the source of which is the strengthening of the Single Market, enhancing the scientific, technological, and industrial base;
- protection against risks (for supply chains, including energy security, critical infrastructure, including cybersecurity, risks related to technology leakage, technological security, dependencies, etc.), through both existing and new policies and instruments;
- the development of partnerships at various levels to address common problems and strengthen the international economic order regulated by multilateral mechanisms, while maintaining maximum levels of economic openness and dynamism.

Achieving a secure position requires the formation of an appropriate security complex, the development of which is based on expanding links between countries in addressing global conflicts and other issues related to global security initiatives. National governments actively employ a wide range of tools to ensure

economic growth and a corresponding level of competitiveness of their economies while ensuring national security.

If the level of national security is primarily determined by a state's ability to ensure the security of its citizens, then global security is determined by countries' inability to resolve global conflicts and problems independently. In fact, global security defines what is best for all (Osisanya, 2015). The needs for the secure development of one country cannot be met without considering the interests and needs of other countries, emphasizing once again the complexity of the hierarchical structure of the modern model of international economic security, where multilevel interdependent components have a complex structure of relationships.

By supporting Ukraine in its resistance to russian military aggression, the EU will contribute to the development of the regional security complex by strengthening strategic partnership with NATO, which the EU sees as a unique and important partner. A stronger security complex will positively contribute to transatlantic and global security. The war has increased NATO's role in ensuring European security, and the gradual integration of EU and NATO tools will promote the more effective joint coordination of the two institutions in terms of resistance to and the identification and prevention of risks through the joint development of relevant strategic documents, the implementation of joint projects, etc. Strengthening the architecture of the European security complex against the backdrop of NATO's further expansion will enhance transatlantic and global security, among other things.

Given the current structure of the global economy, NATO acts as a transatlantic region that unites countries from different continents, characterized by political-institutional interaction. The Alliance, formed on the basis of defining common values and identity, with a complex system of institutional support, ensures the European regional security complex. A fundamental feature is the absence of permanent borders in this transatlantic region, as the process of accession of new

alliance members continues.

Unlike NATO, the EU is an integration union (megaregion) within the global economic structure, which has the highest level of cooperation coverage and depth among integrated countries and institutional support. The dimension of interaction between countries within the EU is determined by socio-economic and political-institutional characteristics. Assistance to Ukraine from the EU and NATO (military, financial-economic, humanitarian, political) is, firstly, an important component of ensuring European and Euro-Atlantic security, as enshrined in strategic documents of the EU and NATO. Secondly, it serves as confirmation of the indivisibility of the security interests of Ukraine, the EU, and NATO.

The intensification of international relations has significantly expanded the scope of the study of security objects, which during the Cold War was clearly defined and has transformed into a complex and multidimensional phenomenon in modern times (Ağır & Arman, 2014, p. 107). In the contemporary international system, the influence of each state is determined not only by its military strength, but also by other dimensions of its influence in the modern geopolitical space, including economic potential, the level of innovation and technological development, and diplomatic influence. Therefore, achieving and supporting a balance of power in the global economy is of particular relevance. The balance of power in the modern international system is defined by corresponding rules and norms characterized by the following principles (Kaplan, 2005):

1) prioritizing negotiations over conflict;
2) enhancing capabilities rather than engaging in direct confrontation;
3) preventing the exclusion of important actors;
4) resisting any coalition or individual actor seeking dominance in the system;
5) restraining entities subscribing to supranational organizational principles;
6) allowing defeated or marginalized major actors to reintegrate into the system.

In fact, any conflict will impact the development of the national economic

system. In the sphere of international trade, a trade conflict directly affects not only the realm of foreign trade security, but also national security as a whole.

An important role in shaping the global security system is played by international organizations, whose activities are aimed at harmonizing relations between countries, transforming the interests of each country into common (global) interests. Essentially, only through international cooperation is it possible to address problems that have taken on a transnational scale, arising from non-traditional threats that cause tension in society and have a multiplicative impact on it. To build a common architecture of global governance, two components are needed from the international community: engaging all stakeholders in sustainable dialogue, which will be crucial, and systemic thinking not constrained by short-term institutional and national considerations. Failure to adopt such a new approach would be a tragedy for humanity.

The contemporary industrialized world is moving towards a risk society, where wealth and wealth distribution are replaced by risk distribution. This entails the emergence of a new risky and unpredictable reality, in which identifying the nature of threats and risks and developing appropriate actions by the state are insufficient for the effective development of the national economic system. The significance of interstate interaction and cooperation to jointly counter risky consequences is increasing. Unfortunately, since the beginning of the 21st century, trust in the principles, conventions, and processes aimed at ensuring peace and stability in the world has gradually declined (Huisken, 2023, p. 4), leading to a reduction in the scope of negotiation processes alongside the escalation of tension in international relations and an increase in conflicts between democratic and authoritarian forms of governance. Accordingly, against the backdrop of heightened national interests of countries in the global economy, the security component of their sustainable development becomes paramount (Panchenko et al., 2021).

The complexity of the conflict related to ensuring international security is

exacerbated by challenges that directly affect national security (Office of the Director of National Intelligence, 2023, pp. 4–5):

- firstly, competition among major powers, rising regional powers, and certain non-state actors for dominance in the global order to establish new rules that will define the international order (escalation of confrontation between the USA on one side and China and Russia on the other, against the backdrop of the war russia has unleashed in Ukraine);
- secondly, the severe consequences of the COVID-19 pandemic have deepened economic problems directly linked to energy and food security, which, along with other global challenges (climate change, human security) and the increased influence (both positive and negative) of modern digital technologies, amplify the uncertainty and vulnerability of the contemporary environment.

Empirical research on the development of the global economy in the second half of the 20th century has allowed for the differentiation of states based on their ability to counter external and internal threats. Strong countries are characterized by greater internal cohesion, while weaker states are more vulnerable to external threats due to existing internal challenges and developmental issues. Considering this, countries of the world can be classified into the following types (Buzan & Wæver, 2023, p. 41):

- superpowers, which include countries capable of realizing their potential (military, political, economic) throughout the international security system, thus belonging to special actors in international relations that operate at the systemic level;
- regional powers, which consist of countries with significant regional influence;
- island states, located in the zone of indifference between regional security complexes;
- buffer states, which largely depend on the existing security situation in neighboring countries and are located between relevant regional security complexes.

Regarding buffer states, it should be noted that they typically have geostrategic importance for actors from different regions. Ukraine, for instance, is one such state, characterized by its simultaneous presence at the intersection of two spaces – European and post-Soviet. Therefore, the national security issues of Ukraine are difficult to consider separately from the security issues of both regions. Serving as a buffer state, Ukraine has felt increasing pressure as it has constantly been under the influence of two divergent regional security complexes. Moreover, for a long time, uncertainty regarding the country's external economic and foreign policy course in addressing regional security issues has prevented effective resistance to the destructive consequences of such divergent pressure.

The resolution of contemporary problems that have acquired a transnational scale requires joint decisions, which should result from effective international cooperation ranging from bilateral and regional to global formats. Consequently, the formation of a global security system plays an important role for international and regional organizations, whose activities aim at transforming the interests of each country into common (global) interests. The escalation of risks in the development of the global economy transforms the contemporary policies of countries (trade, economic, foreign, migration, etc.), leading to changes in regulatory instruments aimed at safeguarding national interests. However, as today's reality shows, collective means of regulation have proven insufficient in addressing transnational issues and minimizing risks. Thus, there arises an objective need to define the hierarchy of levels and structural components of economic security in the context of the contemporary spatial structure of the global economy, which will contribute to the determination and achievement of strategic priorities for the secure development of national economies, taking into account the current processes of global regionalization and fragmentation.

On February 24, 2022, the principles of peaceful coexistence in the world were violated – namely, the fundamental norm of the international order prohibiting

the use or threat of force against the territorial integrity or political independence of any state (Huisken, 2023, p. 4). The economic consequences of russia's invasion of Ukraine could be decisive for the development of globalization processes in the 21st century, as the war has prompted a fundamental reassessment of economic relations and dependencies, fluctuations in value systems, and shifting alliances, creating a new global map of economic relations (Lagarde, 2022). Thus, the uncertainty and vulnerability of the contemporary global environment have not only heightened global challenges and intensified competition between states (global, regional), but also led to an open war on the European continent, directly impacting the security of national economies. In the context of global regionalization, new tasks are emerging to ensure the economic security of national economies, which are currently undergoing strategic reconsideration in light of military actions.

Conclusions

As globalization processes deepen and spread, certain security spheres emerge that states cannot regulate unilaterally. Due to increased interconnectedness and interdependence between countries in the context of globalization, the need for intergovernmental cooperation becomes even more pressing.

The course of events that has unfolded in the formation of the independent Ukrainian state since 1991 allows us to assert that the slowdown in Ukraine's accession to the European security system contributed to the escalation of aggression from russia, culminating in military action. Undoubtedly, joining NATO, with which Ukraine has cooperated since 1992, required Ukraine to meet certain criteria. However, the policy of appeasement towards russia by certain European countries played a significant role in the slow progress of Euro-Atlantic integration. As a result, their unwillingness to intervene in armed conflicts near Ukrainian borders (in Moldova, Georgia, and Azerbaijan) further fueled russia's imperial ambitions, which later culminated in a full-scale war against Ukraine and the

complete destruction of the international security system. The war harshly demonstrates that by remaining outside NATO and the EU for a long time, Ukraine essentially had no opportunity to be fully involved in the process of shaping and developing the common architecture of European security.

russia's war against Ukraine has underscored the high degree of dependency in security matters. This has led to intensified discussions regarding European strategic autonomy in security issues. Events unfolding on the European continent, where the Ukrainian people are fighting for their independence and defending European values, demonstrate that ensuring Ukraine's economic security can only be achieved within the structure of the European security complex.

Post-war reconstruction in Ukraine is an important component of further progress towards Ukraine's membership in the EU and its integration into the European security complex. The instrument to support and practically implement this goal is the Ukraine Facility (2024–2027), focusing on Ukraine's transition to a green, digital, and inclusive economy. Effective work to ensure Ukraine's economic security is determined by the efficiency of the national security system, which is influenced by global transformations creating qualitatively new conditions for the security environment and becoming a source of challenges and threats to economic security, complicating the functioning of the national economic security system and increasing the importance of interstate cooperation in this direction. Remaining outside NATO and the EU for a long time, Ukraine has had no opportunity to be fully involved in the process of shaping and developing the joint architecture of European security. Accordingly, stable and strong neighborly relations, a secure environment, and the economic development of the state are the goals of Ukraine's participation in regional formats and initiatives, which the country actively develops to strengthen both national and regional security.

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CHAPTER III. ENVIRONMENTAL SAFETY IN THE NATIONAL SECURITY SYSTEMS OF UKRAINE AND EUROPEAN UNION COUNTRIES – CASE STUDIES

3.1. Environmental security in the national security system: Ukraine

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Abstract. *This chapter examines the role of environmental security in regional and national development. The authors argue that enhancing environmental security necessitates a focus on the rational consumption of natural resources and the implementation of new approaches to economic activities.*

The purpose of the chapter is to study the theoretical and methodological foundations of environmental security, develop tools for its assessment, and assess its level in the EU and Ukraine.

The authors systematize the conceptual foundations of environmental security, including its constituent elements and related aspects. The subjects and objects of environmental security, environmental security standards, and levels of environmental quality are then determined, before the principles, criteria, and types of environmental security are grouped. The mechanism for ensuring environmental security is determined through the identification of several functions: organizational and preventive, regulatory and stimulating, administrative and executive, security and protective, and restorative. This text examines modern approaches to environmental security measurement and systematizes its evaluation criteria.

The authors identify factors contributing to changes in the state of environmental security and develop an algorithm for its assessment. The algorithm involves systematizing environmental indicators that can be used for assessment, grading the complex indicator using an expert method, and calculating both indices and

an integral indicator of the environmental component of national security for the countries of Europe and Ukraine.

The proposed tools make it possible to rank the EU countries and Ukraine according to their level of environmental security. This ranking includes the Air Quality Index, the Climate Change Performance Index, and the Environmental Performance Index. Countries are also grouped by level of danger. This information can be used to develop policies that make economic development more sustainable while taking environmental aspects into account.

Keywords: *environmental security, subjects and objects of environmental security, environmental indicator, environmental component, sustainable development, security index, EU.*

Introduction

Environmental security is an important component of global and national security. It provides conditions for the sustainable development of society and ensures the protection of vital human interests. It is worth noting that environmental security is unlikely to become possible in the long-term if sustainable development is not considered in an economic way. That is, the two formulations of environmental security and sustainable development synergistically reinforce each other. Sustainable development will most likely not succeed without environmental security, because conflicts and various disruptions become obstacles to effective initiatives.

The understanding of national security is directly related to the protection of the interests of humans and citizens, society and the state, ensuring the sustainable development of society and the timely detection, prevention, and neutralization of real and potential threats to national interests. In this sense, environmental security is an integral part of the country's national security and is defined as ensuring ecologically and technogenically safe living conditions for citizens and

society. Accordingly, assessing this phenomenon while taking into account the interrelationships between environmental efficiency, green growth, and sustainable development is an urgent issue.

Primary results

Environmental security is an indicator of the environment, in which it is possible to determine the deterioration or improvement of the environment and the occurrence or disappearance of danger for living organisms. Environmental safety is the main criterion for ensuring the safety of life activities. Modern researchers consider environmental security in many dimensions (Table 1).

It can be concluded that environmental security is the state of a territory in which the ecological comfort of life is not disturbed and the ability to resist threats to the life and health of all living beings is realized; from the point of view of law, environmental security is designed to protect the life and health of people and the natural environment from anthropogenic influence. From a scientific point of view, this is the balanced interaction of the human–nature–technology triad, which ensures the formation of a natural and cultural environment that will meet the sanitary, hygienic, aesthetic, and material needs of the inhabitants of each region of the Earth while preserving the natural, resource, and ecological potential of natural systems and the ability of the biosphere to self-regulate.

Environmental protection, the rational use of natural resources, and ensuring the ecological safety of human activities are integral parts of the sustainable economic and social development of any country

Thus, environmental security is determined by optimizing utility and hazard functions. Therefore, environmental security should be considered as a state of protection of the vital interests of human, society, and the state against threats of a natural, human-made, and social nature, along with anthropogenic pollution.

Table 1. Definitions of environmental security

Source: compiled by the authors

Author(s)	Definition
Law of Ukraine On Environmental Protection (1991, Article 50)	A condition of the natural environment in which the prevention of the deterioration of the ecological situation and the occurrence of danger to human health is ensured, and is guaranteed by the implementation of a wide range of interrelated environmental, political, economic, technical, organizational, state-legal, and other measures.
Diakiv (2011)	A science that studies human activity in the environment, i.e., natural and man-made conditions and processes, for the purpose of assessing their direct or indirect impact on the natural environment, individual people, and humanity in general, in view of the threat of vital losses.
Kachynskyi (2001)	One of the components of national security – a set of natural, social, technical, and other conditions that ensure the quality and safety of the life and activities of the population living (or active) in this territory and ensuring a stable state of the biocenosis of the biotope of the natural ecosystem.
United Nations Environmental Program (2023)	Focuses on understanding how environmental degradation and climate change interact with peace and security dynamics.
Pachauri (2000)	The minimization of environmental damage and the promotion of sustainable development, with a focus on transboundary dimensions.
Environmental Security Threat Report (U.S. Department of State, 2001)	An element of regional and national security which encompasses the mitigation and prevention of energy threats, including threats to sources and supply lines, and environmental risks and related stresses that directly contribute to political and economic instability or conflict in foreign countries or regions.

The main aspects of environmental security are:

1. The prevention of environmentally significant disasters and accidents. This aspect involves the development and implementation of measures to prevent natural and human-made emergencies, as well as reducing their negative consequences;
2. Ensuring environmentally safe conditions for people's life and activities. This provides for the creation of conditions under which the environment will not pose a threat to human health and life;
3. The creation of sustainable ecosystems that can withstand anthropogenic

impact. This indicates the preservation of natural ecosystems and the creation of new ones capable of resisting the negative impacts of humans.

Environmental security is considered in two aspects: as a subjective category, which is closely related to the right to a safe natural environment for life and health; or as an objectively existing system of the legal protection of environmental security, which regulates environmentally dangerous activities, the mode of use of natural resources, environmental protection, the prevention of the deterioration of the ecological state, and the occurrence of danger to natural objects and the population.

An environmental hazard is a type of environmental situation in which a threat has been created or is likely to emerge, resulting in striking factors and a strong impact on the population, the national economic facility, and the environment. It is possible that environmental hazard factors (a component of any hazardous process or phenomenon caused by a hazard source and characterized by physical, chemical, and biological actions determined by relevant parameters) may arise that can lead to one or a combination of the following undesirable consequences for humans and the environment:

a) negative impact on a person's health, which can lead to serious diseases;
b) the deterioration of the majority of the population due to material or social harm (disruption of the process of normal government activity, loss of any other type of power);
c) the destruction of the ecological balance of environmental resources in the territory;
d) the death of evolutionarily formed biogeocenoses;
e) the local or regional deterioration of the country (polluted atmosphere, water, soil degradation, etc.), which is seen as a threat to the population of the region (Khylko, 2017).

In the scientific literature, five aspects of the occurrence of environmental hazards are distinguished (Srinivas, 2024). The first aspect is related to the scarcity of resources (water, land, labor, energy, etc.) and the competitive environment,

which subsequently cause conflicts between communities, nations, and territories, thus creating danger at the local, regional, or global level. The presence of competition for resources strengthens social inequality and economic instability, in connection with which a question arises regarding the introduction of the practice of the sustainable management of resources using a strategy of fair distribution. Only this can reduce the competitive struggle, and therefore the level of danger, in a particular environment.

The second aspect that causes environmental hazards is related to the large-scale effects of the climate. For example, as a result of climate change, there is a change in precipitation, the state of the ecosystem is disturbed, the water levels in reservoirs rise, extreme weather events or droughts occur, and the process of desertification begins. All of these consequences undoubtedly give rise to population migration (both external and internal), food insecurity, conflict situations (as a result of a struggle for resources), etc. In order to prevent catastrophic consequences, it is necessary for all states to take measures to: reduce greenhouse gases; build sustainable infrastructure; implement methods of the sustainable management of land, water, and energy resources; and carry out preventive measures against natural disasters.

The third aspect which leads to a violation of environmental security is related to the degradation of the surrounding natural environment due to anthropogenic stress (deforestation, pollution of the atmosphere, water resources, soil losses, loss of land fertility, loss of biodiversity, etc.), which leads not only to the violation of ecosystems, but also to their destruction, causing food insecurity, economic instability, and worsening the state of human health. Therefore, in order to prevent environmental hazards, it is extremely important to introduce sustainable practices for forest conservation at the local, regional, and national levels, to promote the principles of a circular economy, and to take measures to reduce anthropogenic load. All of this will not only allow ecosystems to be preserved, but will also

permit their restoration, thereby ensuring environmental safety, well-being, and the prosperity of communities.

The fourth aspect is transboundary environmental problems. There are many examples of environmental challenges that have exceeded national borders (including the accident at the Chernobyl nuclear power plant, the disaster at the Sandoz chemical plant, the fire at the Piper Alpha oil platform, and others), causing a threat to other states. This issue is becoming particularly relevant today, since the military actions taking place in the territory of Ukraine have a cross-border environmental impact on the entire global community (for example, the disaster at the Kakhovka hydroelectric power station). This is why it is extremely important to establish international cooperation, develop diplomatic interaction, strengthen information exchange, conduct joint monitoring, and conclude international agreements. This will not only allow current problems to be solved, but will also allow a rapid response to threats, will permit preventive measures for the emergence of crisis situations to be developed, and will foster stability in cross-border regions.

The fifth aspect is the growing number of environmental refugees and population migration. A large number of natural disasters and/or a significant amount of environmental degradation can lead to the forced migration of people, resulting in refugee crises and increasing social tension. This is because environmental refugees face numerous problems, in particular the loss of means of subsistence, insufficient access to basic services, a lack of support in their new place of residence, etc.

The components of environmental security are:

1) environmentally friendly products – materials or products (for food and technical purposes) that do not have harmful impurities in concentrations dangerous for the natural environment, animals, plants, and humans;
2) ecologically clean soils – soils which do not contain impurities in quantities that threaten soil biocenosis and human health (radiation, chemicals, land

reclamation, acid precipitation, smog, etc., are examples of soil pollutants);
3) ecologically clean production – ensuring a level of production organization that ensures compliance with environmental requirements, norms, and standards.

The objects of environmental security include everything that is vitally important for security subjects: rights, the material and spiritual needs of the individual, natural resources, and the environment as the material basis of state and social development.

The subjects of environmental security are the individual, society, biosphere, and the state.

According to qualitative indicators, the state of the environment can be represented by three levels, where its quality is considered as a set of natural and acquired properties formed under the influence of anthropogenic activity. These indicators must meet ecological, sanitary, and hygiene standards, which provide conditions for the development and reproduction of living organisms, including in human activities.

The highest quality level in this regard is a pure natural environment. In this case, the pollution of the natural environment is minimal, and it does not cause changes in the normal ecological state in the region.

The second level is a favorable natural environment. Pollution of the natural environment is possible within limits that do not affect human health and where there are no unpleasant factors caused by the specific activities of individual industries.

The third level is a safe natural environment. In contrast to the second level, the possibility of the presence of non-threatening negative factors in the natural environment of the region is found here.

As mentioned, the eco-safety of natural objects is related to the safety of citizens in the field of ecology. This is a prerequisite for the realization of the natural

and inalienable human right to a safe environment (Hetman & Shulha, 2009).

The analysis of the reports of leading international organizations on sustainable development allows the main criteria for assessing environmental security and its key indicators to be identified. The UN Development Program characterizes environmental sustainability using twelve indicators – eight that cover environmental sustainability and four environmental threats. The eight indicators of environmental sustainability are fossil fuel energy consumption, renewable energy consumption, carbon dioxide emissions (expressed in two ways), forest area (expressed in two ways), freshwater consumption, and natural resource depletion as a percentage of gross national income. The four indicators of environmental threats are mortality rates associated with indoor and outdoor air pollution, unsafe water, sanitation and hygiene services, and degraded land. The implementation of the Global Sustainable Development Goals (SDGs) of the UN is also subordinated to the environmental assessment indicators measured by the European Union (Table 2).

Table 2. Selected indicators for assessing the state of the environment in EU countries

Source: compiled by the authors based on Eurostat (2023); United Nations (2022)

Indicator	Characteristics of the indicator and its relation to the sustainable development goals (SDGs)
Emissions of greenhouse gases into the atmosphere	Volume of greenhouse gas emissions into the atmosphere as a result of the economic activity of residents: enterprises, families, and government (greenhouse gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and fluorinated gases). ***SDG 13.*** *– taking urgent measures to combat climate change and its consequences.* ***SDG 9.4*** *– by 2030, modernize infrastructure and modernize industries to make them sustainable, with higher resource efficiency and wider adoption of clean and environmentally sound technologies and industrial processes.*
Waste *(volumes of generation, processing, use)*	Volumes of generation and information on waste management (19 types of activities according to the NACE classification and household activities). ***SDG 12.5*** *– significantly reduce waste generation by 2030 through prevention, reduction, recycling and reuse.*

Ecological tax	The volume of revenues from environmental taxes reflects the total tax revenues by categories of environmental taxes: energy taxes, transport taxes, and the sum of taxes on pollution and resources. ***SDG 12.A*** *– support countries in strengthening their scientific and technical potential for the transition to more sustainable structures of consumption and production.*
Expenditures on environmental protection *(EPEA)*	Amounts of expenses for environmental protection (EPEA), operations related to the prevention, reduction, and elimination of pollution and any other deterioration of the environment. The main aggregate indicator is national expenses for environmental protection – that is, resources allocated by residents to protect the natural environment. ***SDG 7.b*** *– by 2030, expand infrastructure and modernize technologies to provide modern and sustainable energy services for all.*
Environmental subsidies and transfers *(ESST)*	Amounts of subsidies and other forms of government support measures (such as tax rebates, tax exemptions, tax credits, tax deferrals) that help protect the environment.

Practice and global experience show that ensuring a country's economic security and its sustainable development are closely related to environmental security. Therefore, it is critically important to maintain the balance of the social, economic, and environmental interests of the population, authorities, and business structures. Accordingly, the system of environmental security assessment indicators should include all types of activities and actions that prevent, reduce, and eliminate pollution and any other deterioration of the environment.

Environmental security is extremely important for all countries of the world. However, despite the relevance of this issue, disparities in the display of comprehensive research, methodological developments, and methodological approaches to the assessment of the national level of environmental security should be noted.

The authors propose to evaluate the level of environmental security using relevant indices and indicators which not only take into account the various components of the security of the state, but which are also common in the statistics of many countries of the world. This will allow the state of security between countries to be compared, will highlight leaders and outsiders, and will lead to the

development of practical recommendations. Thus, through the analysis of statistical databases, the following indicators of environmental security assessment were used: the Air Quality Index (AQI), the Climate Change Performance Index (CCPI), and the Environmental Performance Index (EPI). The AQI informs the population about the level of air quality. To calculate the index, information on the level of pollution in a certain period of time is used, which makes it possible to determine the concentration of harmful substances and their compliance with the established norms of current legislation. The calculation of the index not only allows countries to be compared according to the state of atmospheric quality, but also allows effective tools to be implemented for its improvement in the development of environmental policy.

The CCPI serves as a tool for increasing the transparency and effectiveness of the international policies of countries in the face of climate change. The calculation and use of the index allows the efforts and progress of countries in protecting and preserving climatic conditions to be compared. This index uses a system of standardized criteria for assessing the climate indicators of fifty-seven countries and EU Member States, accounting for more than 90% of global greenhouse gas emissions. The calculation method includes fourteen indicators which are divided into four categories: greenhouse gas emissions, renewable energy sources, energy consumption, and the country's climate policy. Using rating data, it is possible to investigate both the broken promises and the effectiveness of implementation by one or another state. The ranking does not include the first three places – the numbering starts from fourth place, because in order to lead the top three, a country must do enough to prevent dangerous climate change. This means that it needs to move alongside the benchmark greenhouse emissions target of 2 °C or below.

The EPI reflects the sustainable development of countries and their ability to solve and eliminate existing environmental problems. The index is based on

the calculation of thirty-two indicators, which are divided into eleven categories, thanks to which it is possible to monitor the trends in a country's development in the environmental sphere, as well as to analyze the effectiveness of the implementation of environmental policy in the state. The environmental efficiency index acts as a powerful tool for achieving the goals of the sustainable development of the UN and ensuring the movement of society towards a sustainable future. According to the results of the calculation of the environmental efficiency index, it has been established that countries with high GDP per capita have greater opportunities for investing in environmental protection activities and building the necessary infrastructure. In order to achieve an increase in GDP per capita, a country needs to develop industry, and therefore increase the level of pollution, which determines the importance of using environmental management. The countries leading the environmental efficiency index ranking cannot claim a completely sustainable development trajectory, because the process of increasing GDP is endless.

Therefore, using the specified indices, we propose to determine the level of environmental security of Ukraine and EU countries, which is relevant in the context of European integration. The proposed methodology for assessing the level of environmental security of the country involves the following algorithm of actions: collection of initial data and their analytical justification; development of a mathematical apparatus for calculating indices and an integral indicator; and setting the level of the integral indicator by its gradations.

In accordance with this list, a notation is introduced for the integral indicator and indices (Table 3).

Table 3. Indicator and indices of assessment of the environmental security of a country

Source: compiled by the authors based on EPI (2022); CCPI (2022); Numbeo (2023)

Integral Indicator	Marking Indicator	Index	Marking Index
Environmental security assessment indicator	I_{ES}	AQI	I_{AQ}
		CCPI	I_{CCP}
		EPI	I_{EP}

Indices (I_g) are calculated as the ratio of statistical data for the country of study and the EU member state, which has the maximum value among all EU countries, according to the formula:

$$Ig = \frac{Scg}{ScgEU} \qquad (1)$$

where: S_{cg} – statistical value of the g-th index by country; S_{cgEU} – maximum statistical value of the g-th index for the country.

The selected indices are stimulating factors. The AQI, which is calculated using the statistical data of the Pollution Index (I_{PLT}) – a disincentive factor – needs an explanation. The AQI is calculated according to the following formula:

$$Ig = \frac{ScEU}{Sc} \qquad (2)$$

The integral indicator (I_{ES}) is calculated as a geometric mean value according to the following formula:

$$I_{ES} = \sqrt[m]{Ig1 * Igm} \qquad (3)$$

where: m – the number of indices in the integrated indicator (m = 3).

It is proposed to determine the level of environmental security of a country based on five gradations, which are established by the following method:

$0 \le I_{ES} < 0.2$ – unsatisfactory;

$0.2 \le I_{ES} < 0.4$ – low;

$0.4 \le I_{ES} < 0.6$ – satisfactory;

$0.6 \le I_{ES} < 0.8$ – sufficient;

$0.8 \le I_{ES} \le 1.0$ – high.

The statistical data of the Numbeo (2023) rating organization, the CCPI (2022), and the EPI (2022) were used as starting points (Table 4).

Table 4. Source data for assessing the environmental security of countries

Source: compiled by the authors based on EPI (2022); CCPI (2022); Numbeo (2023)

Country	AQI			EPI			CCPI		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
Ukraine	64.3	62.9	62.1	55.48	49.6	49.6	49.50	60.40*	60.40*
Belgium	50.3	50.1	50.1	45.11	51.9	51.9	73.30	48.38	55.0
Bulgaria	64.5	64.3	63.3	42.64	59.9	59.9	57.00	49.15	46.94
The Czech Republic	36.3	35.9	35.3	38.98	59.9	59.9	71.00	44.16	45.41
Denmark	20.4	21.0	21.9	69.42	77.9	77.9	82.50	79.61	75.59
Germany	27.5	27.8	29.2	56.39	62.4	62.4	77.20	61.11	65.77
Estonia	19.0	19.7	16.7	46.01	61.4	61.4	65.30	75.14	72.07
Ireland	33.9	34.8	34.2	45.47	56.2	56.2	72.80	48.47	51.42
Greece	51.9	51.9	51.6	48.11	56.2	56.2	69.10	57.52	60.34
Spain	39.6	39.7	39.6	45.02	56.6	56.6	74.30	58.59	63.37
France	41.8	42.4	42.9	53.72	62.5	62.5	80.00	52.97	57.12
Croatia	30.6	31.2	31.3	56.69	60.2	60.2	63.10	52.04	57.32
Italy	53.9	54.1	54.7	53.05	57.7	57.7	71.00	52.90	50.60
Cyprus	-	-	-	38.73	58.0	58.0	64.80	49.39	53.09
Latvia	33.9	32.7	30.8	61.88	61.1	61.1	61.60	56.81	57.68
Lithuania	27.0	26.7	26.9	58.03	55.9	55.9	62.90	58.21	62.99
Luxembourg	23.3	23.9	21.8	55.23	72.3	72.3	82.30	60.76	65.09
Hungary	47.8	47.9	47.7	38.22	55.1	55.1	63.70	38.51	45.93
Malta	77.9	81.0	81.2	62.21	75.2	75.2	70.70	60.42	59.8
The Netherlands	25.3	25.1	21.8	50.96	62.6	62.6	75.30	62.24	69.98
Austria	19.2	21.7	21.8	48.09	66.5	66.5	79.60	51.56	58.17
Poland	54.3	54.7	54.5	38.94	50.6	50.6	60.90	37.94	44.40
Portugal	29.6	30.5	28.7	56.80	50.4	50.4	67.00	61.55	67.39
Romania	58.4	58.6	58.5	50.33	56.0	56.0	64.70	38.51	61.50
Slovenia	22.7	22.9	22.4	37.02	67.3	67.3	72.00	48.16	53.57
Slovakia	39.1	39.1	38.3	49.51	60.0	60.0	68.30	50.12	54.47
Finland	11.9	12.1	12.0	62.63	76.5	76.5	78.90	61.24	61.11

Sweden	18.4	18.3	17.7	74.42	72.7	72.7	78.70	73.28	69.39

** CCPI did not evaluate Ukraine's climate performance. This decision was due to the far-reaching effects of the Russian war against the country. The war has caused massive damage and destruction in the energy, industry, transport, and building sectors.*

The data shown in Table 4 show that compared to EU countries, Ukraine is one of the most heavily polluted according to the Pollution Index. Thus, the level of pollution in Ukraine is 5 times higher than the level of pollution in Finland. The top 3 cleanest countries in 2021 are Finland (1st place), Sweden (2nd place), and Estonia (3rd place); in 2022 – Finland (1st place), Sweden (2nd place), and Estonia (3rd place); in 2023 – Finland (1st place), Estonia (2nd place), and Sweden (3rd place). According to the Environmental Performance Index, Ukraine is not a leader compared to the EU countries, which indicates an insufficient level of ability in solving and eliminating existing environmental problems. The leaders by EPI are Denmark, Finland, and Sweden.

It should be noted that the CCPI indicator in Ukraine was significantly ahead of such countries as Poland, the Czech Republic, Bulgaria, Italy, Austria, Slovenia, Slovakia, Hungary, and Ireland in 2022, which indicates significant successes of Ukraine in combating climate change before the beginning of the full-scale invasion. Unfortunately, the war with the Russian Federation makes it impossible to implement certain measures to achieve climate neutrality and poses a great threat, particularly an ecological one, for the entire civilized world. Among the EU countries, Denmark, the Netherlands, and Sweden are the leaders in terms of climate change.

Achieving environmental security is an important task for all countries in the context of ensuring sustainable development for current and future generations. Despite the relevance of this topic, there are no methodological approaches to assessing the level of environmental security in the scientific literature. We suggest evaluating the level of environmental security using appropriate indices that allow countries to be ranked by security level, identifying leaders and outsiders.

The results of the calculations of the sub-indices of the ecological security of countries are presented dynamically in Figures 1, 2, and 3.

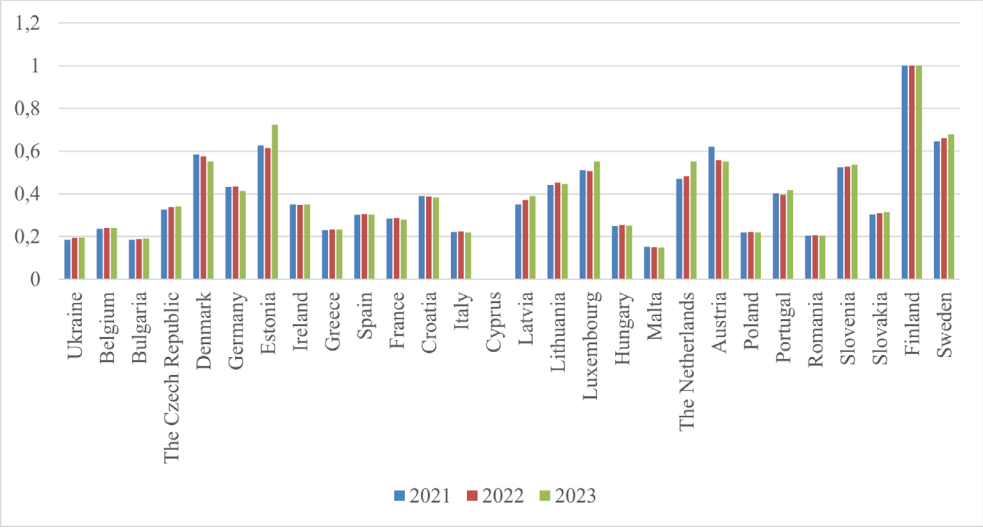


Figure 1. Dynamics of the AQI of EU countries and Ukraine in 2021–2023

Source: developed by the authors

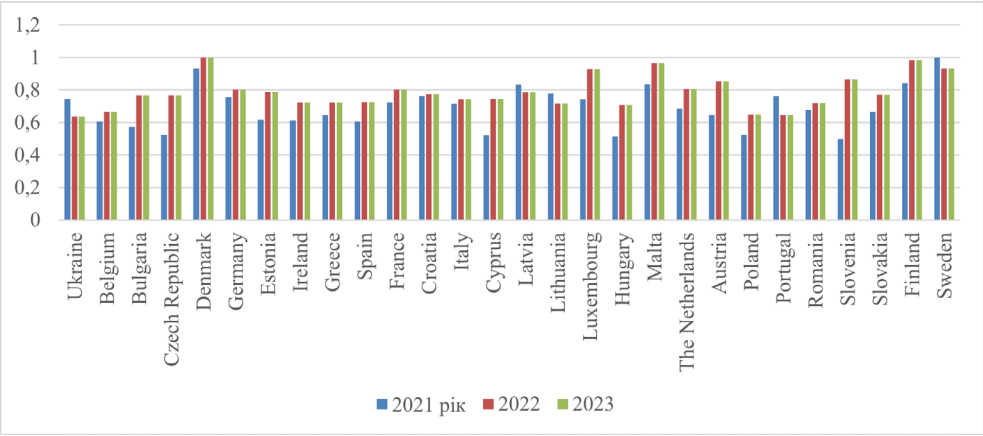


Figure 2. Dynamics of the EPI of EU countries and Ukraine in 2021–2023

Source: developed by the authors

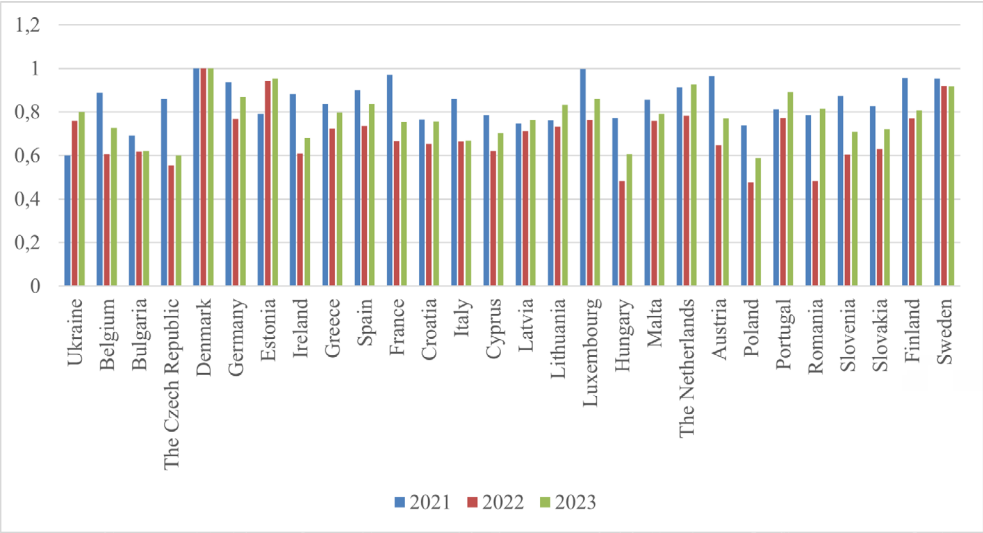


Figure 3. Dynamics of the CCPI of EU countries and Ukraine in 2021–2023

Source: developed by the authors

The results of the calculations of the integral index of environmental security over the past 3 years are presented in Table 5.

Table 5. The integrated index of environmental security of EU countries and Ukraine in 2021–2023.

Source: compiled by the authors

Country	2021	2022	2023
Ukraine	0.4358	0.4529	0.4628
Belgium	0.5032	0.4607	0.4892
Bulgaria	0.4179	0.4470	0.4503
The Czech Republic	0.5287	0.5238	0.5410
Denmark	0.8164	0.8321	0.8206
Germany	0.6745	0.6444	0.6610
Estonia	0.6742	0.7703	0.8166
Ireland	0.5741	0.5345	0.5564
Greece	0.4789	0.4953	0.5117
Spain	0.5470	0.5463	0.5694
France	0.5841	0.5341	0.5535
Croatia	0.6097	0.5808	0.6079
Italy	0.5135	0.4793	0.4774
Cyprus	0.6018	0.5916	0.6155

Latvia	0.6399	0.6195	0.6438
Lithuania	0.7230	0.7170	0.7605
Luxembourg	0.4621	0.4421	0.4764
Hungary	0.4784	0.4783	0.4833
Malta	0.6649	0.6717	0.7427
The Netherlands	0.7284	0.6756	0.7124
Austria	0.4392	0.4092	0.4380
Poland	0.6293	0.5832	0.6225
Portugal	0.4764	0.4156	0.4806
Romania	0.6105	0.6512	0.6896
Slovenia	0.5513	0.5314	0.5582
Slovakia	0.9302	0.9108	0.9259
Finland	0.8513	0.8282	0.8343

The results of the calculations show that no country achieved a state of complete environmental security during the analyzed period, but there are countries that are approaching the value of the maximum indicator. As for Ukraine, the indicator of environmental security is increasing, which indicates the effectiveness of measures in the environmental policy of the state.

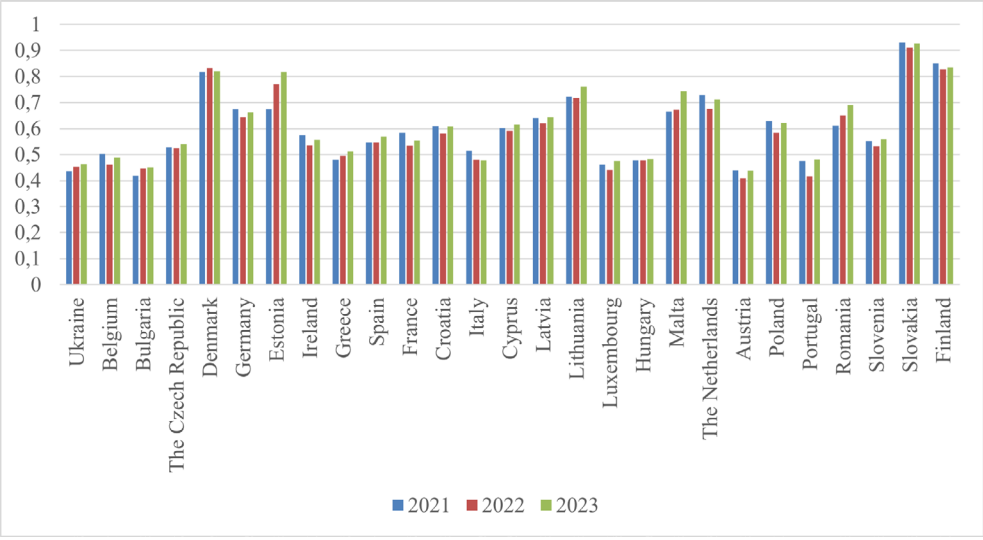


Figure 4. Dynamics of environmental security of EU countries and Ukraine in 2021–2023

Source: developed by the authors

Based on the results above, countries were grouped according to the level of environmental security. The results of this grouping are presented in Table 6.

The grouping of countries made it possible to establish that Denmark, Finland, and Sweden had a high level of environmental security during 2021–2023. Denmark achieved a high level of environmental security due to being a leader in the indicators of the EPI (the index value is equal to the maximum value of 1) and the CCPI (the index value is equal to the maximum value of 1). Finland achieved a high level of environmental security because it occupied the maximum indicator value according to the AQI. The level of environmental security in Sweden is due to high indicator values in the EPI and the CCPI. During 2021 and 2021, Estonia was among the countries with a sufficient level of environmental security, but in 2023, thanks to effective measures aimed at combating climate change, it reached a high level of security in the environmental sector.

Table 6. Grouping of countries by level of environmental security in 2021–2023

Source: compiled by the authors

Level of environmental security	**Countries**
Unsatisfactory $0 \leq I_{ES} < 0.2$	-
Low $0.2 \leq I_{ES} < 0.4$	-
Satisfactory $0.4 \leq I_{ES} < 0.6$	Ukraine, Belgium, Bulgaria, the Czech Republic, Ireland, Greece, Spain, France, Croatia, Italy, Latvia (2022), Hungary, Malta, Poland, Portugal (2022), Romania, Slovakia
Sufficient $0.6 \leq I_{ES} < 0.8$	Germany, Estonia (2021 and 2022), Croatia (2021 and 2023), Latvia (2021 and 2023), Lithuania, Luxembourg, the Netherlands, Austria, Portugal (2021 and 2023), Slovenia,
High $0.8 \leq I_{ES} \leq 1.0$	Denmark, Estonia (2023), Finland, Sweden

Countries with a sufficient level of environmental security during 2021–2023 include Germany, Lithuania, Luxembourg, the Netherlands, Austria, and Slovenia. Portugal, Latvia, and Croatia had a sufficient level in 2021 and 2023, and a satisfactory level in 2022, indicating corresponding gaps in the environmental

policy of these states.

The following countries had a satisfactory level of environmental security during the analyzed period: Ukraine, Belgium, Bulgaria, the Czech Republic, Ireland, Greece, Spain, France, Croatia, Italy, Hungary, Malta, Poland, Romania, Austria and Slovakia. In 2022, Latvia also belonged to this group of countries, although in 2021 and 2023 it had a sufficient level of environmental security.

Environmental security is a component of sustainable development and is inextricably linked to the processes of ensuring the ecological efficiency of the development of countries and the development of a green economy, which is one of the key guidelines of economic strategies for the development of national economies. Therefore, another vector of research was the assessment of the impact of the ecological performance of countries on their progress in the implementation of the SDGs (Sustainable Development Goals Index, SGDI). To measure environmental performance and green growth in international practice, international rating assessments are used, such as: the EPI, which evaluates the effectiveness of the implementation of state environmental policy measures and was included in previous calculations (EPI, 2022), and the Green Growth Index (GGI; GGGI, 2023), which measures the achievements of countries in implementing a green economy.

Using the above-mentioned indices, an attempt was made to evaluate the relationships between the processes of ensuring sustainable development, environmental efficiency, and green growth (Bulatova et al., 2024).

Table 7. Distribution of EU countries and Ukraine according to GGI and SDGI

Source: GGGI (2021); United Nations (2022)

Country	GGI, 2021, 147 countries	SDGI, 2022, 166 countries
Austria	77.78	82.28
Belgium	64.33	79.46
Bulgaria	63.93	74.62
Croatia	68.07	81.50

Cyprus	59.35	72.49
Czech Republic	75.13	81.87
Denmark	76.08	85.68
Estonia	68.27	81.68
Finland	71.69	86.76
France	70.93	82.05
Greece	64.46	78.37
Spain	68.33	80.43
The Netherlands	66.04	79.42
Ireland	59.95	80.15
Lithuania	68.47	76.81
Luxembourg	67.99	77.65
Latvia	68.85	80.68
Malta	50.72	75.53
Germany	75.01	83.36
Poland	66.66	81.80
Portugal	69.54	80.02
Romania	68.01	77.46
Slovakia	74.04	79.12
Slovenia	67.68	81.01
Sweden	76.64	85.98
Hungary	69.75	79.39
Italy	70.89	78.79
Ukraine	57.31	76.52
World:	55.724	66.69

With the use of correlation analysis tools, a matrix of relationships was obtained (Table 8). The results allow the following conclusions to be drawn:

- there is a close, direct correlation (0.71) between sustainable development and green growth; therefore, achieving sustainable development is impossible without implementing the principles of the green economy, and vice versa;
- a moderate correlation (0.49) was observed between environmental performance and sustainable development, which is unexpected and, accordingly, may lead to the conclusion that environmental objectives in the structure

of the SDGI do not demonstrate a significant impact on the overall level of sustainability, because the effectiveness of environmental measures is insufficient;

– the correlation between environmental performance and green growth is insignificant (0.24), which indicates the low efficiency or insufficiency of environmental policy levers to ensure a high level of green growth.

Table 8. Matrix of relationships between the studied indices

Source: compiled by the authors

	EPI	GGI	SDGI
EPI	1	0.24	0.49
GGI	0.24	1	**0.71**
SDGI	0.49	**0.71**	1

Figure 5 presents the nature of the dependence between green growth and sustainable development. It can be observed that 49.7% of the change of SDGI is explained by the variation in the GGI; if the GGI changes by 1% for the analyzed countries, the sustainable development index will increase by 0.38%.

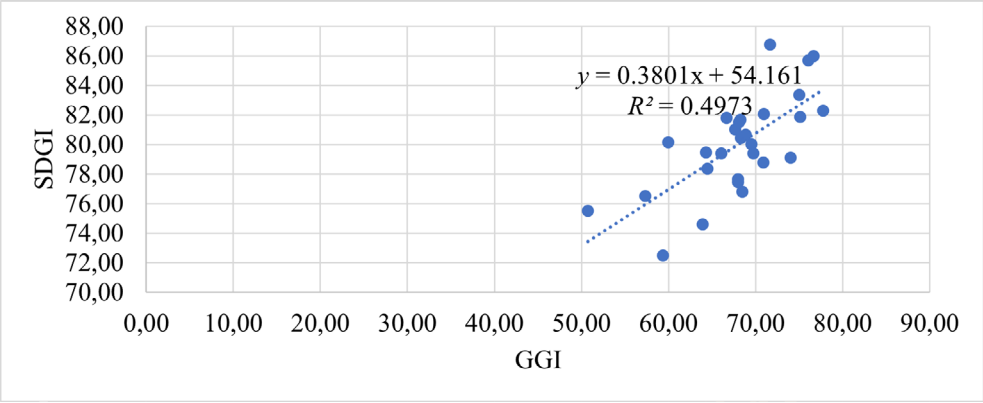


Figure 5. Correlation field for the dependence of the SDGI on the GGI (a sample of EU countries and Ukraine)

Source: developed by the authors

The analysis of the distribution in Figure 5 makes it possible to identify those countries (located above the line of the regression equation on the graph) that are more effective in terms of achieving sustainable development by ensuring green

growth (i.e., possessing a certain level of development of the green economy). Among such countries are: Finland, Denmark, Sweden, France, Poland, Latvia, Estonia, Slovenia, Ireland, Malta, and Greece.

Thus, the combination of the authors' previous studies and the attempt made here to assess the environmental security of different countries confirms the thesis that sustainable development is directly related to environmental security. The countries with the highest levels of environmental security (Table 6), such as Denmark, Sweden, Finland, and Estonia, are also the most advanced in terms of achieving the SDGs. It is therefore clear that further economic growth should take place alongside the more active use of innovative, environmentally friendly technologies. The focus of further research can be broadened by using more indicators to measure environmental security and by comparing the territorial and sectoral structures of the economies of the world, the EU, and Ukraine.

Conclusions

The assessment of a country's environmental security is an important tool for achieving the SDGs and increasing international prestige. In the context of Ukraine's integration into the EU, increasing the level of security in the environmental context is extremely important as it will both hasten the integration process and prove that our state not only supports European values, but is also a real leader of change, particularly in the environmental sphere.

For the EU, climate change and environmental deterioration is a threat to development, in order to overcome which the European Green Deal (European Commission, 2019) was approved. The key goal of the latter document is to transform the EU into a modern, resource-efficient, and competitive economy by: ensuring climate neutrality; accelerating the transition to the use of renewable energy sources; developing a circular economy; increasing the amount of green financing and investment; ensuring the effective fight against the loss of

biodiversity and guaranteeing a clean environment; and actively cooperating with other countries to achieve global goals in the field of climate and ecology. For the vast majority of countries, actions to achieve the SDGs are strategic guidelines, among which environmental security is a driver of sustainable economic growth. At the same time, strengthening environmental security requires increasing the effectiveness of environmental measures and the use of more effective levers of environmental policy.

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3.2. The impact of economic security on economic growth in European Union countries

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Abstract. *Economic security is a relatively young discipline within the field of economic science, yet it plays a critical role in national security. Despite its importance,*

it has historically received insufficient attention from researchers. Economic security is essential for achieving economic sovereignty, fostering sustainable development, implementing effective social policies, protecting society from environmental risks, and enhancing national competitiveness in an increasingly interconnected global economy. An effective economic security system enables a country to identify threats to its national economic interests proactively, thereby preventing potential damage to the socio-economic structure. Unfortunately, in most cases a comprehensive understanding of economic security often emerges only after economic threats have materialized.

In today's rapidly evolving world, ensuring economic security has become one of the primary priorities for nations, serving as the cornerstone of national security and development. The dynamic nature of global development continuously alters the risks associated with economic security, making it imperative for countries to identify and mitigate these risks promptly. The issue of economic security has gained increased attention, particularly as economies have become more open and integrated into global economic processes. Although economic security is often conceptualized as a social phenomenon that safeguards the vital interests of individuals, society, and the state from potential dangers and threats, there remains no universally accepted definition within the broader context of national security.

The main objective of this article is to analyze how economic security impacts economic growth in EU countries.

The study shows that for weak economies, a high level of GDPpC growth can be provided even with relatively low development indicator values. At the same time, for advanced economies, high values in these indicators are a prerequisite for continued growth. Based on the model created in the study, it is possible to distribute countries by clusters. Such an interpretation is necessary in order to understand in which direction a country's economy should develop to ensure sustainable development. Thus, the proposed method makes it possible to objectively assess the potential

of the country's economic development.

Keywords: *economic security, economic growth, composite indicators, international indices, economic development, statistical analysis.*

Introduction

Economic security has emerged as a critical factor influencing economic growth, especially in the context of the European Union (EU) – a region characterized by the complex interplay of economic policies, integration processes, and diverse Member State economies. In the increasingly interconnected global economy, the concept of economic security transcends traditional notions of national security and encompasses a broader spectrum of issues including financial stability, energy supply security, labor market resilience, and the integrity of critical infrastructure. These components collectively shape the economic environment, affecting both individual Member States and the EU as a whole.

The EU, as a unique political and economic union, faces distinct challenges in maintaining economic security. The diversity of its Member States, in terms of economic development, resource endowments, and policy approaches, creates a multifaceted landscape where economic security can significantly impact growth trajectories. For instance, the 2008 financial crisis exposed vulnerabilities within the EU, leading to a prolonged period of economic stagnation in several Member States. Similarly, ongoing geopolitical tensions, energy dependency issues, and the COVID-19 pandemic have underscored the importance of robust economic security mechanisms to safeguard against external shocks.

Economic security in the EU context involves ensuring stable and sustainable growth through effective economic governance, crisis management frameworks, and policies that promote innovation, competitiveness, and social cohesion. These elements are crucial not only for preventing economic disruptions,

but also for fostering an environment conducive to long-term growth. The interdependence of EU economies means that economic security in one state can have profound implications for the entire union, highlighting the need for coordinated policies and collective action.

This article explores the impact of economic security on economic growth within the EU, examining how various dimensions of economic security – such as the financial system, innovation capability, environmental performance, etc. – affect growth outcomes. By analyzing these relationships, the study aims to provide insights into the ways in which the EU can strengthen its economic security to support sustained economic growth across its Member States.

Research results

Economic growth is a complex and multifaceted phenomenon, and its analysis is based on identifying content, qualitative and quantitative indicators, models, and types of growth. Of great importance is the definition of the principles of the growth of economic indicators and the economy as a whole. Economic growth reflects the process of improvement over certain periods, and its basic definition entails a long-term increase in productive capacity. This concept is associated with all sectors of life and elements of social development, including its economic component. Economic growth is a category that reflects general trends of positive or negative changes in a country's economic development, and is an important component and criterion of economic development. It is expressed directly in the quantitative increase in GDP and its components.

Economic growth is one of the key problems of the modern world, while economic development provides new opportunities for the implementation of projects to improve the living standards of the population. For enterprises, such growth is a necessary feature of existence. Transformative processes taking place in the national economy and changes in the development of a country

significantly affect

economic growth, which largely affects the life of the state and its future. Economic growth and economic development are not the same concept: the former is considered to be an increase in the volume of production of the gross national product; while the latter is the improvement of production and an increase in the socio-economic indicators of the country. All of this creates new questions and problems, contributing to an increase in interest in discussions related to the search for new factors and the formation of additional conditions for economic growth. For a long period, global economic growth has remained largely stable, despite difficulties that countries have encountered over the past twenty years. Economic growth is possible thanks to human potential, which, acting as a productive resource within enterprises, is embodied in employees' ability to solve professional problems. This sets the impetus for the development of production, because it is the person who is the engine and inspirer of progress. As economic growth represents a constant increase in the volume of the growth of goods and services over a certain period of time, it mirrors the evolution of the economy. Although the term evolution is not found in the works of the first economists, this definition is indirectly present in their socio-philosophical argumentation. Currently, this concept has become one of the most commonly used in economic theory.

There are two types of economic growth: extensive and intensive. It should be noted that in life, these two types of economic growth do not exist in their pure form, but act in concert, where one type dominates. The condition required for economic growth is a stable macroeconomic environment that promotes the attraction of new resources into economic circulation and their efficient use. The main conditions for economic growth are: effective economic state institutions; competitive business; high aggregate demand; the development of the service sector and information technology; and structural shifts in the economic system.

Entrepreneurs have a growing interest in increasing production capacity and improving the efficiency of their own production due to high aggregate demand. It is important to develop science-intensive industries such as the chemical industry, the production of electrical equipment, the microbiological industry, instrument making, and the computer science industry.

Economic growth has the following goals: improving the living conditions of the population; implementing the achievements of scientific and technological progress in practice; increasing the productive capacity of the economy; and stabilizing of the economic system. The drivers of economic growth are the circumstances that govern the rate and extent of long-term increases in a country's real output. The factors of economic growth are often grouped by type – extensive factors are considered to be the growth of capital and labor costs, while intensive factors are technological progress, the growth of the educational and professional skills of workers, increases in the mobility of resources, improvements in the production management of enterprises, and changes in legislation in the field of the economy. In short, intensive factors are everything that can significantly improve the quality of production factors and the process of using them.

The main factor of sustainable economic growth today is the ability to compete, which is based on innovation. Thus, to ensure a balance between economic policy and competition, it is necessary to apply a more flexible approach to the subjects of economic relations in antimonopoly regulation and develop regulatory documents with the participation of competition policy authorities. Additional factors of economic growth include: the natural resources of the national economy, the labor (human) potential of the society, capital (fixed and circulating), the entrepreneurial ability of businesspeople, scientific and technological progress, and aggregate demand. With economic growth, a country's potential also increases, as there is an increase in both fixed and circulating capital and in the labor force. Optimal economic growth ensures that the incomes of all social

groups in the country increase over a long period of time, while economic growth without the development of new, high-quality production is seen in underdeveloped countries. In order to increase economic growth, it is necessary to: use natural resources efficiently, because they are the basis for further development; use the opportunities of international economic integration by expanding positions in global sales markets, taking into account thorough market analysis; strengthen the innovative component in the socio-economic development of the country, having studied the demand for science-intensive products; and use the state, as a market entity, to maximize the national security of the country and provide a decent working atmosphere for the development of science, production, and business. To date, one of the key factors ensuring the achievement of stable economic growth has been the creation of conditions for innovative development. This will: reduce, but not eliminate, the dependence of a country's economy on raw materials and open up new opportunities for modernizing the structure of the national economy; improve the quality of life of the population and reduce income differentiation in society; and result in the creation of a large middle class.

Economic security and economic growth are fundamental objectives for countries worldwide, representing key drivers of long-term prosperity, societal well-being, and global competitiveness. Achieving and maintaining economic security is essential for withstanding shocks and uncertainties, ensuring stability, and fostering sustainable development. Economic growth, on the other hand, is the cornerstone of progress, signifying the ability of a country to increase its production, generate wealth, and improve living standards over time. Based on empirical data, theoretical foundations and international comparisons, the author aims to provide a comprehensive analysis of indicators that underlie economic security and economic growth. By understanding these indicators and their interaction, it will be possible to formulate an effective model for assessing the impact of economic security on economic growth. As was mentioned before, there is no single

definition of the economic security and economic growth of a country which scientists use. The essence of these two concepts is complicated and multifaceted.

According to Makštutis (2006), economic security refers to a state in which economic and governmental institutions are structured in a way that safeguards the nation's key interests. This state ensures that the country's development is balanced and socially oriented while maintaining robust economic and defense capabilities, regardless of whether domestic or international events are favorable or unfavorable.

Markevicius (2011) asserts that economic security and national welfare should always be top priorities for governments, as well as for political and national leaders. He identifies three distinct contexts for national security: philosophically, security should be regarded as a universal value; politically, it involves creating policies and tools to protect and uphold this value; economically, it focuses on the well-being of the population and the development of strategies to enhance this well-being.

Cernius (2019) describes investment security as a condition in which both private and public enterprises play a regulatory role in investment activities and actively participate in the investment process. Daujotas (2015) highlights that foreign direct investment is a crucial source of capital for developing nations, supplying essential resources for infrastructure, technological advancement, and the enhancement of economic capacity.

Quinn and Cahill (2016) suggest that scientific and technological security is vital for ensuring adequate social, economic, and political stability within a society. Carter (2011) notes that the security is one of the main objectives of economic policy. Access to safe, nutritious and affordable food is strongly related to socioeconomic factors. According to Malnar and Malnar (2015), demographic development is a decisive factor in modern security studies, and demographic factors can be signs of a security situation and possible change.

Choosing the right sub-indicator system is key to obtaining an objective assessment of it. This scorecard should consider all threats to economic security, and all indicators used must be independent, comparable, and representative. The author proposes to base the assessment of the level of the economic security of a country on a hierarchically constructed system of indicators, which includes the compiled indicator formed on the basis of sub-indicators grouped by components. As described earlier, the formation of a system of subindicators for assessing the economic security of a country should be carried out in accordance with the principles of representativeness, reliability, and availability of information.

While determining the indicators of economic security, the subjective position of the researcher, the priority of identified interests, threats, indicators, and their threshold levels should be taken into account. To assess economic security, a number of groups of indicators are proposed (Figure 1).

In order to form a system of indicators for assessing the level of economic security of a country, the author analyzed the composition of the subindicators used by well-known international indices and ratings. Based on the analysis of literary sources (Gryshova et. al., 2020), it was established that the most well-known and widely accepted indicators in this context are: the Global Competitiveness Index; the Index of Economic Freedom; the Fragile states index; the KOF Globalization Index; the Human Development Index; Worldwide Happiness; Doing Business; the Democracy Index; the Corruption Perceptions Index; Prosperity Index Legatum; and the Environmental Performance Index.

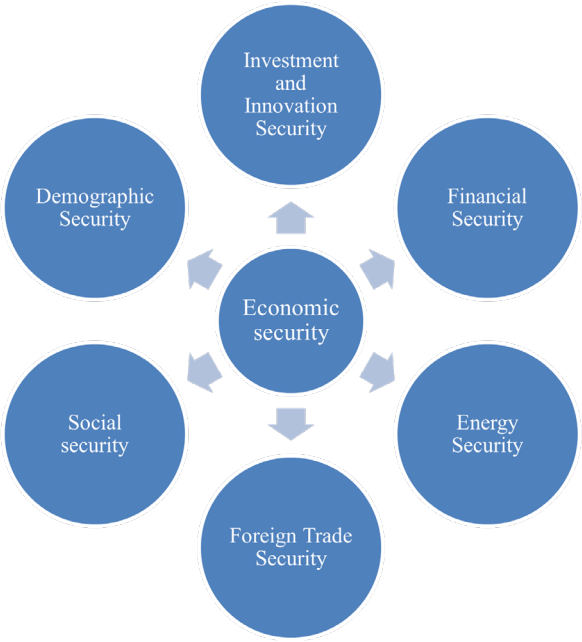


Figure 1. Main indicators of economic security

Source: created by the authors based on previous research

The authors examined the compliance of the aforementioned indicators with the above principles and the main threats to economic security, at the same time as eliminating duplicated indicators. As a result, sub-indicators were selected that clearly characterize individual components of a country's economic security. The selected indicators were checked for the absence of multicollinearity. To avoid an increased effect in calculating the compiled indicator of a country's economic security, correlation analysis was used to assess the density of statistical relationships between numerical series for the selected indicators, which could be used to assess the country's economic security. According to Denysov (2016), the criteria of economic security determine a qualitative position, which, in turn, forms a strategy of deterrence and counteraction to danger. The use of an objective system of criteria, parameters, indicators, and thresholds makes it possible to properly identify the magnitude of real and potential threats. The threshold level is a certain numerical expression of the quantitative and qualitative characteristics of

the state of economic security of the subject, which characterizes their maximum allowable values. In turn, non-compliance with these values harms the process of the normal development of various elements of reproduction and, as a consequence, leads to the consolidation of destructive trends in the economy. The composition of the selected sub-indicators makes it possible to distribute them by components: economic, political, social, and environmental.

To ascertain how economic security impacts the economic growth of a country, the main indicator of economic growth should be found. According to Kiseľáková et al. (2018), the World Economic Forum (WEF) defines economic growth as "the set of institutions, policies and factors that determine the level of productivity of the country." The productivity of a country means a country's ability to maintain a high level of income, but it is also one of the main factors influencing the return on investment that reflects the growth potential of the economy. In summary, economic growth is understood as the ability of a country to achieve sustained high growth rates of GDP per capita.

In the authors' opinion, the economic growth of a country is the ability of its economy to compete with the economies of other countries in terms of the effective use of national resources, increasing the productivity of the national economy, and ensuring, on this basis, a high and constantly growing standard of living for the citizens of the state. When choosing dependent variables, the authors proceeded from the fact that the main economic indicators of a country's development are in one way or another related to the volume of gross domestic product (GDP). Usually, indicators such as total GDP and GDP per capita are distinguished. At the same time, the use of absolute indicators in a generalizing study is inappropriate, since they can differ significantly in different countries.

As the main dependent variables, the authors chose the indicators of relative GDP growth and relative growth of GDP per capita. In addition, as studies show (Ludvigson et al, 2020), macroeconomic processes are rather slow and inertial.

Therefore, results in the form of changes in GDP growth rates may appear with some delay, so it is necessary to include output variables taken with a lag in relation to input values in the dataset.

It is obvious that the countries analyzed in this work differ significantly from one another. Even a cursory analysis of the array of input data shows significant differences both in indicators of economic development (including specific ones) and in the factors analyzed. At the same time, as a rule, in the behavior of individual objects of research, regularities can be identified that make it possible to combine groups for joint study and build generalizing conclusions.

Therefore, in addition to the obvious use of the constructed models for predicting economic development indicators (changes in the value of GDP and its share per capita), it is also advisable to consider the possibility of clustering individual countries into groups that unite countries that are closest in terms of their development characteristics.

To solve the clustering problem, a fairly large number of methods have been developed, including both statistical ones, which differ favorably in operating speed, and intelligent ones, built on the basis of neural networks and characterized by the ability to find nonlinear relationships in data.

When solving applied problems of analysis, the formation of feature descriptions of objects is a more complex operation than determining their similarity. As an example, we can compare several photographs, where it is easier to conclude that they depict the same object than to determine the array of features on the basis of which such a decision was made. Thus, the task of classifying objects based on their similarity to each other, when the belonging of training objects to any classes is not specified, is called the clustering problem. In other words, clustering is the task of dividing a set of objects into groups according to the criterion of their similarity. Within each of the obtained groups there are similar objects, and the objects of different groups are most different from each other. The effectiveness

of solving the formulated clustering problem is difficult to assess due to the lack of an objective criterion for assessing the quality of the results obtained. In addition, the specifics of the work of one or another clustering algorithm involve entering a certain set of input parameters before starting the analysis. One of the most common parameters is the number of clusters into which the initial array of objects being analyzed should be divided. The goals of applying clustering algorithms to data can be divided into two large groups:

1. Using clustering as an intermediate step in data processing. Clustering, due to its relative ease of use, is often used in exploratory analysis to initially determine the structure of the analyzed array and apply more complex algorithms to the resulting groups. It is also used to form a secondary array of objects that have average characteristics for each cluster to reduce the amount of stored data.
2. Using clustering to solve the problems of detecting anomalous objects. In this case, it is assumed that the anomalous object will not belong to any of the clusters; however, such output marking options are possible for a limited number of clustering algorithms. It should be noted that for this case, it is possible to evaluate the effectiveness of the algorithms used.

The classification of clustering algorithms can be carried out according to different criteria that characterize both the nature of the partition (hierarchical or flat) and the belonging of objects (clear or fuzzy) to clusters. The evaluation of the efficiency of clustering algorithms is subjective, and may vary for different data sets; however, the quality of their work in solving applied problems determines their popularity and the need to include software implementation in open libraries of data mining algorithms.

After researching methods of clustering, the authors propose the use of manual clustering when it is necessary to build a visual display of data using a scatter plot. Since the diagram is plotted using one parameter, only the vertical position of the points matters, and the horizontal difference serves only to separate

countries closely located on the diagram. Next, the authors constructed a similar diagram for two parameters – avg and avg_ – allowing the clarification of the picture of the distribution of countries into clusters.

Thus, the proposed method makes it possible to objectively assess the potential of a country's economic development. It is also pertinent to consider the results of applying the formal method of data clustering using k-means and g-means algorithms. This algorithm will be running on input data with various settings that govern the clustering process.

After the above actions, the relationships between clusters can be graphically displayed. This illustrates the location of links between clusters – that is, the degree of their similarity to each other. These data can be used to analyze the possible directions of development of countries in the transition from cluster to cluster.

The authors are interested in constructing an economic interpretation of the adjustment factors for dummy variables. Such an interpretation is necessary in order to understand in which direction the country's economy should develop to ensure sustainable development. Based on the principle of operation of the panel regression model with fixed effects, the coefficients for dummy variables show how much it is necessary to correct (increase or decrease) the result of model calculations for each object under study. Thus, it can be hypothesized that the adjustment coefficient shows the effectiveness of the country's economic development. The larger this coefficient, the less effort the country needs to input in order to achieve high growth rates of per capita income. The average GDPpC and cluster number were then plotted for each country. A similar result is also obtained if the average values of the correction factors are plotted instead of the cluster numbers.

It was noted above that the panel regression model with fixed effects showed the best result among statistical models. In this model, for each object, the value of unobservable individual effects is calculated, for which the method for

determining the regression coefficients is corrected. Thus, for each country, the model forms its own adjustment coefficient, which serves to compensate for its individual characteristics.

This adjustment factor can be viewed as a generalized indicator of the individual characteristics of a country, and can be used as the main indicator for grouping countries. According to this methodology, the construction of a diagram for two parameters – avg, for models describing relationships in the current period, and avg_, for models describing relationships in the future – allows the picture of the distribution of countries into clusters to be clarified (Figure 2).

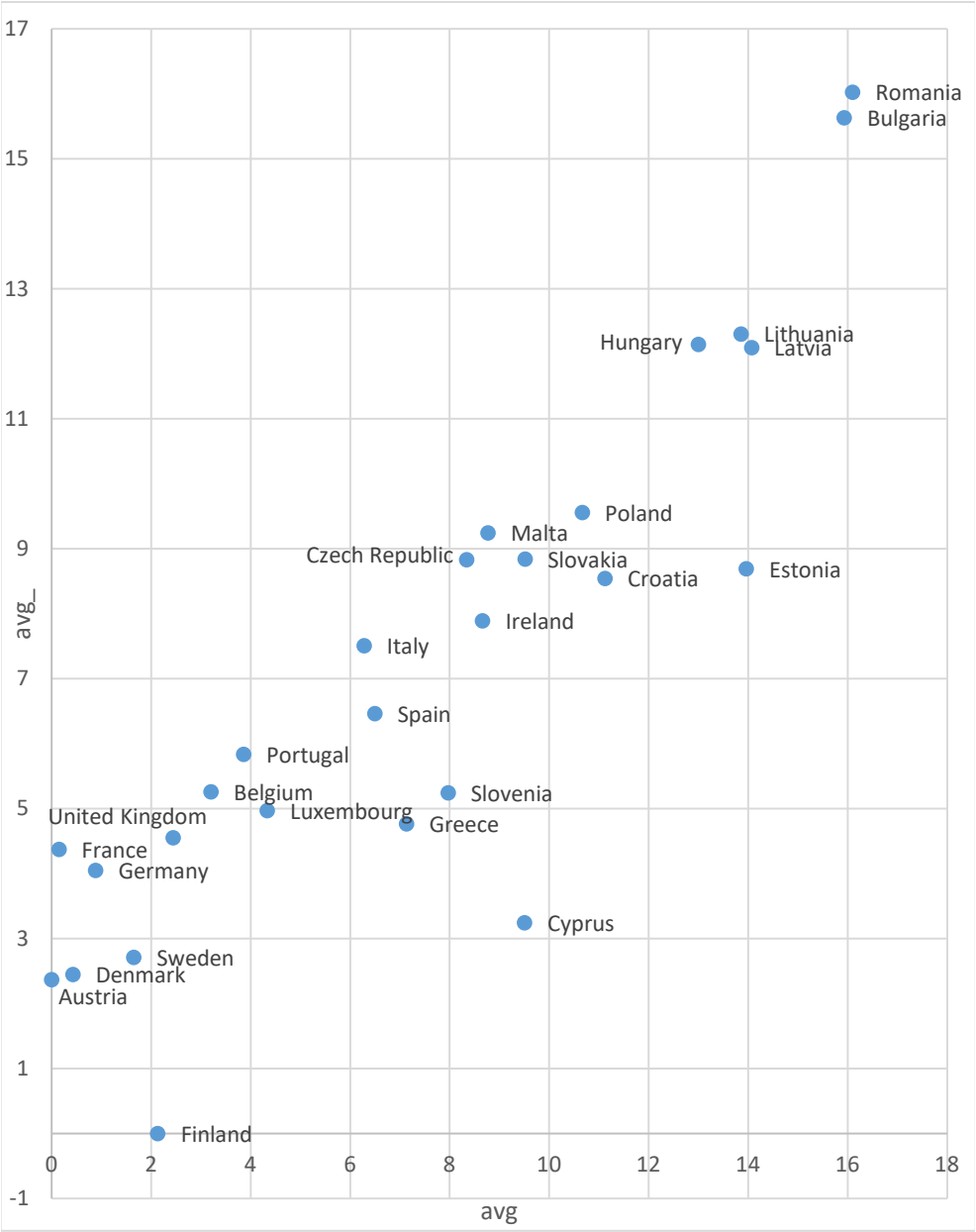


Figure 2. Distribution diagram of countries based on avg and avg_

Source: authors' calculations

Obviously, this distribution is not random. The analysis shows that countries that are close economically, and often also geographically, fall into one group. At

the same time, there is a tendency that the countries with the most developed economies are closer to the base of the coordinate plane, and the countries with a weakened or developing economy are the most distant from it. According to this methodology, the algorithm was run on input data with various settings that govern the clustering process (Table 1).

Table 1. Results of clustering data by country

COL1	Cluster number	Distance to cluster center	Average cluster distance
Finland	6	0	0
Sweden	5	0.07374	0.0672
Netherlands	5	0.087706	
Germany	5	0.073136	
France	5	0.090842	
Denmark	5	0.031469	
Austria	5	0.046426	
Portugal	4	0.049002	0.0482
Luxembourg	4	0.054576	
Belgium	4	0.01689	
Spain	3	0.123557	0.084
Slovenia	3	0.023043	
Greece	3	0.040557	
Cyprus	3	0.149035	
Slovakia	2	0.077127	0.0671
Malta	2	0.056134	
Italy	2	0.137686	
Ireland	2	0.041509	
Czech Republic	2	0.023099	
Poland	1	0.093547	0.1192
Hungary	1	0.158377	
Estonia	1	0.126342	
Croatia	1	0.098706	
Romania	0	0.1426	0.1295
Lithuania	0	0.127084	
Latvia	0	0.132298	
Bulgaria	0	0.116193	

Source: authors' calculations

It can also be noted that the algorithm placed Romania, Bulgaria, Lithuania, and Latvia in one cluster (№ 0), although they are visually fairly far apart. It can be concluded that in this case the limitations of the algorithm appear. Note that this cluster is characterized by the largest average distance from the elements to the center – that is, it is the first candidate for additional division.

The relationships between clusters can also be displayed graphically.

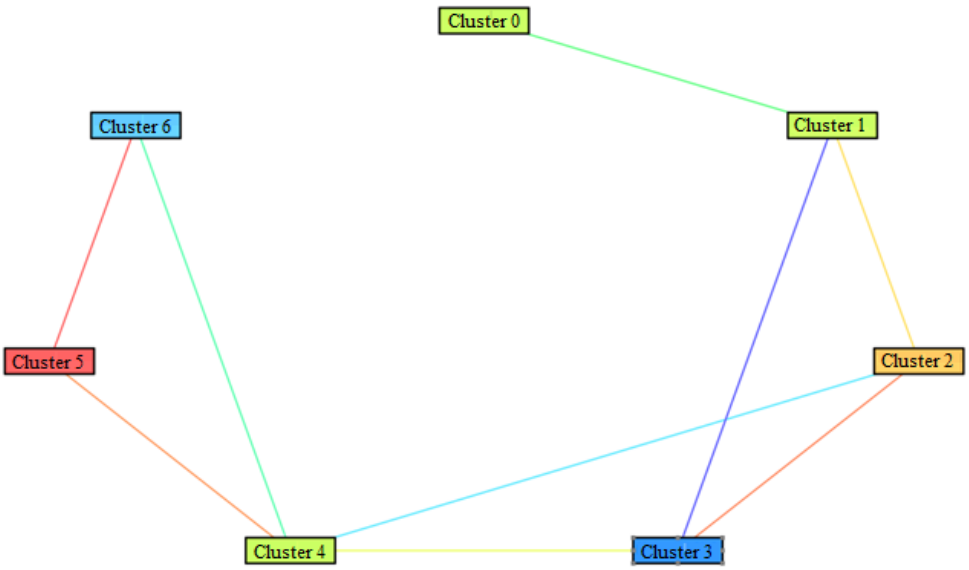


Figure 3. Cluster connections
Source: authors' calculations

Figure 3 illustrates the location of links between clusters – that is, the degree of their similarity to each other. These data can be used to analyze the possible directions of development of countries in the transition from cluster to cluster.

Conclusions

During this research, the theoretical bases of economic security and economic growth were analyzed. The main concepts of the economic security and economic growth of countries were determined. The study statistically proved the existence of a relationship between a country's economic growth, expressed through

indicators of the dynamics of GDP per capita, and the factors of economic security, which are represented by a system of indicators of economic, political, social, and environmental development. The analysis showed the correspondence between the calculated and empirical values of economic growth.

Based on the model obtained in the study, it is possible to distribute countries by clusters. Such an interpretation is necessary in order to understand in which direction a country's economy should develop to ensure sustainable development. Thus, the proposed method makes it possible to objectively assess the potential of a country's economic development.

Further research will be aimed at identifying closer relationships between economic and non-economic indicators and their impact on the economic growth and security of the EU countries. Due to the lack of research in this field, the authors believe that such studies and modeling may provide unexpected results.

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3.3. Strategies for implementing digital technologies in circular economy models: balancing economic security and sustainable industrial growth

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Abstract *The circular economy (CE), an economic paradigm designed to minimize waste and maximize the continual utilization of resources, stands in contrast to the "take, make, dispose" model of the traditional linear economy. Through the lens of this paper, the author explores how digital technologies such as the Internet of Things (IoT), big data analytics, blockchain, and artificial intelligence (AI) can act as levers for transformation, facilitating more efficient resource use, improving product lifecycle management, and catalyzing innovative business models. This article delves into the strategies for implementing digital technologies within circular economy frameworks, emphasizing the dual objectives of fostering environmental sustainability and ensuring economic resilience. The aim of this research is to explore and articulate effective strategies for the integration of digital technologies into CE models. The research helps to identify how these technologies can be leveraged to support sustainable industrial practices that not only minimize environmental impact, but also bolster economic security and promote growth. The article endeavors to bridge the existing research gap by offering a balanced perspective on the economic and environmental dimensions of digital technology adoption in CEs. The*

main tasks of the research are: to conduct a thorough review of current studies related to the CE and digital technology integration, identifying gaps in research and opportunities for innovation; to analyze specific strategies for the implementation of digital technologies in CE models, considering the challenges and opportunities presented by this integration; to analyze potential risks associated with digital technology adoption in CEs and propose robust management strategies to mitigate these risks, ensuring a secure and efficient transition; and to provide actionable policy recommendations to support the adoption and effective implementation of digital technologies in CEs, aimed at policymakers, industry leaders, and stakeholders. The conclusion opens a discussion on the future directions of digital technology in CE models, emphasizing the need for continued innovation, collaboration, and policy support to realize the full potential of these transformative strategies. This work contributes to the burgeoning body of literature on sustainable development and digital innovation, offering insights for researchers, practitioners, and policymakers alike to provide a deep understanding the complexities of the digital CE.

Keywords: *Circular Economy, Digital Technologies, Sustainability, Security, Risk Management Strategies, Policy Recommendations*

Introduction

Recent advancements in sustainability have enabled companies to more effectively implement circular economy (CE) practices. The CE focuses on removing valuable materials from waste streams by emphasizing product reuse and repair and developing restorative industrial systems. Alhawari et al. (2021) noted that there is growing recognition of the CE's role in managing natural resources, leading to significant changes in sustainability initiatives. Geissdoerfer et al. (2017) have identified various connections between sustainability and the CE, ranging from conditional relationships to trade-offs. The rise of sustainability and environmentalism has prompted companies to engage in more eco-friendly activities.

Over the past decade, the CE has expanded rapidly, centering on the principles of reusing, reducing, and recycling materials in production and consumption. According to the World Resources Institute (2022), the CE can potentially decrease the use of new materials by 32 percent within 15 years, and by 53 percent by 2050. Consequently, the CE has gained traction as a viable model for material reuse, with organizations like the Ellen MacArthur Foundation and the McKinsey Global Institute advocating for it as a method to decouple economic growth from the consumption of virgin resources in an evolving world.

While primarily emphasizing an environmental perspective, the CE cannot be dissociated from economic and societal factors, thus connecting it to the concept of strong sustainability. Digital technologies facilitate the development of intelligent factories and products, creating opportunities for improved performance in production activities, organizational strategies, business models, and skills. Although these two concepts have often been considered separately, recent years have seen growing integration between them. It is generally accepted that digital technologies (DTs) can facilitate the transition to a CE by enabling more efficient and flexible processes and providing transparent access to product data and resource consumption. Like any significant societal transformation, digitization presents both substantial opportunities for advancement and considerable risks, with potentially harmful impacts on society. The opportunities include achieving digital autonomy in transportation, creating more adaptable workplace designs, enhancing global networking and communication through digital social networks, and leveraging disruptive technological innovations in data creation and analysis. Conversely, the risks involve the potential loss of regulatory control over companies, increased social inequalities due to unequal access to digital resources, the concentration and abuse of power, the erosion of privacy and personal freedom, and the substantial energy demands of digital technologies.

This paper, therefore, seeks to explore and articulate effective strategies for

the integration of DTs into CE models. The paper attempts to: conduct a comprehensive review of existing studies on the integration of the CE and DT; identify research gaps and innovation opportunities; analyze specific strategies for implementing DTs in CE models; consider the associated challenges and opportunities; examine the potential risks of adopting DTs in CEs and proposing robust management strategies to mitigate these risks for a secure and efficient transition; and provide actionable policy recommendations to support the adoption and effective implementation of DTs in CEs, aimed at policymakers, industry leaders, and stakeholders.

This is followed by the empirical study and a quantitative analysis of the data. Finally, the research concludes with an analysis of the results, a presentation of the conclusions, and proposals for future research.

Main analysis and results

The CE and DT Sector. This section presents the frameworks utilized in this study to analyze the literature concerning both the CE and DT. As discussed in the preceding section, our focus is on understanding the relationship between CEs, DTs, sustainability, and the economic security framework to determine if and how DTs can facilitate the transition to a CE.

Despite the increasing importance of the CE in contemporary discussions, reaching a consensus on a unified definition and key concepts remains challenging. To enable a successful transition to a CE in the industrial sector, it is essential to present the concept from a practical perspective, which can help firms maximize resource use, preserve value, and reduce environmental impact.

Various frameworks have been developed to conceptualize the CE, with early discourse primarily centered on the 3Rs model: Reduce, Reuse, Recycle. This model evolved into the 6Rs framework, which added Redesign, Remanufacture, and Recover to the original 3Rs. The framework was further expanded into the

9 (10) Rs model, which includes Refuse, Redesign, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle, and Recover. These hierarchical models of waste management are depicted in the butterfly diagram created by the Ellen MacArthur Foundation (2017), which differentiates between biological and technical nutrient loops through a cradle-to-cradle approach. The technical loop emphasizes activities such as reuse, refurbishment, and remanufacturing (Kirchherr, et. al 2017).

In response to the need for industrial firms to transition from linear to circular production models, the Ellen MacArthur Foundation (2017) developed the ReSOLVE framework. This framework identifies key opportunities for advancing the CE and outlines six strategic areas for action: Regenerate, Share, Optimize, Loop, Virtualize, and Exchange (Figure 1).

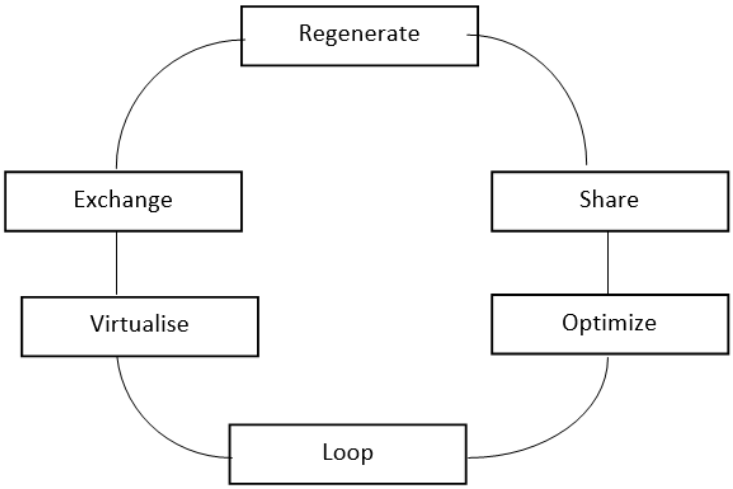


Figure 1. The ReSOLVE framework.
Source: compiled by the author based on Ellen MacArthur Foundation (2017)

Various strategies can be aligned with the six areas of the ReSOLVE framework, enabling the definition of operational actions for the CE transition. Rosa et al. (2020) provided a comprehensive and widely accepted overview of potential CE operational actions, identifying ten key aspects: Circular Business Model

as the overarching concept, DT, Disassembly, Lifecycle Management, Recycling, Remanufacturing, Resource Efficiency, Reuse, Smart Services, and Supply Chain Management. Building on the insights from Kalmykova et al. (2018) and Lewandowski (2016), the author linked these ten CE aspects to the ReSOLVE areas. This approach facilitates a clear classification of the literature according to the ReSOLVE framework.

In the following sections, the author defines digitization as the development and application of DTs that interconnect and enhance other technologies and processes. This term encompasses a broad spectrum of technologies and buzzwords, including information and communication technology, Industry 4.0, big data, robotics, artificial intelligence, smart systems, and machine learning. This broad definition is maintained intentionally – both to capture the wide range of applications and because there is no universally accepted definition of digitization or its limitations which would be sufficient for addressing the research questions in this paper.

Sustainable development is another concept that is difficult to operationalize due to its ambiguity and complexity. However, for simplicity, in this context it involves balancing economic, social, and environmental objectives. The underlying assumption is that current systems promote economic growth at the expense of social cohesion and ecological boundaries, thus hindering sustainable development. Consequently, a paradigm shift – a transformation of societal systems – is necessary to promote sustainable development. Internationally, this is encapsulated in the 17 Sustainable SDGs. Scientifically, this is often interpreted through the lens of planetary boundaries, suggesting that societal and economic systems need realignment (Steffen et al. 2015). These concepts, while complex, are translated into a more tangible framework in this context through the CE concept.

Transitioning to a CE for Economic Security: a Sustainable Development Approach Enhancing resilience to emerging challenges and achieving sustainable

economic growth are critical priorities for any economic entity. Therefore, the strategy of countering external factors involves modernizing industrial development to transition towards a resource- and energy-efficient economy.

Several key factors underscore the importance of this transition in Europe:

- Increased frequency of environmental disasters: situations such as large-scale fires, land flooding, building destruction, the pollution of ground and surface water, and gas emissions into the atmosphere critically impact economic security.
- Escalation of external aggression: actions by entities such as the Russian Federation and China disrupt developmental balance and threaten national security.
- Acceleration of technological progress and digitalization: rapid advancements and innovations deepen technological gaps and heighten competition among producers of material goods at both the national and global levels.

Given these circumstances, it is essential to analyze ongoing changes amidst growing threats to the economic security of EU countries and the simultaneous impact of the environmental crisis. This requires examining the main characteristics of the factors shaping the CE and its role in strengthening economic security.

The prevailing linear economic model of "take, make, dispose" relies on abundant resources and energy, making it incompatible with the reality of finite natural resources. Many strategies for sustainable development focus on increasing efficiency, but these often merely delay the inevitable and are frequently offset by rebound effects (EMAF, 2016, p. 18). In light of a growing global middle class with increasing consumption and waste, a new economic model is urgently needed. The CE, which aims to reduce dependency on finite resources, has gained significant attention as a promising approach to operationalizing sustainable development. This model replaces the linear "end-of-life" concept with a circular approach, where materials are reduced, reused, recycled, remanufactured, or

recovered throughout the production and consumption processes (Kirchherr, et. al 2017). The CE represents a paradigm shift, fundamentally rethinking our existing economic systems and the concepts of value creation and waste. Its ultimate goal is to decouple economic growth from finite resource extraction by facilitating effective flows of different resources (e.g., energy, materials, labor, information).

In an ideal CE, waste ceases to exist as production and consumption cycles are fully closed, allowing materials to be continuously cycled back into technical or biological systems. While the concept promises many solutions to current challenges, practical implementation often falls short. For instance, although Germany is considered a pioneer in recycling and the use of secondary materials, in 2022, approximately 60% of the raw materials used in industrial production were sourced from recycling processes, with the remainder still derived from primary materials (Umweltbundesamt, 2023).

The introduction of a CE is an opportunity to ensure a safe environment, fair labor conditions and remuneration, reduced energy dependence, etc. In addition, global practice shows that it is impossible to ensure economic sustainability without addressing social and environmental issues. These are systemic changes that affect the entire economy and cover all products and services. It should be noted that the environmental component is important in ensuring economic sustainability and strengthening economic security, which is emphasized by many researchers and public figures. For instance, Heiets et al. (2006) argue that the criteria for assessing economic security should include natural resource potential, the efficiency of its use and development, indicators of economic competitiveness, territorial and economic space integrity, the ability to withstand external and internal economic threats, and quality of life (including environmental conditions). Hrybinenko (2020) suggests that economic security criteria should be expanded to include indicators that account for environmental factors of growth,

such as life expectancy, the level of technogenic load on the environment, GDP energy intensity, energy efficiency, the share of renewable sources in energy consumption, ecological stability, air quality, and water quality. Potapenko et al. (2013) improved the system of state economic security indicators by including environmental indicators and indicators of natural resource use. They argue that the natural resource component is a "reserve" for economic security and improves the overall economic security index. Brüggeman (2019) highlights that the relentless increase in global resource consumption is a major cause of climate change and biodiversity loss. He advocates for a CE as a means to make economic management more sustainable and competitive by designing production systems as closed loops to minimize waste and emissions. Lee et al. (2021) analyzed policies on the circular economy and resource security, emphasizing the importance of managing critical raw materials and minerals for sustained economic growth. They argued that the CE and resource security should be integrated to effectively manage these essential resources.

To summarize the developments mentioned, environmental indicators within the CE play a crucial role in the economic security system. They are closely linked with other elements such as economic, social, and legal factors, which together enhance the national economy's resilience to environmental threats. The significant impact of the CE on economic security is further highlighted by its characterization as a regenerative system. This system aims to minimize resource input and output costs, material waste, pollutant emissions, and energy losses by slowing down, closing, and narrowing material and energy loops.

The achievements of countries we can see in the Climate Change Performance Index (CCPI) – developed by Germanwatch, the New Climate Institute, and the Climate Action Network – which provides a detailed assessment of climate protection performance across 63 countries and the EU (Germanwatch, 2024). This index evaluates four main categories: Greenhouse Gas Emissions (40% of the

overall score), Renewable Energy (20%), Energy Use (20%), and Climate Policy (20%). For visibility, the author selected 14 countries (Eastern and Western Europe, the USA, Australia, and Turkey).

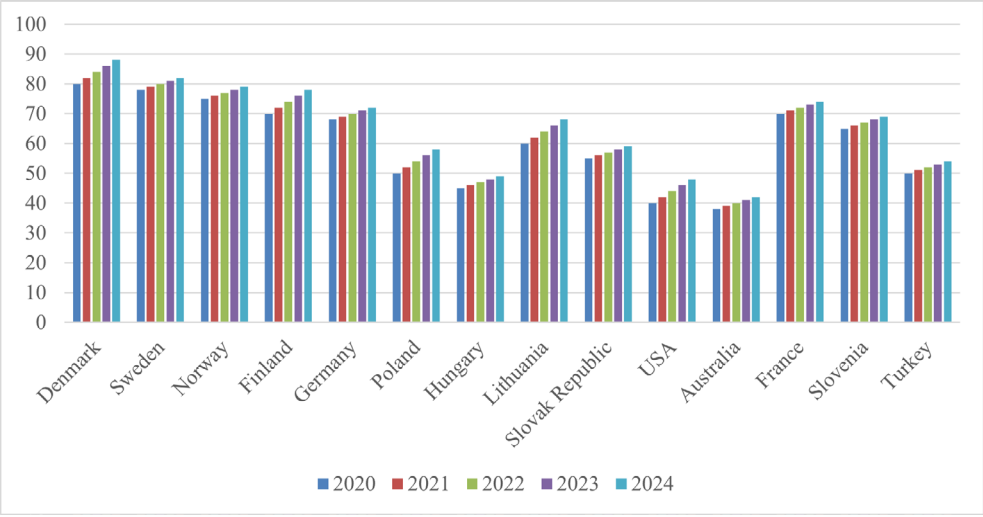


Figure 2. The dynamics of selected countries' rankings in the fight against climate change (2020–2024)

Source: compiled by the author based on Germanwatch, Climate Change Performance Index (CCPI), 2020–2024

The overall trends in Figure 2 suggest that while some countries like Denmark and Sweden have made significant strides, others have shown stagnation or minimal improvement. This variability highlights the differing levels of commitment and capacity among nations to addressing climate change. The countries that perform well generally have strong climate policies and invest significantly in renewable energy and energy efficiency. This underscores the importance of innovative and stringent policy measures in driving climate action. Moderate and low performers need to accelerate their efforts to catch up with the high performers. This involves not only setting ambitious targets, but also implementing robust policies and investing in sustainable technologies.

In Table 1, we can observe the primary criteria of the CCPI Index for 2024. These criteria include the reduction of greenhouse gas emissions, which is a

critical measure of a country's efforts to mitigate climate change. Another key criterion is the development of renewable energy sources, reflecting the transition from fossil fuels to more sustainable options. Additionally, the index assesses energy consumption, considering how efficiently energy is utilized across various sectors. Lastly, the effectiveness of climate policy and its dynamics is evaluated, examining how well policies are implemented and their impact on long-term climate goals.

CE assessment tools are designed to measure the value generated by a circular system. These tools help identify the most suitable circular strategy or determine if implementing a circular strategy will enhance the sustainability of an existing system. The indicators used in CE assessments can be categorized into two groups. The first group comprises methods that provide multiple indicators to evaluate various aspects of a system's circularity, which can be customized to specific cases. The second group uses a single indicator, such as a resource potential indicator, to assess circularity (Hrybienko, 2020).

Table 1. Ranking of selected countries in the fight against climate change in 2024

Source: compiled by the author based on Germanwatch, Climate Change Performance Index (CCPI), 2024

Country	GHG Emissions Reduction	Renewable Energy Development	Energy Consumption	Climate Policy Effectiveness
Denmark	High	High	Medium	Medium
Sweden	Medium	High	Medium	High
Norway	Medium	Very High	Low	Medium
Finland	Medium	High	Low	Medium
Germany	Medium	Medium	Medium	Medium
Poland	Low	Low	Low	Low
Hungary	Low	Low	Low	Low
Lithuania	Medium	Medium	Medium	Medium
Slovak Republic	Low	Medium	Medium	Medium
USA	Low	Low	Low	Low
Australia	Low	Low	Low	Low

France	Medium	Medium	Medium	Medium
Slovenia	Medium	Medium	Medium	Medium
Turkey	Low	Medium	Medium	Medium

The European Commission's CE monitoring framework includes ten indicators, some of which are further divided into sub-indicators. These ten indicators are grouped into four thematic areas (European Commission, 2022):

1. Production and Consumption. This area includes indicators of self-sufficiency in raw materials for EU production, green public procurement (focusing on financing aspects), waste generation (highlighting consumption aspects), and food waste.
2. Waste Management. This includes recycling rates (the proportion of waste that is recycled) and specific waste streams (such as packaging waste, biowaste, e-waste, etc.).
3. Recycled Materials. This area is measured by two indicators: the contribution of recycled materials to the demand for raw materials, and the trade in recycled materials between EU Member States and the rest of the world.
4. Competitiveness and Innovation. This includes indicators for private investment, job creation, gross value added, and patents related to recycling and secondary raw materials.

In the author's opinion, an additional area of ensuring economic security is the introduction of circular production principles alongside the introduction of digitalization.

The significant potential of digitization to accelerate the circular transformation of the economy has a notable impact on sustainable development. The Wuppertal Institute, an international think tank specializing in sustainability research and transformation processes, highlights the central challenges for advancing a CE: the availability of information and the lack of networking among key stakeholders (Wilts & Berg, 2018, p. 136). They identified four main barriers, which can be described from the economic security perspective (Wilts & Berg, 2018):

1. Quality and Quantity of Data: Inadequate information on secondary materials undermines market confidence and disrupts supply chains, which can lead to increased costs and supply shortages. Reliable data is crucial for maintaining stable and secure economic operations, as it ensures that materials can be sourced efficiently and at predictable prices.
2. Transaction Costs: High transaction costs reduce the competitiveness of secondary materials compared to primary materials. This can result in higher operational costs for businesses, ultimately impacting their profitability and economic stability. Reducing these costs through standardized processes and better marketplaces can enhance economic security by making circular practices more economically viable.
3. Externalities: When environmental and social costs are not internalized in the price of materials, it distorts market signals and leads to overconsumption of primary resources. This unsustainable practice can deplete natural resources and create long-term economic vulnerabilities. Incorporating these external costs into pricing encourages the use of more sustainable materials, thereby enhancing long-term economic resilience.
4. Product Design: Products that are not designed for easy recycling increase waste and the cost of the management of materials. This inefficiency can strain economic resources and lead to higher disposal costs. Improving product design to facilitate recycling can lower these costs, create new economic opportunities in recycling industries, and contribute to a more secure and resilient economy.

As previously discussed, DT primarily represents a revolution in information and communication, potentially serving as the key to bridging the gap in implementing a CE and ecological responsibility. In this scientific research, two technological and economic strategies are proposed: blockchain technology and the development of new business models. When applied effectively, these innovations could close existing gaps and generate substantial societal value.

2.3 Integrating Blockchain Technology and Innovative Business Models for CE Development – Opportunities and Risks

The effective communication of information across a company's value chain is essential for implementing a CE. One of the main challenges is providing reliable, transparent data of appropriate quality for all participants in complex, globally interconnected value chain networks (Casado-Vara et al., 2018). Blockchain technology could address this challenge by providing relevant information in real-time to all stakeholders in the network.

Blockchain, despite its complexity, can be viewed as a decentralized database where information is stored in ledgers accessible to all involved value chain partners. Transactions are cryptographically timestamped and encrypted, enhancing the quality and reliability of the data (Voloshyn, et al., 2022). This system ensures that transaction information cannot be altered without the consent of all stakeholders, allowing real-time sharing of details on material composition, processing, and production sites with both customers and producers. This increases the transparency, verifiability, and reliability of data. Supported by digital technologies like sensors or RFID, blockchain can track material flows throughout the entire product lifecycle, addressing issues of data quality, quantity, and transaction costs.

Additionally, blockchain can integrate environmental and social data into transactions, helping to factor in externalities in price calculations and decision-making.

The shift towards a CE also presents opportunities for developing new business models (EMAF & Google, 2019). These models, such as those within the Sharing Economy or Product-Service Systems (PSS), move from selling traditional products to providing utility services, fundamentally changing the value proposition (Pagoropoulos et al., 2017, p. 19). These business models aim to be profitable while significantly reducing resource intensity, thus contributing to

sustainable development. For instance, in a car-sharing model, customers pay for access to transport rather than owning the car itself, paying for the route or time rather than the vehicle.

Such models can also extend to a material level, where materials are lent and must be returned after use. This incentivizes producers to design products for easy material recovery, allowing them to be reused in new products. Digital information and communication technologies provide the necessary infrastructure for these sharing models, demanding enhanced networking and reliable real-time information exchange between stakeholders.

The potential of digitization to address existing social challenges, such as implementing a CE, is significant. However, the deployment of these technologies also brings social risks that must be preemptively considered (WBGU, 2019, p. 6).

Blockchain technology was designed to decentralize data management, preventing power concentration and abuse by eliminating intermediaries. This technology enables users to send and share information without central oversight, thereby circumventing the control of entities like search engines, social networks, or content platforms (Al-Saqaf & Seidler, 2017, p. 3). While this offers unparalleled freedom, it also creates regulatory challenges, posing a "black box" issue for public authorities (Al-Saqaf & Seidler, 2017, p. 5). The debate on data privacy thus pivots around the issue of determining who in society should have access to information and the extent of regulation necessary in virtual spaces. For blockchain technology to realize its full potential, all value chain participants must trust the technology and be willing to share sensitive production data. This requires a high degree of trust, particularly given that material composition and production processes are critical for competitive advantage. However, building such trust is challenging, especially with the risk of unequal access and the need for fast, reliable internet, which is not available in many regions involved in raw material extraction (Al-Saqaf & Seidler, 2017, p. 7). Additionally, most major technology

developers are based in Western countries, potentially embedding cultural biases and contributing to global inequality.

Implementing new business models can conflict with existing sectors. For instance, services like Uber and Airbnb have disrupted traditional taxi services and hotels, respectively. While innovation typically replaces existing products and services, Sharing Economy models often benefit from regulatory gaps, providing them with competitive advantages not available to traditional businesses (Kim, 2019, p. 24). This exploitation of regulatory loopholes can undermine fair competition and potentially harm social welfare. Moreover, virtual and sharing platforms tend to develop monopolistic tendencies due to the significant competitive advantages that they wield due to networking and economies of scale. This concentration of financial power in largely unregulated markets poses risks of monopoly abuse, which could harm both manufacturers and consumers (Demary et al., 2016, p. 66).

Digitization offers transformative opportunities for advancing a CE by enhancing transparency, reliability, and efficiency. However, these benefits come with risks, including data privacy issues, trust challenges, unequal access to technology, and potential regulatory arbitrage. Addressing these risks requires careful planning and robust regulatory frameworks to ensure that the deployment of digital technologies fosters fair competition and inclusive benefits for all stakeholders.

Conclusions

The impact of digitization is multifaceted, presenting both substantial opportunities and significant risks for social progress. Leveraging digital technologies' transformative power and rapid innovation, combined with other social transformations like sustainable development, offers a pathway to preemptively mitigate risks and direct innovation towards societal benefit. The CE exemplifies how technological advancements can support sustainable development by decoupling

resource use from economic growth. Implementing blockchain technologies and new business models demonstrates the potential of DTs to enhance information flow and communication among value chain stakeholders, thereby bridging the implementation gap in the CE concept.

However, the associated risks highlight the challenges of deploying DTs. These risks are diverse and necessitate a holistic, systemic understanding to identify and manage them effectively. Research must integrate technical perspectives with interdisciplinary or even transdisciplinary views to address these issues comprehensively. Current publications often emphasize the advantages of DT while neglecting their potential risks and adverse interactions with other societal areas. To safeguard digital innovations, future research should develop a nuanced understanding of these complex interactions, ensuring that the potential of digitization for social progress is fully realized.

Based on the content of this research, some policy recommendations can be offered:

1. Technical Standards. Continue developing technical minimum standards to harmonize data collection and ensure the interoperability of digital product documents.
2. Stakeholder Representation. Ensure a balanced representation of all stakeholder interests and include environmental, climate, and sustainability sciences in developing standards for circular production systems.
3. Public Registers. Establish a public register of product documents to ensure easy access for all stakeholders.
4. Sustainability Indicators. Require vendors and online marketplaces to display product sustainability indicators, enhancing transparency and consumer awareness.

By addressing these policy recommendations, we can harness DTs to support a CE, fostering sustainable development and ensuring economic security.

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3.4. The right to education – is it achievable in the modern age of technology in the context of pandemics and armed conflict?

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Abstract. *This research outlines and analyzes the implementation of the right to education in practice. The rapid development of digital technologies, especially in the area of communication, hugely affects the education system in many countries. New tools have invaded the education system, starting from preschool education institutions and ending with advanced training and learning-for-life programs. The bulk of research on advanced technology and human rights has been and remains focused on the possible threats to human rights that can be caused by new technologies, especially in the area of communication. However, this area of research must be considered from the perspective of the implementation of the right to education through distance/online learning, especially during pandemics or armed conflict. This question might be simple at first glance – all one needs to do is connect to the Internet and begin their studies. However, this is easier said than done.*

The right to education has been recognized as a human right in several international conventions, and is enshrined in the constitutions of many countries. Although the Russian Federation's invasion of the territory of Ukraine in 2014 (and later full-scale invasion on February 24, 2022) and the COVID-19 pandemic brought more

challenges to the practical implementation of the abovementioned right for different age groups, they mostly affected children and young people. This is true in both Ukraine and other parts of the world where armed conflicts are still ongoing.

Due to these events, distance/online learning became widespread around the world in an instant. At the same time, this triggered the creation or significant improvement of preexisting learning platforms and the application programs designed for distance/online studies. This fostered the adoption of new technologies in the relatively conservative area of education, especially at the primary and secondary levels. The most significant challenge for Ukraine's social policy is and will remain the implementation of the right to education.

The Internet is in private hands in many countries, and states have very few instruments with which to force the private sector, especially Internet service providers, to change their business-oriented models into those serving the public good. Thus, how should a country's government act when its citizens cannot afford Internet services and cannot obtain computers, including software and applications needed for learning? The latter may include Microsoft Office (MS Word, Excel, PowerPoint, Teams, or One Note), Zoom, and Webex applications used for teleconferencing, telecommuting, etc. This creates an additional obligation for the state: to ensure free and rapid access to the Internet with software suitable for distance/online learning.

The right to access the Internet is moving towards obtaining a status alongside other fundamental rights. This raises further questions: How are countries' education systems to cope with this challenge? Is a state obliged to provide free internet access and equipment (hardware and software for distance/online learning) to socially vulnerable (e.g., poor or disabled) parts of society? It is one thing to publicly declare that the right to education is free and available for everyone and to enshrine it in law, but it is quite another to implement the abovementioned right into practice.

***Keywords**: The Constitution, the right to education, the Internet, new technology, the right to Internet access, socially vulnerable parts of society.*

Introduction

This paper aims to analyze the right to education and its implementation in practice on behalf of socially vulnerable persons. The novelty of this paper is the fact that this type of research has not been carried out yet in the Baltic States.

The right to education has been recognized as a human right in several international conventions and enshrined in the constitutions of many countries. However, the COVID-19 pandemic and armed conflicts have posed more challenges to the implementation of the abovementioned right. This triggered the creation or significant improvement of preexisting learning platforms and applications designed for distance/online studies, fostering the creation of new technologies in the relatively conservative area of education. Distance/online learning platforms instantly become popular, and were temporarily the only accessible method of education around the world.

According to international conventions and national laws, almost every country is obliged to guarantee the right to education. This creates a series of additional obligations for the state – to ensure free and rapid access to the Internet, to provide equipment and software, etc.

The right to Internet access is moving towards obtaining a status alongside other fundamental rights (Mildebrath, 2021). As Internet service providers are in private hands, the question of how a country should act when its citizens cannot afford Internet access emerges.

Methodology

The object of this paper is the implementation of the right to education for socially vulnerable parts of society. To assess this phenomenon, the following tasks were set:

– provide an overview of the provisions of international and national laws on the right to education;

- provide an overview of the provision of national laws (the Republic of Lithuania) on the right to education for some socially vulnerable groups of society: children from low-income families and disabled persons;
- analyze the implementation of the right to education for persons from low-income families;
- reveal the challenges that were faced by state education institutions during the implementation of the above-mentioned rights during the COVID-19 pandemic;
- propose possible solutions for resolving problems in the implementation of the right to education.

During the preparation of this paper, the author used a range of methods to analyze and assess three main research trends. Firstly, international, and national laws regulate the right to education, and particularly access to education for socially vulnerable parts of society – children from economically disadvantaged backgrounds and disabled persons. Secondly, the question of how the right to education is implemented in practice through the analysis of national laws on the implementation of the right to education for some parts of society in the Republic of Lithuania. Third, the implementation of the right to education during the COVID-19 pandemic.

The following research methods were used: content analysis, textual analysis, archival research, semi-structured and unstructured interviews, survey, analytic induction, comparative research, field observation, and analysis of statistics.

The author used basic methods for primary and secondary data collection. The collection of primary data leads to both quantitative and qualitative study, allowing the empirical, analytical, and interpretative research methods to be used. Secondary data is data that has been previously collected or gathered. This type of data is already available in different forms from a variety of sources – both internal and external. All data for preparing this paper was obtained from open

sources of information such as official websites. All respondents to the interviews and surveys were informed about the objective of the research, and tasks and questionnaires were presented to them.

The author presents the results of a survey conducted in different European Union Member States and third countries (for example, Ukraine and the United Kingdom). The target respondents were academic staff, students (from universities, academies, colleges, gymnasiums, and secondary schools), and representatives of NGOs involved in advanced education processes. Google Forms was used for the creation of the questionnaire and for the collection and analysis of data.

International and national laws and the right to education

The right to education is very important for the exercise of all other human rights enshrined in international conventions. It strengthens personal integrity and shapes the society in which we live. Education makes a human being civilized by making mankind literate in fundamental universal values. If we have a well-balanced education system, we have an excellent entry point for future prosperity.

Nelson Mandela (2003) said that education is the most powerful weapon that one can use to change the world, and the Mindset Network is a powerful part of that world-changing arsenal, promoting individual freedom and progress in the society. Famous thinkers and philosophers of the European Enlightenment, for example John Stuart Mill, highlighted the importance of education for the development of mankind.

The right to education has been recognized as a human right in a number of international conventions and declarations, including: the 1948 Universal Declaration of Human Rights, the 1950 European Convention on Human Rights and Fundamental Freedoms, the 1966 International Covenant on Civil and Political Rights, the 1989 Convention on the Rights of the Child, and the 1990 World Declaration on Education for All. These signed and ratified international conventions are legally binding agreements that operate in accordance with the provisions of

many countries' main law: the constitution. For example, Article 138 of the Constitution of the Republic of Lithuania, adopted by the citizens of the Republic of Lithuania in the Referendum of 25 October 1992, declares that international treaties ratified by the Seimas of the Republic of Lithuania shall be a constituent part of the legal system. Similarly, Article 85 of the Ukrainian Constitution (1996) on the powers of the Verkhovna Rada (parliament) of Ukraine grants consent by law to the binding character of international treaties on Ukraine.

The International Covenant on Economic, Social and Cultural Rights entered into force on 3 January 1976 and recognizes a right to free, compulsory primary education for all, an obligation to develop secondary education accessible to all via the progressive introduction of free secondary education, as well as an obligation to develop equitable access to higher education, ideally via the progressive introduction of free higher education. As of 2021, 171 states (the author notes that 193 states are members of the United Nations) were parties to the Covenant.

The right to education is reflected in: Article 26 of the Universal Declaration of Human Rights; the 1960 UNESCO Convention against Discrimination in Education; Articles 13 and 14 of 1966 the United Nations International Covenant on Economic, Social and Cultural Rights; the 1981 Convention on the Elimination of All Forms of Discrimination Against Women; Article 28 of 1989 the United Nations Convention on the Rights of the Child; and Article 24 of 2006 the United Nations Convention on the Rights of Persons with Disabilities.

Article 26 of the Universal Declaration of Human Rights (1948) declares that (1) "everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all based on merit. Moreover, (2) education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It

shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace. (3) Parents have a prior right to choose the kind of education that shall be given to their children."

Article 13 of the International Covenant on Economic, Social and Cultural Rights (1966) declares that (1) "the States Parties to the present Covenant recognize the right of everyone to education. They agree that education shall be directed to the full development of the human personality and the sense of its dignity and shall strengthen the respect for human rights and fundamental freedoms. They further agree that education shall enable all persons to participate effectively in a free society, promote understanding, tolerance, and friendship among all nations and all racial, ethnic, or religious groups, and further the activities of the United Nations for the maintenance of peace. (2) The States Parties to the present Covenant recognize that with a view to achieving the full realization of this right:

(a) Primary education shall be compulsory and available free to all;

(b) Secondary education in its different forms, including technical and vocational secondary education, shall be made generally available and accessible to all by every appropriate means, and in particular by the progressive introduction of free education;

(c) Higher education shall be made equally accessible to all, on the basis of capacity, by every appropriate means, and in particular by the progressive introduction of free education;

(d) Fundamental education shall be encouraged or intensified as far as possible for those persons who have not received or completed the whole period of their primary education;

(e) The development of a system of schools at all levels shall be actively pursued, an adequate fellowship system shall be established, and the material conditions of teaching staff shall be continuously improved."

Article 28 Convention on the Rights of the Child (1989) declares that "1. States Parties recognize the right of the child to education, and with a view to achieving

this right progressively and on the basis of equal opportunity, they shall, in particular:

(a) Make primary education compulsory and available free to all;
(b) Encourage the development of different forms of secondary education, including general and vocational education, make them available and accessible to every child, and take appropriate measures such as the introduction of free education and offering financial assistance in case of need;
(c) Make higher education accessible to all on the basis of capacity by every appropriate means;
(d) Make educational and vocational information and guidance available and accessible to all children;
(e) Take measures to encourage regular attendance at schools and the reduction of drop-out rates."

The right to education in Article 13 of the International Covenant on Economic, Social and Cultural Rights (1999) declares that education is both a human right in itself and an indispensable means of realizing other human rights. As an empowerment right, education is the primary vehicle by which economically and socially marginalized adults and children can lift themselves out of poverty and obtain the means to participate fully in their communities. Education has a vital role in empowering women, safeguarding children from exploitative and hazardous labour and sexual exploitation, promoting human rights and democracy, protecting the environment, and controlling population growth. Increasingly, education is recognized as one of the best financial investments states can make. But the importance of education is not just practical: a well-educated, enlightened, and active mind, able to wander freely and widely, is one of the joys and rewards of human existence.

A similar provision on the right to education is contained in the European Convention on Human Rights (1950), the EU Charter of Fundamental Rights (2012), and other EU legal acts. For example, Article 2 of Protocol No. 1 to the

European Convention on Human Rights declares that no person shall be denied a right to an education (European Court of Human Rights, 2024).

Article 40 of the Constitution of the Republic of Lithuania declares that education shall be compulsory for persons under the age of 16. Education at state and municipal general education schools, vocational schools, and schools of further education shall be free of charge. Higher education shall be accessible to everyone according to individual abilities. Citizens who perform well in their studies shall be guaranteed education at state schools of higher education free of charge. The Law on Education of the Republic of Lithuania (1991) regulates the abovementioned provision on the right to education in detail.

Case law of the European Court of Human Rights (ECHR), Court of Justice of the European Union (CJEU), and Federal Court of Germany related to the right to education and the right to Internet access

The right to education covers the right of access to educational institutions. The ECHR, in the *Case "Relating to certain aspects of the laws on the use of languages in education in Belgium" v. Belgium (merits)* (1968, § 32), ruled that "the enjoyment of the right to education as the Court conceives it, and more precisely that of the right of access to existing schools, is not therefore on the point under consideration secured to everyone without discrimination on the ground, in particular, of language."

In *Velyo Velev v. Bulgaria* (2014, §§ 31–32), the ECHR ruled that "as regards the right to education, while Article 2 of Protocol No. 1 cannot be interpreted as imposing a duty on the Contracting State to set up or subsidize particular educational establishments, any State doing so will be under an obligation to afford effective access to them. Put differently, access to educational institutions existing at a given time is an inherent part of the right set out in the first sentence of Article 2 of Protocol No. 1 …. This provision applies to primary, secondary, and higher levels of education …. The Court however recognizes that, despite its

importance, the right to education is not absolute, but may be subject to limitations. … Although the final decision as to the observance of the Convention's requirements rests with the Court, "the **Contracting States enjoy a certain margin of appreciation in this sphere** …."

In *Cengiz and Others v. Turkey* (2015, §§ 49, 52), the ECHR ruled that "the Internet has now become one of the principal means by which individuals exercise their right to freedom to receive and impart information and ideas, providing as it does essential tools for participation in activities and discussions concerning political issues and issues of general interest. ... Moreover, as to the importance of Internet sites in the exercise of freedom of expression, 'in the light of its accessibility and its capacity to store and communicate vast amounts of information, the Internet plays an important role in enhancing the public's access to news and facilitating the dissemination of information in general'. User-generated expressive activity on the Internet provides an unprecedented platform for the exercise of freedom of expression …."

In *Jankovskis v. Lithuania* (2017) the ECHR stated that "the website to which the applicant wished to have access contained information about learning and study programs in Lithuania, and it was not unreasonable to hold that such information was directly relevant to the applicant's interest in obtaining education, which was in turn relevant for his rehabilitation and subsequent reintegration into society." The Court also observed that the Internet played an important role in people's everyday lives since certain information was exclusively available on the Internet.

The CJEU, in its preliminary ruling in case C-830/18, ruled that "Article 7 (2) of Regulation the European Union No. 492/2011 of the European Parliament and of the Council of 5 April 2011 on freedom of movement for workers within the Union must be interpreted as meaning that national legislation which makes the payment of school transport costs by a Land subject to a requirement of residence

in the territory of that Land constitutes indirect discrimination, in that it is intrinsically liable to affect frontier workers more than national workers. Article 7(2) of Regulation No 492/2011 must be interpreted as meaning that practical difficulties linked to the effective organization of school transport within a Land do not constitute an overriding reason in the public interest that can justify a national measure categorized as indirect discrimination."

Finally, in 2013, the Federal Court of Justice in Karlsruhe (Germany, Case No. III ZR 98/12) ruled that the Internet is an "essential" part of life.

Access to education for socially vulnerable parts of society

Human rights are inherent to every human being from the beginning of life until its end. This idea is embodied in the United Nations Universal Declaration on Human Rights. Article 1 declares that "all human beings are born free and equal in dignity and rights." However, at different stages of human life, these rights obtain different peculiarities, so children's rights differ from the rights of adults or those of disabled persons. The main international document on the protection of disabled people is the United Nations Convention on the Rights of Persons with Disabilities and its Optional Protocol (hereinafter the UN Convention), which was adopted by the United Nations General Assembly on December 13, 2006, and entered into force on May 3, 2008. Lithuania is a signatory to and participant of the above-mentioned Convention. The UN Convention builds upon and works in synergy with other international legal acts related to disabled persons: Standard Rules on the Equalization of Opportunities for Persons with Disabilities (1994), and the World Program of Action on Disabled Persons (1982) (not legally binding treaties). The UN Convention does not explicitly define disability, but the preamble states that "disability is an evolving concept," and that "disability results from the interaction between persons with impairments and attitudinal and environmental barriers that hinder full and effective participation in society on an equal basis with others." Article 1 of the UN Convention

states that "persons with disabilities include those who have long-term physical, mental, intellectual, or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others."

In 2015, world leaders adopted a declaration on 17 integrated Sustainable Development Goals (SDGs) with 169 targets (United Nations, 2015). This paper focuses on SDG 4 (advancing the right to education) and SDG 9 (ensuring access to education through the Internet): "Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes. 4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care, and pre-primary education so that they are ready for primary education. 4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational, and tertiary education, including university. …. Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. … 9.8 Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet …."

M. Heffernan said, that "accessibility in education, especially in the digital age, is an important part of the right to education. Accessibility in education can be viewed as a two-way mirror. On the one hand, learning material must be made more accessible to learners. On the other, learners' true abilities must be made accessible to educators if their potential is to be fully realized." At the same time, the impact of the COVID-19 pandemic on students' equity and inclusion is a test for many governments' social policies regarding the implementation of the right to education. Thus, we might ask whether all proper legal and financial conditions and grounds for accessibility in education are in place.

This paper focuses on several groups of socially vulnerable persons: children from families with low incomes and disabled persons. The Internet opens new possibilities for vulnerable groups of society to access education and implement the right to education in real life. Thus, access to the internet has become essential to achieving the right to education.

It is by now well-established under domestic and international law that the best interests of the child are a primary consideration and of paramount importance. In this regard, Article 3 of the UN Convention on the Rights of the Child provides that "in all actions concerning children … the best interests of the child shall be a primary consideration." This leads to the conclusion that a state should grant free access to the Internet to socially vulnerable groups of society. It is also in line with the position of UNICEF (2007) that the wording of the principle indicates that its scope is very wide, going beyond state-initiated actions to cover private bodies too, and embracing all actions concerning children as a group. Like transportation, Internet access can facilitate access to educational resources for learners who, due to various reasons, cannot take part in the learning process face-to-face. This is particularly relevant for disability, temporary diseases that cause limited mobility, and epidemiological situations in the country or region – for example, restrictions on movements due to the COVID-19 pandemic. In this case, the Internet and information technology facilitated learners' participation in the distance/online learning process. At the same time, access to the Internet can also help reduce costs related to textbooks and other teaching materials.

The Programme of the Eighteenth Government of the Republic of Lithuania (2020) declares that "(39.) The mission of our government in the field of education is to create education conditions where quality education for all is a practical objective and not a mere figure on paper. We will strive to ensure that every child, regardless of their place of residence, social background or special needs, has equal access to a prospective education. (40.2.) All children, regardless of

their place of residence and socio-economic background, have a level playing field and access to quality education; (50.3.) A package of technological solutions for schools. We will work out and bring before the school community simple and easy-to-use combinations of technological solutions (communication tools, video conferencing tools). We will urge municipalities to ensure that teachers and pupils have access to necessary technological tools and the Internet in schools and at home (particularly focusing on children growing up in families with needs for social services). (85.) … Some groups in society find it much more difficult to adapt and feel included. Our task as fellow citizens is to build a sensitive society that can lend a helping hand when it is most needed, to provide care that responds to real needs and to help people feel an important member in society, not a 'dependent'. Social problems must be tackled at their earliest possible stage so that we can address their causes rather than their consequences. (93.1.) Availability of services to fit individual needs. We will shift the delivery of social services from one-size-fits-all to personalized services tailored to individual needs and groups of people."

Article 2 of the Law of Social Integration of Disabled People in the Republic of Lithuania (1991) defines disability as follows: "(9) Disability means long-term deterioration of health, participation in public life and reduction of activity opportunities due to the disorder of the person's body structure and functions and the interaction of unfavorable environmental factors." The definition of a person with disabilities is also provided in Article 18.16 of the Technical Requirements STR 2.03.01:2001 Buildings and Territories of the Republic of Lithuania (2010), which states that persons with disabilities are "people with impaired functions of parts of the body, including movement, visual, auditory, and manipulative disorders, that cause partial or complete restrictions for people to move around and have access to environmental elements."

The author fully supports the concept provided in the World Report on

Disability (World Health Organization, 2011) that disabled people are more disabled by society rather than by their bodies. Disability is a human rights issue because people with disabilities experience inequalities in different areas of social life – for example, when they are deprived of access to health care, employment, education, or political participation because of their disability. A range of international documents have highlighted that disability is a human rights issue, including the World Program of Action Concerning Disabled People (1982), the UN Convention on the Rights of the Child (1989), and the Standard Rules on the Equalization of Opportunities for People with Disabilities (1993). According to the Disabled World (2024) database, approximately 10% of the world's population suffer from disabilities (over 650 million people). In the EU, unemployment rate of people with disabilities is 17.4%, compared to 10.2% of people without disabilities (Grammenos, 2013).

The European Commission estimates that, including all who have a long-term physical, mental, intellectual, or sensory impairment, one in six people in the EU have a disability – or approximately 80 million individuals. Of them, some 30 million people are blind or partially sighted, according to the European Blind Union. Deaf people are far less numerous, with some 750,000 users of sign language in Europe, according to a spokesperson for the European Union of the Deaf. There are an estimated 5 million wheelchair users in Europe. Other prevalent disabilities – severe and less severe – include dyslexia, with an estimated 25 million sufferers in Europe; stuttering, with 5 million sufferers; and autism, with 3.3 million.

According to the official data of the Ministry of Social Security and Labor (2024) of the Republic of Lithuania, 230,000 people in the country had a disability in 2020. Amongst them were 15,259 children. At the same time, approximately 2.8 million people lived in Lithuania, meaning that around 8% of the population were disabled in 2020.

The preamble of the Constitution of the Republic of Lithuania states that "the Lithuanian nation strives for an open, just, and harmonious civil society and a State under the rule of law." Article 33 of the Law on Education of the Republic of Lithuania (1991) dedicated to socially vulnerable groups of society states that "(1.) The accessibility of education to socially excluded children from poor families, children of refugees, children not attending school, unemployed persons, persons who have returned from imprisonment, persons undergoing treatment for alcohol and drug addiction as well as persons failing to adapt to society shall be ensured by providing them with social services and educational assistance. (2.) The Government and municipalities shall implement target social and education programs directly or through schools. Such programs may be developed and implemented by non-governmental organizations as well as other legal and natural persons. 3. State and municipal institutions and agencies, based on the data of the registers recording residents as well as of other state and departmental registers, shall determine the number of children not attending school and their educational needs and shall, together with schools, implement target programs for the inclusion of these children in education activity."

Article 34 of the Law on Education of the Republic of Lithuania regulates access to education for learners with special educational needs, declaring that "(1.) Upon the request of the parents (guardians, curators) of a learner with special needs, conditions shall be created for him to study at a preschool education and general education school located closer to his home or at any state, municipal (regional) school designated for learners with special educational needs. The pedagogical-psychological service shall recommend a school for the child. …. (3.) A municipality in the territory of which learners with special educational needs reside shall take care of the accessibility of such learners to education. Accessibility to education shall be ensured by adapting the school's environment, providing psychological, special-pedagogical, special and social-pedagogical assistance,

supplying technical aids at schools and special teaching aids, and also in other ways prescribed in laws." According to the definition presented in Article 2 of the Law on Education, special educational needs are defined as the "need for assistance and services in the course of the training process, arising from a person's exceptional capabilities, congenital or acquired disorders, or adverse environmental factors." Congenital diseases are carried from birth and are passed from generation to generation. A congenital disorder is a medical condition that is present at the time of birth, whereas acquired diseases are acquired during the lifetime of an individual. This classification can be applicable to human beings with mental and physical health issues. A person might be granted special educational needs status based on certain procedures according to statutory law on the establishment of special educational needs, and the relevant services that a person might expect are also prescribed by laws. Parents or guardians are granted the right to compensation for acquiring a means of transport for the transportation of a person with special needs.

Article 35 of the Law on Education is designed specifically to regulate access to education for persons with limited mobility. This article states that "(1.) Children who are unable to attend a general education school due to an illness or a pathological condition shall be provided the opportunity to study at an inpatient personal healthcare institution, to study at home, to study independently and to pass examinations. The procedure for organizing the teaching of learners at inpatient personal healthcare institutions and at home shall be laid down by the Minister of Education and Science, after consultation with the Minister of Health." It is important to note that this research does not concern mental illness, only issues of limited mobility.

Article 36 of the Law on Education regulates transportation, accommodation (dormitories), and meal services for socially vulnerable students. The same article declares that "(8) Learners shall receive meals free of charge by the procedure

and in the cases laid down by the Law on Social Assistance for Pupils of the Republic of Lithuania."

Article 1 the Law on Social Assistance for Pupils of the Republic of Lithuania (2006) states that "(1.) The purpose of this Law shall be to establish the types and the amount of social assistance for pupils, as well as the conditions and the procedure for granting the assistance and financing. (2.) This Law shall apply to pupils who study at general education schools, vocational schools, pre-school education schools and with any other education provider (except for a freelance teacher) (hereinafter referred to as the 'school') according to general education (primary, basic, secondary, or special education) curricula or preschool curricula. (3.) This Law shall not apply to pupils who study according to adult education curricula and to pupils who study according to general education and vocational education curricula simultaneously."

According to part 2 of Article 4 of the Law on Social Assistance for Pupils, the following types of expenses related to social assistance for pupils are outlined: "1) expenses for products (including the value-added tax for the acquired goods) when pupils are provided with free meals; 2) expenses for school supplies (including the value-added tax for the acquired goods); 3) expenses for cooking of meals (wages of employees of the providers of catering services directly related to the provision of free meals for pupils, state social insurance contributions, utility expenses, etc.); 4) expenses for administration of social assistance for pupils (wages of employees of institutions administering such assistance and employees of schools responsible for the provision of such assistance, state social insurance contributions, communications expenses, postal expenses, etc.)."

However, no clear stipulation on expenses related to telecommunication services (the Internet), computers, system software, or applications for the educational needs of such pupils exists. These expenses thus do not meet the requirements prescribed in subparagraphs 1 and 2 of paragraph 2 of this Article, leaving a

wide area for various interpretations from state players in the social policy sphere.

The author proposes the inclusion of telecommunication (internet) services, a computer, system software, and applications for the educational needs of socially vulnerable parts of society – students from families with low incomes per capita – into subparagraph 2 of part 2 of Article 4 of the Law on Social Assistance for Pupils.

According to the Law on Social Assistance for Pupils, social support is provided exclusively for children from low-income families studying at general education schools, vocational schools, preschool education establishments, and other establishments designed to educate children according to general education (primary, basic, secondary, or special) or pre-primary curricula, except for curricula for adults. However, social assistance cannot be provided for the cases outlined in the above-mentioned law.

Clearly, some provisions of the Law on Social Assistance for Pupils must be amended regarding expenses related to telecommunication (internet) services, a computer, applications, and system software for educational needs.

Another important issue is the criteria by which decision-makers grant social assistance to a student. The national lawmaker set one criterion in part 1 of Article 5 of the Law on Social Assistance for Pupils: monthly income per family member (including all persons living together). From January 1, 2022, this amount is €193.50 per family member. The above-mentioned provision uses the following wording: "if monthly income per family (persons living together) member is less than the amount of 1.5 state support incomes" (hereinafter SSI; author's note – €193.50). This is the case except for in cases prescribed in part 2 of the abovementioned law, where the amount of money is expressed in the wording "less than 2 amounts of the SSI." This indicator is reviewed annually.

During the interviews, some respondents who work at general educational institutions expressed their doubts regarding this criterion. According to their

opinion, it does not reflect the reality due to rising prices for food, transportation, different types of services, etc. The author's opinion is that this criterion must be more flexible and more humanistic, not just a mathematical expression of numbers. It is not difficult to imagine a situation in which a family attempts to receive social assistance for a child and submits all required documents, and after calculating the incomes of the family members a state official makes a decision that the child cannot be granted social assistance because the monthly income per family member exceeds €193.80. This example is faced by many in their daily lives, and gives rise to a series of questions. For example, what about social justice – is the government's social policy oriented towards protecting socially vulnerable parts of society? This could be a separate topic of research.

Article 8 of the Law on Social Assistance for Pupils declares that "(1.) The sum in the amount of 2 base social security benefits per pupil per calendar year shall be allocated for the purchase of school supplies (including the value-added tax on the purchased goods). (2.) Where a pupil is raised in the family at social risk, or a pupil is raised persons also experiencing social risk, the individual learning materials shall be included in the sets of school supplies by a list of individual learning materials approved by the Ministry of Education, Science and Sports of the Republic of Lithuania. The sets of school supplies shall be compiled for each pupil according to his individual needs, considering the number of children raised in the family who attend school, the school supplies already obtained and in accordance with the procedure for the assistance for acquisition of school supplies approved by a municipal council." According to the State Social Insurance Fund Board under the Ministry of Social Security and Labor of the Republic of Lithuania, the amount of basic social security benefits in 2024 was €55.00 (Sodra, 2024).

Technological and financial aspects of the implementation of the right to education.

Technology has become a powerful tool that affects human rights, but a lot depends on how modern technology is used. For example, 4th- or 5th-generation cellular technologies can be very intrusive regarding a person's privacy or can be very useful for the implementation of the right to education.

The famous proverb that "every stick has two ends" is particularly appropriate here, as it reminds us that the same tool can be looked at from different perspectives – in this case, 5th generation cellular/mobile technology (hereinafter 5G technology). This is an important tool in our lives, as many of us cannot imagine our daily routines without a smart mobile phone. Wider access to the internet, the massive number of smart phone users, and the development of social media tools have enabled us to spread messages more quickly and to broader audiences. Emerging technologies, particularly in communication, may significantly expand the availability and quality of data, upon which we can make informed decisions for the benefit of society (Bloomer, n.d.). Moreover 5G will lead to average download speeds of up to 1 Gbps, meaning that users can download huge amounts of data in a matter of seconds. In short, 5G technology can quickly transfer vast amounts of information/metadata from one point to another, despite locations and the distances between them (Buciunas, 2020). This makes this technology extremely attractive for educational needs, especially when emergencies arise – for example, the restriction of movement due to the COVID-19 pandemic. At the same time, however, this may enable criminals to attack socially vulnerable persons.

When looking for a suitable target, many different things can influence an offender/perpetrator in making this decision. The easiest target for achieving this goal is a person with a disability. The fact that disabled persons are more often targets of criminal acts has been proven by research in the UK and the USA.

For example, according to the U.S. Department of Justice (2021) data, in 2019, the rate of violent victimization against persons with disabilities was nearly four times the rate for persons without disabilities in the USA (49.2 compared to 12.4 per 1,000 age 12 or older).

Socially vulnerable groups are also more often targets for cybercriminals. Cyberattacks hit schools and colleges harder than any other industry during the pandemic. According to Microsoft's (n.d.) data on global threat activity, from August 14 to September 12, 2021, educational organizations were the most heavily affected industry in the USA, and were targeted by over 5.8 million malware attacks – or 63% of all such incidents. According to data from the State of Ransomware Report (EMSISOFT, 2020), ransomware attacks alone impacted 1,681 US schools, colleagues, and universities in 2020. Globally, 44% of educational institutions were targeted by such attacks.

This leads to the conclusion that states must pay more attention to cyber hygiene training for all online users, especially children and disabled persons.

The Digital Education Action Plan was put forward by the European Commission in October 2020 as an EU-wide strategic vision for achieving high-quality, inclusive, and accessible digital education in the period from 2021 to 2027. It also represents a call to action for stronger collaboration between a variety of stakeholders in the European landscape.

In 2020, 82% of households in Lithuania had access to the internet (Statista, 2024). This meant that household access to the internet in Lithuania had not increased since 2019. The overall share of households in Lithuania with internet access was 9% lower than the European Union average (EU-27) in 2020. According to data from the Communications Regulatory Authority of the Republic of Lithuania, 91 legal entities/companies are included in the list of Internet service providers.

In 2020, the Government of the Republic of Lithuania approved the 5G

Development Guidelines of Lithuania for 2020–2025, initiated by the Ministry of Transport and Communications. Their purpose is to safeguard the gradual and controlled development of the 5G connection through an effective legal and investment environment in Lithuania.

According to data from the Communications Regulatory Authority of the Republic of Lithuania (hereinafter CRA) in 2019, the Telia Lietuva telecommunications company retained first position in the field, with an average data transmission speed of 76.22 Mbps across its network. The measurement of mobile Internet speed is affected by such factors as location, time, measuring equipment used, network occupancy and its parameters, and, ultimately, the layout of base stations and even weather conditions. Sometimes it is enough to repeat measurements at the same place several times, and their results may vary considerably. Therefore, the larger the sample size, the more accurately it reflects the actual situation countrywide, rather than in a specific region at a given time. In 2019, the absolute majority (nearly 97%) of mobile data on the Telia Lietuva network was transmitted using a 4G connection. The ratio of CRA speed measurements is even more impressive: as many as 99.3% of measurements were made on the Telia Lietuva 4G network, and the remaining mere 0.7% were connected to older generation 3G or 2G networks. According to the latest CRA data, Telia Lietuva has the most 4G base stations in Lithuania (1,382), which provides connection via 8,473 cells. The nearest competitor has a total of 1,293 4G base stations and 8,087 cells, and, according to CRA, the third-placed operator has 1,164 base 4G stations with 4,598 cells (RRT, 2020).

This research analyzes only the price of internet services, and partly touches on the financial support aspect of the state in the context of the implementation of the right to education. However, the financial aspect of the implementation of the right to education might be a separate object of research. A study was conducted in 2019, comparing the prices of the 233 largest providers of unlimited home

fiber optic Internet in 62 countries (AIN, 2019). In December 2019, according to the Speedtest.net platform, the average speed of wired Internet globally was 70 Mbps. The most frequently offered speed in most of the countries included in the study (55 out of 62) was 100 Mbps. Among the countries examined, people in South Africa pay the most for Internet at a speed of 100 Mbps – an average of 87 US $ per month, while in Lithuania this figure is just $19.73. In some Eastern European countries, users pay the least for a comfortable 100 Mbps: Ukrainians pay only $6.19 per month. High-speed 1 Gbps Internet at a cost below $20 can be found in Ukraine, Romania, Hungary, India, Moldova, and Latvia. In Russia, high-speed Internet is available at 890 Mbps, and in China, Poland and Lithuania – 600 Mbps. However, not all students can afford to pay for internet services.

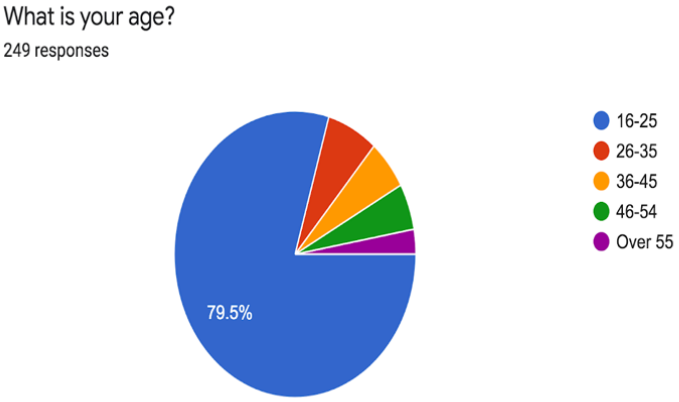
The UN is comprised of 193 sovereign states, which have equal representation in the General Assembly. Can every country afford to cover expenses for equipment, applications, and internet service for students from families with low incomes? Some can, and some cannot, due to various factors which do not always depend on the country's economic power, GDP per capita, and other indicators closely related to the country's well-being. Thus, how can a country solve the access to free Internet problem? The author contends that the solution is cooperation between private businesses (namely telecommunication companies) and the state to ensure access to the Internet for the educational needs of children and adults from socially vulnerable families. An example of cooperation in this area is the Chicago Connected Initiative. This is a program that provides no-cost, high-speed internet service to students and their families with low incomes. So far, the Chicago Connected Initiative has covered the costs of high-speed internet service from Comcast and the RCN Corporation for more than 58,000 students (Herold, 2021). This initiative is a good example of cooperation between the state and private sector on the elimination of digital apartheid in education. An additional condition for the successful implementation of the right to education is the digital

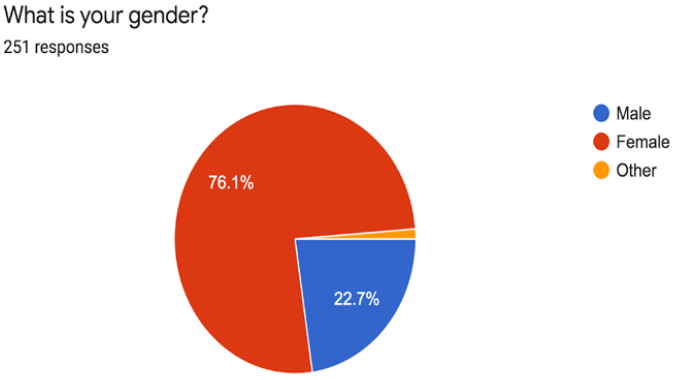
literacy of the participants in the educational process: the ability to use online applications, find information online, assess its quality and value, and make use of it in daily life. Due to the increasing number of cyber-attacks on educational institutions around the world, knowledge of cyber hygiene is becoming an important factor for each participant in the educational process. The topic of cyber hygiene could be a separate object of research, and falls outside the scope of this study. As can be observed, it is not enough to simply provide a computer, software, applications, and internet access to students, including those from socially vulnerable segments of society, for distance/online classes. Instead, this creates more obligations from the state to create proper conditions from an internet security point of view for the implementation of the right to education.

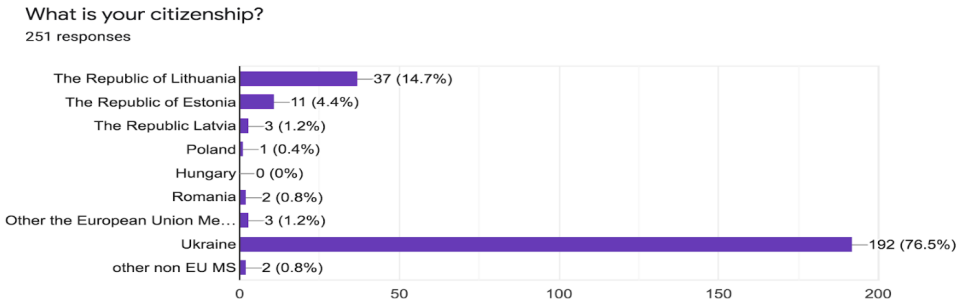
Empirical research: survey and case study (interviews, questionnaires)

This section presents the results of a survey conducted in different EU Member States and third countries. The questionnaire was created in compliance with ethical and data protection standards, and respondent anonymity was maintained during the online survey. The target respondents of the above-mentioned survey were 251 academic staff and students of educational institutions from different countries as follows: Ukraine (Odesa, Dnipro, Kharkiv universities); Lithuania (Mykolas Romeris and Vytautas Magnus universities); the Tallinn University of Technology in Estonia; gymnasiums based in Kaunas and Vilnius; a school in the Klaipėda region; and academic staff from other countries mentioned above. Google Forms was used for the creation of the questionnaire. Communication tools use to send questionnaires included emails, networks of academic institutions (for example, student organizations), and closed academic staff groups based on social networks – for example, Facebook. The author explained to the respondents the objective and tasks of the research, and provided other important and relevant information. Below is a summary of the research results presented in a number of charts. A graphical representation of data is grouped into

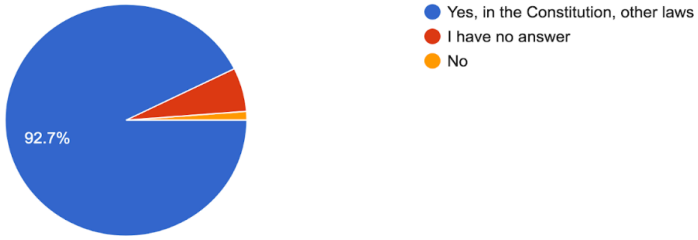
separate parts based on questions and answers.



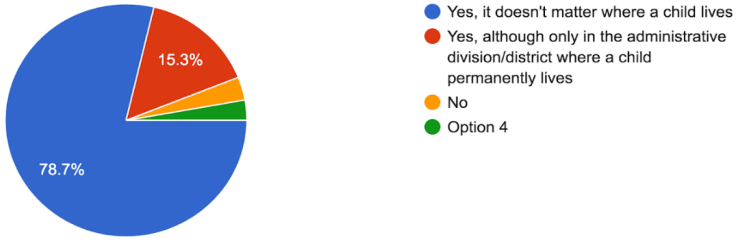




Is the right to education set up in the Constitution, other laws of your country?
246 responses

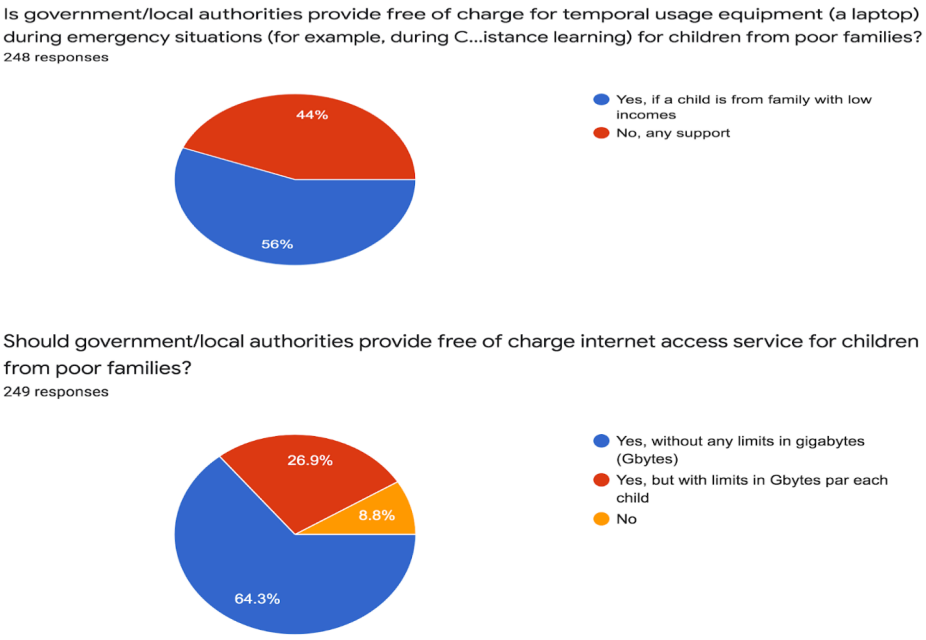


Is everyone free to choose the education institution (state) for general education?
249 responses



Is government/local authorities provide internet access for free for children from poor families during emergency situation? (According to The Unit...Child. A child is any person under the age of 18).
249 responses





At the same time, the author conducted semi-structured and unstructured interviews with three teachers and the principal working at a school in the Republic of Lithuania on the following topics: criteria for the distribution of computers at educational institutions; the installation of software and applications on the computers distributed to students; and payment for Internet services. This case study on the implementation of the right to education in Lithuania was implemented through semi-structured interviews, unstructured face-to-face and online interviews, and by postal correspondence with Kaunas City Municipality Administration as a reply to the author's request to provide information on some questions related to this research.

After Lithuania declared a national emergency due to the COVID-19 pandemic in March 2020 and students began distance/online learning, the Ministry of Education, Science and Sports submitted a questionnaire to schools to determine the need for computers and Internet connections for the future arrangement of a public procurement. The computers (tablets and laptops) were purchased by the

National Education Agency, implementing the "Provision of Schools with Tools for Natural and Technological Sciences" project financed by the European Union Structural Fund (code No. 09.1.3-CPVA-V-704-02- 0001), before being handed over to the Kaunas City Municipality. Due to the lack of computers on the market, they were bought in 4 stages (3, 10, 18, and 23 April 2020) and distributed to general education schools/institutions based on their priorities in proportion and according to the data provided in the questionnaire on the need for computers by general education schools/institutions.

It also should be noted that distance/online learning began before some of the computers bought through public procurement were available. Thus, the senior management of general education schools/institutions found a solution to keep the learning process on track: computers were handed over to students who did not have their own computers or smartphones. In addition, schools set their own priorities for how to distribute the computers based on certain criteria. The social context of the students was considered at first – i.e., the need for a computer. Later, other factors including low incomes per capita in the family, etc., we considered. This is a good example of granting the right to a final decision on the distribution of computers for students to the senior management of general education institutions. The benefit of this approach is that the school administration is closer to students and has a better vision and understanding of the needs of each student.

These computers were not included as new objects in the list of expenditures referred to as student expenditures, and were not part of a separate program in providing free computers to students from socially vulnerable segments of society. If several children from the same socially vulnerable family attended the school, the school made its own decisions depending on the context. Some computers (bought through public procurement) did not have any applications or software (except system software) installed, and applications were therefore installed by the school staff in charge of the information technology area at the general

education institution. The students themselves could not install the necessary application programs for the learning process. However, preschool institutions did not receive any computers. The municipality of Kaunas city does not plan to allocate targeted funding for free Internet access for students. Within the framework of the abovementioned project, mobile phone cards were received (significantly less than the number of computers received), which were valid for 2 months from the start of the activation of the SIM card. Schools addressed specific problems with Internet access in a variety of ways: using offers from companies offering promotions, looking for joint agreements with a company providing Internet access, and so on.

The Internet service provider was chosen by the schools independently. The student had the right to supplement a mobile SIM card for Internet service and communication if the amount of data access provided was not enough. According to the respondents, the students had all of the applications necessary for distance learning.

Education and crime

Otto von Bismarck paid significant attention to the development of the education system, including accessibility. This approach has paid dividends in the achievements of Germany, as the country now has a strong economy, a high level of living standards, and was one of top 10 manufacturing countries in the world in 2023 according to Safeguard Global (2024).

Russia's full-scale aggression against Ukraine caused the largest migration crisis in the Europe after the Second World War. According to the UN Refugee Agency, some 7.7 million Ukrainians remain displaced inside their home country, while another 13 million are estimated to be stranded in affected areas and unable to leave because of security risks (NPR, 2022). Of those who have been forced to flee their homes, 90% are women and children. The factors which push children

and young people into organized crime activity may be divided into individual, family, social, and environmental factors. Individual risk factors include learning difficulties and exclusion from school/education institutions, mental health issues, low self-esteem, aggressive behavior, emotional distress, and involvement with alcohol and/or drugs. Family risk factors involve problems at home such as neglect or abuse, drug or alcohol abuse, a prevailing criminal culture inside the family, economic problems, etc. Social risk factors include friends that are connected to a criminal environment, the lifestyles of the leaders of organized crime, the possibility to become rich in very short period, a lack of recreational activities, etc. Environmental factors include living in an area with a high rate of poverty, unemployment, social inequality, and a high rate of criminality in the area of living.

Children and young people experience a significant drop in income due to their parents becoming unemployed. Russia's aggression against Ukraine is an additional factor that affects the population of Ukraine, including children. As poverty is a risk factor, this means that more and more children, young people, and women could become vulnerable to being targeted by organized crime groups. Negative thoughts, losses of family members during Russia's aggression, and the feeling of not being secure bring uncertainty about the future to many Ukrainians. All of these factors make it easier for the leaders of organized crime groups to recruit and exploit children, or in other words to involve children in criminal activity – namely, the trafficking of drugs, weapons, explosive material, or other military equipment. Organized crime groups also encourage children to commit property crimes inside and outside of the country – for example, shoplifting. Criminal organizations look for children to implement their criminal plans for many reasons – for example, reducing the risk of being detected, or avoiding punishments for crime.

Calculations of organized crime are based on the provision of criminal

liability. In accordance with part 1 of Article 18 of the Criminal Code of Ukraine (2001), the subject of a crime is the natural person who committed the crime at the age from which criminal liability can arise. According to the Criminal Code of Ukraine, children up to the age of 14 do not bear criminal responsibility. Even if they commit a crime, the court can apply only coercive educational measures before the child reaches the age of criminal responsibility. The same provisions on the subject of a criminal act are enshrined in Article 13 of the Criminal Code of the Republic of Lithuania (2004) on the age of criminal responsibility. Part 1 of the above-mentioned article states that a person shall be liable under this Code if they were 16 years of age before the commission of the crime or criminal offence, or 14 years of age in the cases provided for in paragraph 2. Part 2 of Article 13 of the Criminal Code of the Republic of Lithuania states that a person who has reached 14 years of age before the commission of the offence shall be liable for: murder (Article 129); grievous bodily harm (Article 135); rape (Article 149); sexual assault (Article 150); theft (Article 178); robbery (Article 180); extortion (Article 181); destruction or damage to property (Article 187(2)); theft of a firearm, ammunition, explosives, or explosive substances (Article 254); theft, extortion, or other unlawful possession of narcotic drugs or psychotropic substances (Article 263); and damage to vehicles, roads, or equipment thereon (Article 280(2)).

Policymakers, especially during elections, are interested in fighting crime, including by shaping policy on decreasing the level of criminality in their political program. This is expressed during meetings with voters, public discussions, public speeches, and in different formats varying from leaflets to internet publications. Policymakers often focus on enforcement and punishment, but other policy mechanisms can also be effective. One policy mechanism for combating criminality amongst children might be the implementation of the right to education in manner that is not merely declarative. Researchers from different countries analyze crime and education and conclude that there exists a correlation

between education and crime. For example, Hjalmarsoon and Lochner (2004) emphasize the role of education as a human capital investment that increases future legitimate work opportunities, which discourages participation in crime. If human capital raises the marginal returns from work more than crime, then human capital investment and schooling should reduce crime. Thus, policies that increase schooling (or the efficiency of schooling) should reduce most types of street crime among adults.

Conclusions

The right to education has been recognized as a human right in several international conventions and declarations, and covers the right of access to educational institutions. The right to access the Internet is essential to achieving the right to education in the digital age.

Subparagraph 2 of part 2 of Article 4 Law on Social Assistance for Pupils of the Republic of Lithuania should be amended regarding expenses related to communication (internet) services and applications, system software, and computers for the educational needs of pupils from socially vulnerable segments of society – especially children from families with low incomes and disabled children. The criterion of monthly income per family member (including all persons living together) set up in the Law on Social Assistance for Pupils for a decision-maker when granting social assistance to a student is too narrow, and not oriented towards social justice. The criteria for granting social assistance to a pupil must be more flexible and more humanistic, not just a mathematical expression of numbers – the amount of money per family member. Despite the declaration regarding the right to education for everyone contained in the Program of the Eighteenth Government of the Republic of Lithuania (2020), the provisions of laws still lack an orientation toward social justice and the socially vulnerable segments of society.

The state also must pay more attention to cyber hygiene training for all distance/online learning users – especially children and disabled persons – during the implementation of the right to education. Cooperation between the state and the private sector on providing access to the Internet for the educational needs of students from socially vulnerable parts of society and from families with low incomes is solid ground on which to build towards the elimination of digital apartheid in education. The administration and staff of educational institutions are closer to students, and have a better perception and understanding of the needs of each student. They should be granted the right to make the final decision on the distribution of computers for students.

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3.5. The early diagnosis of catastrophic events: weak signals detection based on information field monitoring

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***Abstract**. Objective: This article explores the possibility of the early diagnosis of catastrophic events based on weak signal detection and information field monitoring. Data and Methods: Publications in The New York Times and The Guardian are*

used as a source of data. To analyze the dynamics of the information field, the concept of weak signals is applied. Text mining methods (text preprocessing, frequency analysis, word clouds) are used. Statistical methods for analyzing distributions and testing hypotheses are used to determine anomalies in keyword frequencies.

Results: The study makes it possible to confirm the assumption that the information field begins to change some time before the real onset of catastrophic events. The changes in the information field that preceded the two selected catastrophic events – the COVID-19 pandemic and Russia's military invasion of Ukraine – are analyzed. Statistically significant changes in the information field in both cases were observed long before the start of these events. It was revealed that deviations in the frequency of keyword mentions more than 4σ are anomalous, and can signal impending disasters. The assumption that it is possible to track the state of the information field through open media resources is also confirmed.

Conclusions: The results of the study confirm the possibility of using the analysis of the information field for the early diagnosis of global catastrophes. The creation of a system for monitoring the information field using the methods of machine linguistics can contribute to the timely preparation and minimization of threats to economic security.

Keywords: *catastrophes, economic security, text mining, detection, weak signals, black swan.*

Introduction

The modern world is characterized by a high degree of variability, and the number of factors that affect global processes is constantly increasing. The influence of unpredictable or difficult-to-predict factors – "black swan events" that directly determine economic security at the state level – is also growing. Over the past few years, among the most significant examples of such factors are the COVID-19 pandemic (2020) and Russia's military aggression against Ukraine (2022).

The originator of the "black swan" concept, N. Taleb, defines such events as fundamentally unpredictable (Taleb, 2012). On the other hand, I. Ansoff (1975) substantiated the need for and possibility of tracking "weak signals" in the context of increasing economic security. That is, he assumed that signals of catastrophic events can be detected some time before their actual occurrence (at least in some cases).

Despite the general similarity of views on the importance of studying global crises and catastrophes, there is no established opinion in the scientific community about the reaction to them. N. Taleb (2012) observed that it is possible to mitigate the consequences of a crisis by following the concept of "antifragility." J. Stiglitz (2018) believes that crises create new dynamics in the global economic system. For example, the 2008 financial crisis exposed flaws in the rules necessary for a stable and prosperous global economy, including the management of inevitable cross-border externalities. Jiuping Xu & Yi Lu (2018) note that it is necessary to rethink disaster management in terms of complex systems engineering. The same authors emphasize the importance of interdisciplinary research and systems thinking for disaster preparedness and relief. At the same time, it is emphasized that it is necessary to change the paradigm of the study of natural disasters towards their prevention.

Some authors, in particular Voronkova et al. (2022), put forward the idea of strategic forecasting, which is possible in the digital economy through an understanding of its global trends and processes. The same idea was independently developed by Štitilis and Laurinaitis et al. (2020). An important area of disaster management is research in the field of economic security, which makes it possible to minimize the consequences of disasters as well as to combat their occurrence. In this direction, we can also note the works of Malnar and Malnar (2015), Quinn and Cahill (2016), Huet et al. (2017), Kiseľáková et al. (2018), and Khadzhynova and Simanavičienė et al. (2022).

The problem of global catastrophes is undoubtedly important for ensuring economic security. The early identification of forthcoming transformations in the geopolitical situation will make it possible to better prepare for them, and the principal condition for ensuring economic security in these conditions is the formation of a combination of economic, social, political, cultural, and other factors that would ensure a sufficient level of stability. This corresponds to the concept of I. Ansoff (1975), but is expanded to the level of countries and regions.

At the same time, the issues of the early diagnosis of global catastrophes are poorly studied. In some cases, these events arise unpredictably, as noted by N. Taleb (2012) – for example, the crisis caused by the Evergiven container ship in the Suez Canal. However, a number of studies show that individual signals of approaching changes can be detected in advance (Welz et al., 2012; Zhan, 2022). It has also been found that social networks have the potential to monitor and detect signs of catastrophes (G. Amoudi et al., 2022; S. Mukherjee et al., 2022; K. Carley et al., 2016; Yin et al.; 2012; Štitilis et al., 2023). Moreover, Charitonidis et al. (2015) directly point to the possibility of using social media as a source of weak signals to predict adverse events in the real world.

T. Ahlqvist compared weak signals in social media with "hardly discernible cracks anticipating such earthquakes" (Ahlqvist et al., 2007). However, the aforementioned work describes only general ideas for the identification of such signals. Charitonidis et al. (2015) offered a more formal approach, but applied it to the prediction of adverse events in the social environment. Other works on diagnosing weak signals were analyzed in the preparation of this article, but they also distanced themselves from the problem of economic security.

It should be noted that Charitonidis et al. (2015) analyzed social media to predict adverse events using machine linguistics methods. The same methods were used in the works of Rajput et al. (2020) and Altmann et al. (2013) for similar studies on trends in social media (although without predicting their development).

However, there are no studies that clearly identify the sources of weak signals and prove that they can be used to improve economic security.

The main goal of this study is to test the fundamental possibilities of diagnosing catastrophic events on the basis of the study of the information field. To achieve this, we will substantiate the use of the information field as a data source for weak signals. Based on an information base from publications in The New York Times and The Guardian, two daily newspapers, we will develop a model for analyzing the information field using methods and tools of applied machine linguistics. Statistical hypotheses will then be formulated and tested regarding the characteristics of the information field in calm periods and before the onset of catastrophic events.

Methods

In this study, the concept of "weak signals" proposed by I. Ansoff (1975) is used to analyze the dynamics of the information field. According to this concept, global changes are preceded by weak, elusive signals that can be detected during the analysis of the information field. To interpret the concept of the information field, we start from the definition given in Morrill & Pitts (1967), developing it and adapting it to the context of the study.

To study the phenomenon of the early diagnosis of global catastrophes, this article uses a mixed approach, which combines qualitative and quantitative analysis. The research methodology consists of the following components.

Data Collection. As the main source of data, the archives of the publications of two authoritative daily newspapers specializing in international news were used: The New York Times (USA) and The Guardian (UK). This choice was determined by factors such as representativeness, regularity, openness, and accessibility. Both publications provide extensive coverage of world events, providing information on various regions and areas. The daily release of these publications ensures a

high frequency of data updates. Both publications provide access to publication archives via API, which simplifies data collection and analysis.

Machine Linguistics and Text Mining. The main tool for data analysis in this study is the application of machine linguistics and text analysis methods. We use statistical techniques for text data processing, including text preprocessing, frequency analysis, and natural language processing models, to extract insights from large amounts of data (Mints, 2017). Word Clouds were used to visualize the main topics and terms found in publications and to identify related events. The adequacy of the use of these methods in the context of the article is confirmed by the studies of Charitonidis et al. (2015), Rajput et al. (2020), and Altmann et al. (2013).

Statistical Analysis. Data analysis includes the use of statistical tests to identify anomalies in keyword frequencies that may indicate upcoming crisis events. This approach is based on the assumption that the prior frequency of word use in texts is subject to the empirical Zipf's Distribution Law (Baayen, 2001). To test statistical hypotheses, the Shapiro-Wilk test, the Two-sample T-test, the consequence of the Chebyshev inequality, and other tools of mathematical statistics were used. The principles of statistical studies of the distribution of words in large texts and their dynamics are described in the works of Baayen (2001), Rajput et al. (2020), and Altmann et al. (2013).

Ethical Considerations. This study took into account the ethical aspects of data collection and analysis. Particular attention was paid to the protection of personal data and the confidentiality of information.

Theoretical results

In the process of conducting the study, we proceeded from the fact that the object of the application of methods for analyzing text data and extracting information is *the information field.* Morrill & Pitts (1967) define the information field

as a carrier of the properties of the surrounding world. In contrast to the passive category of information space, the information field contains quantitative and qualitative characteristics that can be investigated.

For the sake of clarity, in this study we understand the information field as: *the space of the Internet, where multifaceted media communication between users is carried out, and where hypertext links between information elements exist and are created.* Such a definition makes it possible to specify the object of the research and its methodology.

For further investigation, let us make the following assumptions:

1. The information field begins to change some time before the real onset of catastrophic events.
2. Quantitative and qualitative characteristics of the information field can be tracked through open media resources.

The creation of a system for collecting, analyzing, and monitoring the information field based on open information, using the methods of machine linguistics, will make it possible to understand the processes in the digital world and predict sharp changes in trends. Monitoring current discussions will allow an observer to highlight which topics are becoming relevant and conduct additional research on their impact on economic security. Additional contextual analysis will reveal people's views on various topics discussed in the community.

It is important to consider the location of the information field in relation to the "data-information-knowledge-wisdom" pyramid, also known as the DIKW pyramid. This concept was first proposed in the context of information management and information technology, and describes a hierarchical approach to transforming raw data into information, then into knowledge, and finally into wisdom.

However, one of the first mentions of the pyramid is considered to be the work of Zeleny (1987) in the context of management systems. R. Ackoff (1989)

also made a significant contribution to the development and popularization of this idea. In particular, he observed that: data is transformed into information when it is organized for a purpose; information becomes knowledge when it is used to understand something; and knowledge becomes wisdom when it is used to improve human well-being (Ackoff 1989). The concept of information refinement, similar to the DIKW pyramid, was proposed by Dave Campbell (*Lankow et al., 2012*) to describe big data transformations. In this concept, the data layer is preceded by a signal, and the final stage of information enrichment is "insight."

Since its inception, the DIKW pyramid concept has gained widespread use in analyzing and understanding knowledge management, organizational decision-making, and individual thinking. However, in the context of this study, "data" can already be considered to represent a certain level of abstraction, since they already represent a certain sample set that characterizes the information field. Therefore, it is the information field that should be considered as the fundamental level of the DIKW pyramid, and as the basis for collecting data and their subsequent transformation (Fig. 1).

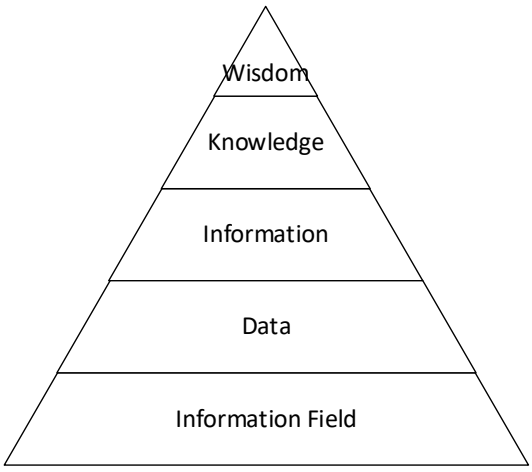


Figure 1. The DIKW pyramid, supplemented by the fundamental level of the information field

Source: authors

Compared to data, a key feature of the information field is that its elements are by definition unstructured and can be presented in text, audio, or visual form. Text form has been the primary way for humanity to exchange information for thousands of years. Compared to audio and visual forms, text allows information to be stored in the most compact way. In addition, modern AI models allow textual descriptions to be created based on content presented in other forms. Therefore, henceforth we will assume that the information field consists of textual information, or can be reduced to it.

Diagnosing global catastrophes in the context of improving economic security should involve extracting data from the information field and gradually transforming it into information, knowledge, and, ultimately, wisdom or understanding.

The first stage of the above, *the transformation of the information field into a compressed form* (data), seems to be the most difficult task due to the fact that it is necessary to simultaneously structure and compress a large amount of content. Taking into account the textual nature of the content to be transformed, methods of machine linguistics and natural language processing were used. These methods included tools which have been developing rapidly over the past few years, from statistical methods and frequency analysis to large language models. Each of these methods has both advantages and disadvantages, so it is important to evaluate them in the context of this study and choose the most suitable. In addition, supporting methods for collecting content and managing databases are necessary at this stage.

Empirical results

The main assumption underlying the concept of this study is that the information field begins to change some time before the actual onset of catastrophic events. Although similar findings can be found in various studies (Ansoff, 1975;

Zhan, 2022; Welz et al., 2012; Charitonidis et al., 2015), the authors were not able to find quantitative studies to support this assumption. Therefore, in order to substantiate the expediency of further research, it was necessary to conduct quantitative experiments to confirm or refute this assumption.

Data sources for the study must meet a number of requirements, including:

- - representativeness – data should describe all regions of the planet as evenly as possible;
- - relevance and regularity – necessary to ensure the prompt accounting of changes in the information field;
- - openness – data should be open and available for research and analysis;
- - compactness – since this study relates to intelligence, the compactness of the data set is also an important requirement.

The analysis of the requirements above shows that publications in daily newspapers that specialize in world news can be considered as an information base of the study. The specification of the requirements and a detailed consideration of various options led to the choice of The New York Times (USA)[3] and The Guardian (UK)[4] newspapers as the information base. Both publications cover global events, are issued daily, and print large volumes of materials. In addition, both publications are open for research and provide access to publication archives via API. Practical experience with these publications has shown that the New York Times API provides more flexible options for building queries, but allows users to process no more than 1000 articles per request. The Guardian API provides fewer options when setting up queries, but it has almost no limit on the number of articles.

The main tool for conducting the study was the Orange Data Mining software package, which includes advanced Text Mining tools. To perform statistical calculations, Matlab was used.

3 https://www.nytimes.com

4 https://www.theguardian.com

A scenario model for studying changes in the information field based on publications in the media is presented in Fig. 2.

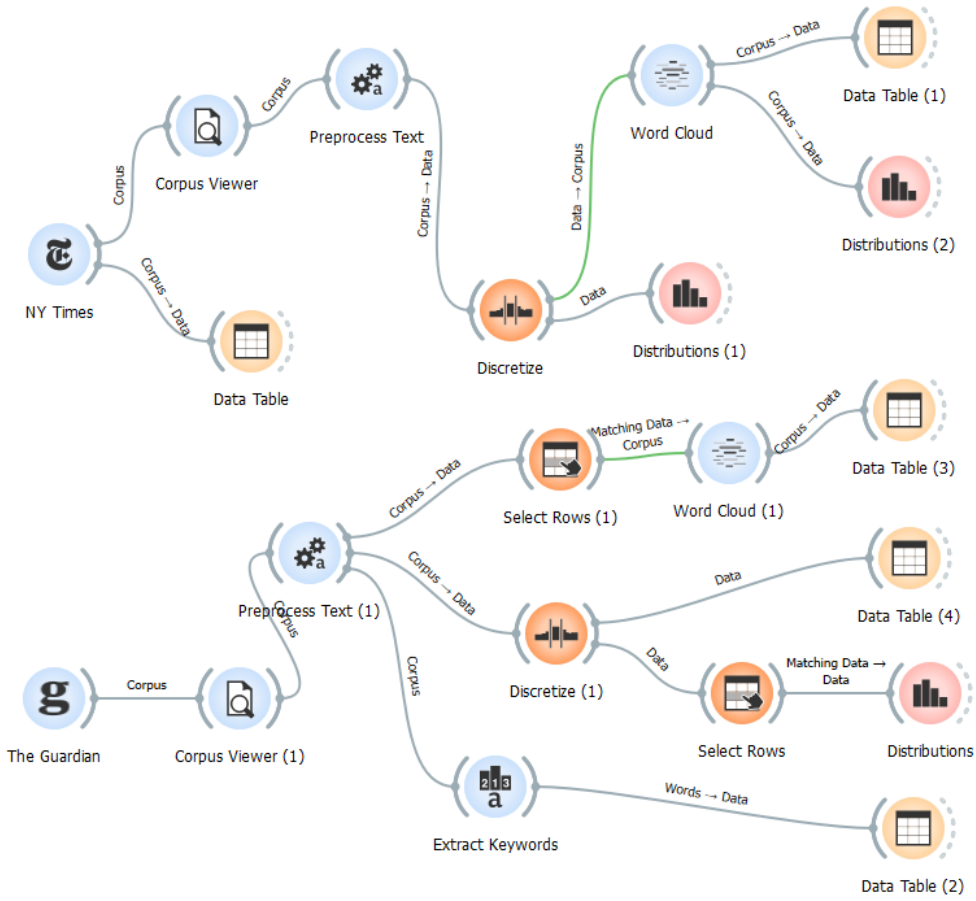


Figure 2. Scenario model for studying changes in the information field based on publications in the media

Source: authors

In the first step, a request is made to retrieve publications from the archive according to the specified keywords and time range. In this case, for further processing, the titles of publications, brief abstracts, or the full text can be used. Already at this stage, information can be obtained regarding the number of publications containing the specified keywords in different periods of time.

An analysis of the dynamics of changes in the information field before the outbreak of the SARS-CoV-2 (COVID-19) pandemic.

We studied the dynamics of changes in the number of publications containing the words *virus*, *pandemic*, *covid*, and *sars* in the period from November 1, 2019 to March 15, 2020, with an interval of 15 days. The start date of the study period was selected as it was earlier than the first documented case of COVID-19 symptoms in patient zero (Huang et al., 2020). The final interval of the study period includes the date of the pandemic announcement by the World Health Organization (March 11, 2020).

Table 1 and Table 2 contain information on the number of articles in the New York Times and The Guardian mentioning the relevant keywords for the period under study. Table 3 provides similar information for the reference period, which is taken from a similar time interval one year before the events under study.

Table 1. Number of articles with keywords in The New York Times, for the period from 01.11.2019 to 15.03.2020

Source: authors

keywords	2019				2020				
	01-15 Nov	16-30 Nov	01-15 Dec	16-30 Dec	01-15 Jan	16-30 Jan	01-15 Feb	16-29 Feb	01-15 Mar
virus	7	19	10	16	18	138	194	249	650
pandemic	2	1	3	7	8	88	164	208	702
covid	0	0	0	0	2	79	156	193	664
sars	2	1	1	0	7	73	69	41	41

Table 2. Number of articles with keywords in The Guardian, for the period from 01.11.2019 to 15.03.2020

Source: authors

keywords	2019				2020				
	01-15 Nov	16-30 Nov	01-15 Dec	16-30 Dec	01-15 Jan	16-30 Jan	01-15 Feb	16-29 Feb	01-15 Mar
virus	10	15	16	20	16	144	231	278	840
pandemic	3	1	4	0	5	21	33	121	454
covid	0	0	0	0	0	0	31	177	638
sars	0	1	1	0	3	73	72	45	80

Table 3. Number of articles with keywords in The New York Times, for the period from 01.11.2018 to 15.03.2019

Source: authors

keywords	2018				2019				
	01-15 Nov	16-30 Nov	01-15 Dec	16-30 Dec	01-15 Jan	16-30 Jan	01-15 Feb	16-28 Feb	01-15 Mar
virus	16	23	10	17	16	14	16	10	27
pandemic	7	7	3	4	5	7	5	1	7
covid	0	0	0	0	0	0	0	0	0
sars	2	1	3	1	1	1	3	2	3

A simple visual analysis and comparison of the data from Tables 1–3 makes it easy to notice a sharp increase in posts selected for even the most common of the keywords studied – the word "virus."

A similar conclusion can be reached by examining the distribution of publication frequencies over time graphically. Fig. 3 shows a histogram of the frequency of publications in The Guardian for January 2020, taken at intervals of 5 days. It can be seen that the most noticeable increase in the frequency of publications was observed after January 21 (that is, almost 50 days before the official announcement of the pandemic). However, in the previous period (January 16–20), significant changes were noticeable.

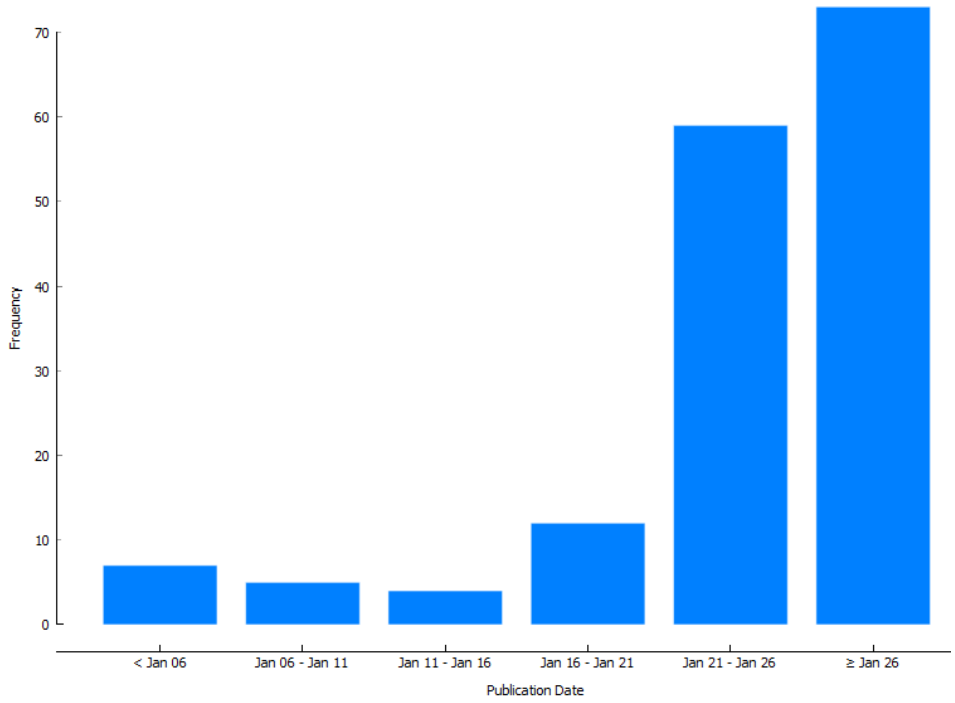


Figure 3. Distribution of publications containing keyword "virus" from Jan 1–30, 2020, in The Guardian

Source: authors

In order to quantify the magnitude of changes necessary to treat them as anomalous, it is necessary to conduct statistical studies. First of all, the distribution over time of the frequency of the appearance of keywords in the publications must be determined. Similar questions have repeatedly been raised in the scientific literature. The most frequently studied question is the distribution of words in large texts (Baayen, 2001; Baron et al., 2009; Rajput et al., 2020). At the same time, most authors confirm the relevance of the empirical Zipf's Distribution Law. According to this law, in the list of words ranked in descending order of popularity, the frequency of use of the n_{th} word is inversely proportional to its number n:

$$\text{Word frequency} \propto \frac{1}{word\ rank} \quad (1)$$

It follows from this law that the frequency of the use of individual words will be constant on average, and its deviations from the average value in individual texts will be influenced by random factors. If we assume that the probabilities of frequency deviation up and down are the same, then we get a normal distribution law. It should be noted that the frequency of word usage can vary with time, as noted by Altmann et al. (2013) and Rajput et al. (2020). Therefore, it is necessary to be careful when choosing the time interval for studying the parameters of distributions.

The data in Tables 1–3 represent the frequencies of keywords in publications distributed over time. The statistical characteristics of the frequency of the word "virus" in different periods of time can then be calculated. This word was chosen because the frequency of its appearance in the period preceding the pandemic, according to Tables 1–3, is the highest. This, according to the findings of Baayen (2001), increases the total number of observations and reduces the impact of random fluctuations on statistical outcomes.

Thus, the following data can be analyzed:

V1 – a sample of the frequency of the word "virus" in newspaper publications in the study period (from 1.11.2019 to 15.03.2020).

V0 – a sample of the frequency of the word "virus" in newspaper publications in the base period (from 1.11.2018 to 15.03.2019).

V19 – a sample of the frequency of the word "virus" in newspaper publications during 2019 (from 1.01.2019 to 26.12.2019).

As can be seen from this list, in comparison with the data in Tables 1–3, frequency sampling for the whole of 2019 is added. This sample was created with the same discreteness (15 days) as the others, and its analysis is necessary to check the stationarity of the distribution parameters.

To check the data against the normal distribution law, the Shapiro-Wilk test was used. The H0 hypothesis is formulated as follows: "V is normal with

unspecified mean and variance."

At a significance level of α=0.05, the Shapiro-Wilk test produced the following results:

For V19: sw=0.9441; p=0.2197. There is no reason to reject the H0 hypothesis.

For V0: sw=0.899; p=0.2463. There is no reason to reject the H0 hypothesis.

For V1: sw=0.7002; p=0.0036. The hypothesis of a normal distribution must be rejected.

Note that the test values (sw) and p-value for V19 and V0 are fairly close. This indirectly indicates the proximity of the distribution parameters. To assess this more accurately, the mean (μ) and standard deviation (σ) values can be calculated.

V19: μ = 15.0435, σ = 6.0671

V0: μ = 16.5556, σ = 5.5252

The confidence interval for estimating the mathematical expectation of the V19 sample can be found using the following formula:

$$\Delta\mu = \frac{\sigma}{\sqrt{n}} \cdot t(p, f) = \frac{6.0671}{\sqrt{24}} \cdot t(0.95,23) = 2.56 \qquad (2)$$

Since |16.5556-15.0435| = 1.5124 < 2.56, it can be observed that the statistical distribution of V0 corresponds to the distribution of V19.

Similar conclusions can be reached based on the calculation of the Two-sample T-test. The equality of the mean distributions can be taken as the null hypothesis, H0, alongside a significance level of α=0.05.

p-value(ttest2(V19,V0)) = 0.4352 > 0.05

Therefore, we cannot reject the H0 hypothesis regarding the equality of the mean distributions in the V19 and V0 samples.

Thus, in the absence of external disturbances, the frequency of mentions of a keyword in publications is approximately the same, and its variation corresponds to the normal distribution law.

Testing the hypothesis of the equality of the means of V1 and V19 using the Two-sample T-test gives the following value:

p-value (ttest2 (V19,V1)) = 0.005 < 0.05 μ.

The assumption of a normal distribution of words in publications makes it possible to statistically determine the probability of the observed deviation from the mean values. If the probability falls below critical values, then this may mean the emergence of new factors that change external conditions.

Thus, in Table 1, on the basis of which the V1 sample was compiled, in the period from January 16 to January 30, the number of publications mentioning the word "virus" increased to 138. The probability of such an observation can be calculated using the formula:

$$P(X \geq 138)=1-P(X \leq 137)=1-\Phi(z), \quad (3)$$

$$z = \frac{137 - \mu}{\sigma} = \frac{137 - 15.0435}{6.0671} = 20.1$$

Thus, the observed deviation was more than 20σ. With a normal distribution, 99.7% of observations fall within a much narrower interval of ±3σ. Therefore, the deviation of 20σ should be unequivocally interpreted as anomalous. Calculations show that if the previously observed distribution parameters are preserved, the probability of a deviation of 20σ is approximately 1.249×10^{-90}.

In practice, events that deviate from the expected value by more than 3σ are considered unlikely. However, in dynamics, the distribution of words in newspaper publications is most likely quasi-stationary. This follows from the work of Altmann et al. (2013). Therefore, additional research is needed to determine the limits of permissible deviations of frequencies from average values.

Nevertheless, in the context of the observations made, it is obvious that already in the second half of January 2020, the number of publications mentioning the word "virus" went far beyond the statistically possible dispersion. This could

be interpreted as a signal of future catastrophic events.

Analysis of the information field using text mining tools not only allows critical signals to be identified, but also permits additional data that is useful for clarifying the directions of danger to be obtained. Figure 4 shows a visualization of a Word Cloud generated from the Guardian based on the keyword "virus" from January 1 to January 15, 2020. It should be noted that within the framework of statistical analysis, this time period is not yet manifested as dangerous or abnormal.



Figure 4. Word Cloud generated from the Guardian based on the keyword "virus," 1–15 Jan, 2020

Source: authors

At the center of the cloud are words such as China, Flu, Illness, and SAR, which specify danger. The analysis of these keywords can provide the researcher with additional information about the state of the information field and potential threats to economic security.

Figure 5 shows a similar chart, which is based on publications with the keyword

SARS (Severe Acute Respiratory Syndrome) for the entire month of January 2020 in the New York Times. An analysis of this diagram already provides much more information not only about the causes, but also about the possible consequences of the spread of coronavirus. In particular, the word "quarantine" is quite clearly visible. It was the announcement of quarantine that became the main reason for economic losses around the world. Obviously, an additional 40 days to prepare for quarantine could have significantly reduced the losses of many companies.



Figure 5. Word Cloud generated from the New York Times based on the keyword "SARS," 1-30 Jan, 2020

Source: authors

Analysis of the dynamics of changes in the information field before the start of the war in Ukraine.

This method can also be used to consider the background of the beginning of another critically important event for the whole world: the war in Ukraine. Figure 6 shows a histogram of the frequency of publications in the Guardian with the

keyword "war" for the period from 1 Jan 2021 to 28 Feb 2022. To reduce information noise, only publications in the "World news" category were selected when building a histogram.

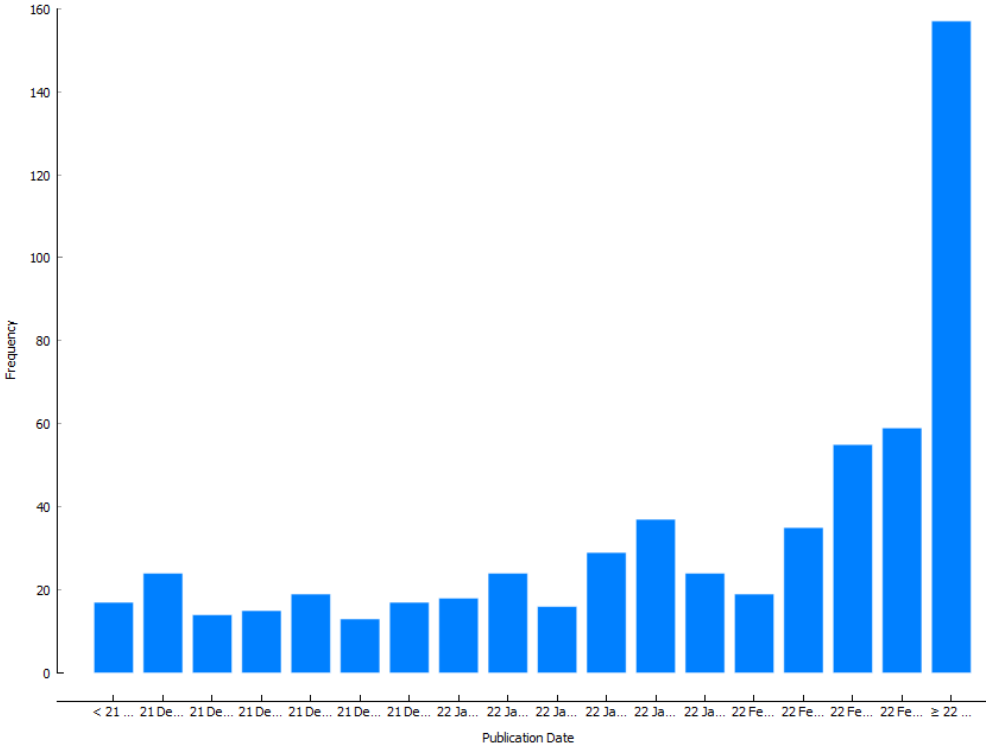


Figure 6. Distribution of publications containing keyword "war" in the Guardian from 1 Dec 2021 to 28 Feb 2022

Source: authors

The analysis of Figure 6 shows that there are no sharp frequency jumps on the histogram until the final pocket, which includes the date of the start of the Russian invasion: Feb 2, 2022.

The analysis of a similar sample of publications based on 2021 data shows that $\mu(war21) = 20.5352$; $\sigma(war21) = 6.4472$. The maximum frequency values were 45 (August 2021) and 42 (May 2021), which is 3.8σ and 3.33σ, respectively. At the same time, the histogram in Figure 6 shows that 10 days before the start of the war in Ukraine, the deviation from the mean value was more than 6σ. The chance

that such deviations are caused by random factors is only 9.87×10^{-10}. A comparison of distribution parameters also shows statistically significant discrepancies as early as January 2022.

The analysis of a Word Cloud generated by the keyword "war" (Fig. 7), as in the case described above, allows the threat and the parties associated with it to be clarified. In this Word Cloud of publications in the Guardian from 1 Dec 2021 to 15 Feb 2022, the central place is occupied by the words Ukraine, Russia, US, and UK. The same conclusion is confirmed by a study of a sample of publications from The New York Times for the keyword "war" for the period of December 15–30, 2021 (that is, almost 2 months before the start of the invasion). There, Russia and Ukraine are among the three most mentioned countries, along with Afghanistan.



Figure 7. Word Cloud generated from the Guardian based on the keyword "war," 1 Dec 2021–15 Feb 2022

Source: authors

The results obtained confirm the possibility of analyzing the information field

for the early detection of potential catastrophes, which can contribute to timely preparation and the minimization of threats to economic security.

This study has demonstrated the validity of the assumptions made in the theoretical results section. In both situations considered, the information field began to change significantly before the onset of major catastrophes. Statistically significant changes in the information field were observed around 50 days before the official announcement of the COVID-19 pandemic, and around 10 days before the start of Russia's military invasion of Ukraine.

The method of analyzing the frequency of keyword mentions in different time periods allows researchers to identify anomalous changes in the information field. This method is compatible with the apparatus of mathematical statistics, which is necessary for validating results. Statistical tests confirmed the importance of changes in the information field before the onset of the catastrophes under study. According to the results of the study, deviations in the frequency of mentions of words more than 4σ are abnormal. However, this conclusion requires additional verification.

Discussion and conclusions

Based on the analysis of literary sources, this article confirms the relevance of the scientific problem of the early diagnosis of global catastrophes in the context of ensuring economic security, and highlights promising methods for its solution. The possibility of diagnosing catastrophic events based on the detection of weak signals and monitoring the information field is shown.

This involved the creation of a system for collecting, analyzing, and monitoring the information field based on open information, using machine linguistics methods. This allows the processes in the digital world to be understood, and enables sharp changes in trends to be predicted. The article discusses the theoretical prerequisites for diagnosing global catastrophes in the context of increasing

economic security. The sequence of extracting data from the information field and gradually transforming them into information, knowledge, and, ultimately, wisdom or understanding is substantiated. Critical assumptions describing the relationship between catastrophic events, the information field, and its manifestations are formulated.

This study makes it possible to statistically confirm the assumption that the information field begins to change some time before the real onset of catastrophic events. Changes are manifested in the form of a sharp increase in the frequency of mentioning keywords and related terms, titles, surnames, etc. The assumption that it is possible to track the state of the information field through open media resources is also confirmed.

At the same time, it should be noted that there are some differences between the results of the article and the results obtained by other authors. One of the important results of this article is the conclusion that in the absence of external perturbations, the frequency of keyword mentions in publications is approximately the same, and its variation corresponds to the normal distribution law. However, it may turn out that under other conditions for the formation of the corpus of texts, other laws of distribution will be more suitable. This conclusion can also be reached if we take into account that the decrease in the frequency of words on the left is limited by the frequency of 0, and there are no such restrictions on the right. Rajput et al. (2020) Baron et al. (2009), and Altman et al. (2012) indicate log-normal, or Poisson distribution as possible options. However, it should be taken into account that the conditions for the formation of the data sample in these studies were significantly different from ours. Baron et al. (2009) examined a historical corpus of texts spanning an interval of 400 years; Altman et al. (2012) investigated the evolution of words in the word niche at an interval of around 12 years while Rajput et al., (2020) covered the period of the onset of the COVID-19 pandemic. Although the latter period is short, according to our results, it is in

times of crisis that significant changes in the information field occur. Therefore, further research is needed to confirm our findings, or to establish boundary conditions for them.

It is important to note that the results obtained are based on a relatively limited dataset and simplified analysis models. Since the main purpose of this article is to test the fundamental possibility of diagnosing catastrophic events on the basis of the study of the information field, this approach can be considered justified. Further research towards the creation of a system for the early diagnosis of catastrophes should involve the use of more representative data and sophisticated machine learning algorithms. This is necessary for the development of reliable forecasting methods.

This study shows that the use of text mining tools allows the direction of a threat and the parties associated with it to be clarified. The results obtained demonstrate the potential of the proposed approach for the early diagnosis of global catastrophes. Further research on this topic would involve for experimental work on the basis of open media and participatory media databases in order to analyze quantitative characteristics characterizing changes in the information field during major catastrophes.

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3.6. The transformation of business processes in industrial enterprises under the conditions of digitalization

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Abstract. *This article is dedicated to the study of the features of business process (BP) transformation in industrial corporations within the context of the digital economy. The purpose of the publication is to explore how corporations in the industrial production sector utilize management tools oriented toward process-based activities that meet consumer demand within their strategic business units. The research*

presents a definition and a generalized model of the digital economy, identifying the place of components and functional segments of integrated business information systems in Industry 4.0 industrial corporations. The study examines the parallel formation of value for both real and digital products in the context of business process digitization in corporate activities, alongside the content and specifics of information support throughout the stages of order processing that generate value in goods and services considered valuable to customers. Business processes in industrial enterprises are defined as a sequence of logically connected actions performed over a certain period within a specified space, aimed at creating goods or services with the goal of achieving an optimal economic outcome from subsequent sales. The study argues that progress in using BPs is achieved when, over time, the value added by their input is maximized. The article discusses means of optimizing BPs by breaking them down into a sequence of subprocesses, determining the chronological order of operations/subprocesses, visualization, and workflow schematics. It outlines the directions for BP transformation in the digital economy, extending requirements for proper procedure execution in identification, structuring, visualization, implementation, and control. Additional distinct requirements for digital BPs are formulated: operational efficiency, system accessibility, execution speed, confidentiality, a focus on quality service, and increased customer loyalty. BP transformations are viewed as drivers of competitive advantage in market competition, achievable through the technical enhancement of execution platforms, the involvement of artificial intelligence in BP execution, autonomous robotic systems, gaining new knowledge from processing large datasets, and the intellectualization of communication networks.

Keywords*: digital economy, e-business, industrial corporation, business processes, workflow transformation, value chains.*

Problem Statement: Business processes (BPs) in industrial enterprises are a sequence of logically connected actions that are carried out over a specific period

in a defined space, aimed at creating goods or services to achieve an optimal economic result from subsequent sales. This process, known to its organizers, is initiated by a certain input, after which it undergoes transformation through the execution of tasks and activities, the cost of which is added to the input value. The process concludes with a pre-expected result, and its goal is to create a service that meets customer requirements. If the outcomes of this sequence of actions significantly contribute to the success of the company, it is referred to as a business process, specifically a core or key process. The transformation of BPs in industrial corporations in the digital economy should be viewed as a driver of competitive advantage, achieved through the technical enhancement of execution platforms, the involvement of artificial intelligence in BP execution, the use of autonomous robotic systems, the acquisition of new knowledge from processing large datasets, and the intellectualization of communication networks.

Task Statement: This article is dedicated to the study of the transformation of BPs in industrial corporations in the context of the digital economy. The purpose of the publication is to examine how industrial production corporations use process-oriented management tools to meet consumer demand within their strategic business units. In pursuit of this research goal, the article aims to provide an original definition and develop a generalized model of the digital economy, identify the role of components and functional segments of integrated business information systems in Industry 4.0 industrial corporations, and explore the specifics of parallel value creation for real and digital products in the context of business process digitization in corporate activities. Additionally, it will examine the content and specifics of information support throughout the stages of order processing, which generate the value of goods and services that are valuable to customers.

Presentation of Main Material: There are three main types of BPs: processes related to the prospect of exchange, where the dominant aspect is satisfying customer needs for products; processes connected to achieving production goals,

aimed at the efficient use of corporate resources; and organizational perspective processes, where the primary focus is on labor utilization and operational management. Progress in utilizing BPs is achieved when the added value during the execution of the process is maximized over time.

The first step in optimizing a BP is breaking it down into a sequence of subprocesses. A general rule observed is that processes performed more frequently are detailed in more depth.

The second step involves determining the chronological order of actions. Following this, the process of defining interfaces begins. Similar to software, these interfaces are contact points where the output data from the previous process is transferred to the input data of the next. Reducing the time taken to complete the process while maintaining its quality is almost always a declared goal in management decisions. At this stage, the minimum, average, and maximum time required to complete the process is defined. The duration during which value is added during the process is referred to as "effective time." If a level of 3% is considered the minimum acceptable for BPs, then a level of 10% is considered excellent, making it the target level of efficiency for optimization.

The third step involves the visualization of the BP, during which the following are established: what actions are performed, what input data is required, and where interfaces occur. The workflow is represented as a flowchart of sequential events as follows: (a) events physically occur at the place of service delivery/processing operation; (1) a dividing line of external interaction is drawn; (b) events that occur with the contact person are recorded; (2) a visible line of interaction is drawn; (c) events that occur in the provider's back-office are recorded; (3) a dividing line of internal interaction is drawn; and (d) supporting processes are recorded. At this stage, it is important to identify points at the interfaces (moments of crossing external, visible, or internal interaction lines) where errors (failures) in the effective flow of the business process, particularly in its documentation,

might occur. As a result of performing these operations, a clear understanding of the workflow is formed (the sequence of actions that needs to be executed to achieve success), resulting in a formally described, fully or partially automated BP (i.e., what needs to be done to achieve success). Based on the workflow, an improved model can subsequently be developed.

The potential for continuous improvement and, simultaneously, the radical transformation of BPs in an industrial corporation has been significantly enhanced with the advent of the digital economy. Although the majority of commercial processes now occur online, they are subject to the same requirements as real-world processes. This means that they must also undergo procedures of identification, structuring, visualization, implementation, and control. Additional requirements for digital business processes include: operational efficiency (user-friendly page design, quick navigation, easy information search, personalization), system accessibility (page accessibility, loading speed, reliability), execution (fast and accurate processing), confidentiality (responsible handling of entrusted data), and a focus on quality customer service (appropriate response in case of problems, compensation for losses, contact options).

Modern society is characterized by the intensive use of information technologies and the associated transition from an industrial economy to a post-industrial knowledge economy (Industry 4.0). One of the central characteristics of the post-industrial computer society, which is fundamentally based on the constant innovative renewal of information technologies in terms of increasing computing power, digitizing information, creating networks, and processing data, is their systematic use for communication, as well as for obtaining and applying information, which is considered on par with labor and capital as an exclusive source of value creation.

At the core of the information economy lies the networked (digital) economy – E-Business – the building blocks of which are platforms that service production

transactions (procurement (E-Procurement), sales (E-Commerce), trading (E-Marketplace)). These platforms are complemented by platforms for maintaining contacts (E-Community) and intercorporate cooperation (E-Company), which allow the expansion of electronic business beyond the boundaries of corporate business (Figure 1).

A common feature of these platforms is that the exchange of digital data between them, directly or indirectly, relates to electronic business processes (E-Business), either preparing or supporting them, but ultimately generating corresponding revenue. Thus, the digital economy facilitates the commercial use of electronic data networks in business, functioning as a network economy that generates additional income through the direct or indirect processing of/influence on information, communication, and transaction processes via specialized electronic platforms.

The redesign of business processes in the digital economy can be approached from two main perspectives:

- Firstly, through the aforementioned transaction platforms (procurement, E-Procurement, sales, E-Commerce, trading, E-Marketplace, electronic communication, E-Community, and cooperation, E-Company);
- Secondly, by leveraging the five fundamental modules of digital business that are essential for implementation: systems, processes, management, marketing, and deployment (Table 1).

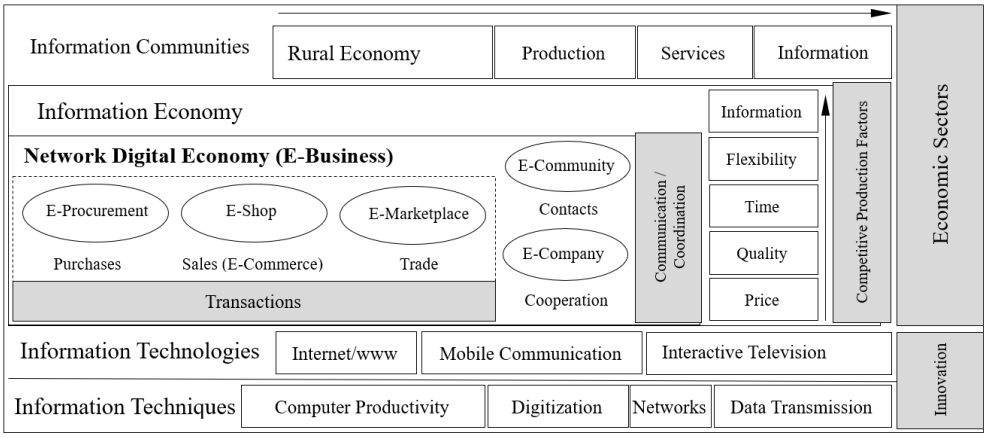


Figure 1. Generalized enveloping model of the networked digital economy

Source: developed by the authors based on generalization of sources [3-5; 7; 9; 11-13]

Systems refer to all aspects related to the technical foundations of implementing electronic business processes. This includes decisions regarding hardware and software, the technical structure, and the use of databases and catalogs, as well as issues related to system architecture design, system interfaces, and user interfaces. Additionally, technical tools in the fields of content management and product management systems are considered.

Processes encompass all corporate activities related to the procedures for conducting electronic business processes. This includes, among other things, the tracking of procurement (eTracking), sales (eSales or ePayment), and trading processes (eMatching or eAuctions), as well as procedures in the areas of distribution and control. In this study, a process will refer to the logical sequence of stages in raw material processing/production operations, triggered by input data and leading to a predetermined result. The unique feature of a business process is that, when repeated an unlimited number of times, it leads to the most economically advantageous outcome.

Management involves all aspects related to the strategic foundations of conducting electronic business processes. This particularly concerns the analysis of online offerings (eService), the online market (eCustomer), and online

competition (Market entry). If necessary, the minimum number of regular consumers required to guarantee market development in the future is calculated as a success factor for managing central platforms (known as Critical Mass). Tools in the fields of online cooperation (eOnline Cooperation) and electronic supply chain management (eSupply Chain Management) are also used.

The elements of process-oriented management in the creation of a real value chain (supply chain management) for a product include the accumulation of value through the actual expenses incurred during the implementation of processes (Figure 2).

According to one possible classification, these expenses can be categorized as follows:

(a) Advertising activities (direct advertising, operation of online stores, external sales, production and distribution of promotional materials, sales promotion, exhibition activities, sponsorship contributions);
(b) Pre-sales activities (accepting orders, customer consultations, analyzing the feasibility of fulfilling orders, calculating the cost of proposals, sending offers);
(c) Order acceptance (processing, review, and planning, customer notification, confirmation);
(d) Order preparation (scheduling work (utilizing materials, machines, and employees), planning execution time, printing prepared documents, preparing materials, machines, and employees);
(e) Production (machine setup, product manufacturing, further processing, packaging, delivery to the finished goods warehouse);
(f) Pre-sale preparation of goods (preparing and editing accompanying documents (warehouse receipts, invoices, inspection certificates, shipping documents), assembling goods, delivering goods to the customer);
(g) Error correction in order fulfillment (delivery condition violations, delivery delays, acceptance of returned goods, processing overdue payments).

Table 1. Electronic modules of corporate-level digital business

Modules	Digital Business Processes				
	E-Procurement	E-Shop	E-Marketplace	E-Community	E-Company
System	Hard- & Software, Databases, Catalogues, Architectures, Standards, Design, CMS (Content Management System), ERP (Enterprise Resource Planning), Ajax (Asynchronous JavaScript and XML), SOAP (Simple Object Access Protocol), Group wear				
Processes	eSales, eTracking, ePayment, eFulfillment, Initiation, Matching, Agreement, Auctions, eDistribution, eControlling, eBlogging etc.				
Modules	Product, Market, Competition, Strategy, Analysis, Success factors, Cooperation, eSMS, Coupling, Trust, Dialogue				
Marketing	Research, Data Mining, DBMS (Data-Bank-Management-System), eBranding, Online-/Viral-/One-to-One marketing, eCRM (Customer Relationship Management), Market management, Recommendation				
Implementation	Analysis, Learning, Design, Organisation, Implementation, Project management/-phases/team, Interface, Interaction				

Another approach to classifying activity stages includes costs associated with:

1) Studying customers, checking their creditworthiness, and conducting technical and economic feasibility studies for cooperation with customers;
2) Order processing (calculating the execution price, preparing documentation, justifying the necessary resources, making agreements with suppliers);
3) Product management (procurement/manufacturing/storage, maintaining necessary information about products, managing warehouse operations, maintaining necessary information about suppliers);
4) Product delivery (assembling, preparing supply documentation, invoicing, contracting with carriers, organizing safe transportation);
5) Customer service (installation, assembly at the customer's site, inspections, routine maintenance, repairs, emergency services, disassembly).

Focusing on specific processes within the value chain may involve paying more attention to specific business operations, such as:

1) Warehouse management (production, procurement, inventory control, inventory monitoring);
2) Transportation (invoicing, automatic booking of goods, collaboration with

carriers, selection and commissioning of transporters, tracking transported goods in transit, etc.).

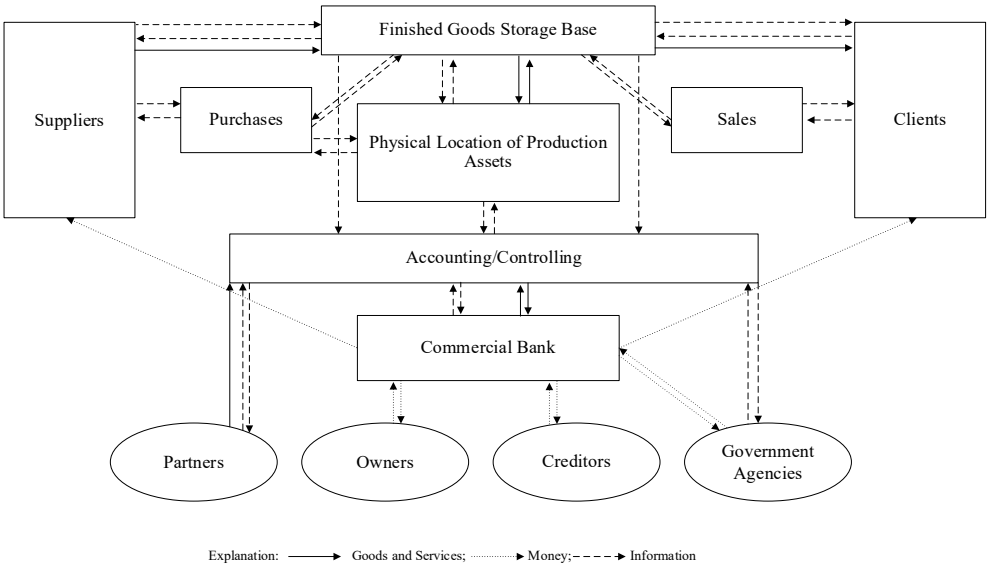


Figure 2. Flows of goods, financial resources, and management information in the functioning of an industrial corporation within the digital economy as a testing ground for the implementation of the e-Supply Chain platform

Source: compiled by the authors based on Gratzke (2016); Ringhand & Patett (2016); Werner (2020)

A unique feature of the digital economy is that, alongside the creation of value in a real product (or service), there are processes involved in the creation of an electronic (informational) product. In other words, parallel to the real processes of value creation, as illustrated in Table 2, there is a simultaneous process of creating value in a digital product, which adds to the real value.

Marketing encompasses all aspects related to sales policy for conducting electronic business processes, including procurement marketing. This includes activities such as online market research, data analysis, database marketing, electronic advertising, online communication forms, viral marketing (E-Community or Social Media Network), and personalized marketing (One-to-One Marketing).

Table 2. The logic and content of the processes for the parallel development of the real value chain and the electronic value of a product in digital format

Question	**Business Process**	**Supporting Processes**
What is the idea?	**Business Idea**: Trade in used cameras on the Internet Platform: E-Marketplace Enterprise Interest	**Parallel Processes**: - Information Flow - Information Feedback
What value is created?	**Virtual Purchase Offer** - Viewing - Selection - Mediation - Customer Interest	**Corporate Interest**
How is value created?	**Formation of the Electronic Value Chain** - Information Collection - Information Systematization - Information Selection - Information Combination - Information Distribution - Information Exchange - Information Evaluation - Information on the Offer	**Real Value Chain Formation** - Corporate Governance Structure - Personnel Management - Technology Development Management - Procurement - Inbound Logistics - Production - Outbound Logistics - Marketing and Sales - Customer Service
How exactly is the value created?	**Electronic Process of Value Creation** - Information Collection - Information Processing - Information Transfer	**Corporate Interest**

If online marketing involves paying for each advertising contact, viral marketing provides contact information for free. The network effect of the internet, and more recently social media, lies in ensuring the effectiveness of targeted efforts to achieve a multiplier effect, with free dissemination of information at an exponential rate. Tools of viral marketing include: search engines/link lists (results from the free submission of one's offer to various search engines to facilitate searching); free services (offering free services that add value for clients and are therefore used regularly); forums/chats/blogs (free placement of a link to one's offer when responding to another post/comment); recommendations (free distribution of content/information by a user among other users through sending electronic

copies); communication carriers (free offerings, such as mailing services with a return address for recipients); and commercial contests (free registration of one's contest in thematic communities).

Influencer marketing is increasingly gaining popularity, where the dissemination of product information is entrusted to an influencer who may play a typical role as a social butterfly, "trendsetter," reporter, power user, or thought leader. Another type of electronic marketing is affiliate marketing with compensation models such as pay-per-view, pay-per-click, pay-per-lead, pay-per-sale, pay-per-lifetime, or pay-per-period. Additionally, sales support processes are carried out in the realm of eCustomer Relationship Management (eCRM), the online management of business relationships on the internet. The use of a closed-platform eCRM architecture, which consists of three components – an analytical component for collecting and preparing data for decision-making, an operational component aimed at automating and standardizing all data related to transaction processing, and a collaborative component that regulates and synchronizes all communication channels with customers – is a powerful tool for building a loyal customer base, considered a valuable asset to any corporation.

Implementation involves practical aspects of managing the processes of implementing electronic business processes, particularly decisions regarding the planning, organization, and implementation of electronic systems. The foundation of successful implementation is Project Management, as well as addressing specific applied tasks. Tools for interface management and change management (e-Change Management) are also applied.

Conclusions and future research prospects: The transformation of BPs is viewed as a driver for ensuring competitive advantage, which can be achieved through the consistent improvement of tools for using the previously described basic modules of corporate-level digital business, including technical systems, BPs (in the context of manufacturing corporations, attention should be paid to

the development of productive functions of the cognitive platform Supply Chain 4.0, which ensures profitable use of the Internet of Things/Digital Twins, Big Data, Blockchain, and Machine Learning), management, marketing, and implementation. More specific prospects are associated with the improvement of the aforementioned platforms for transaction support, electronic communication, and cooperation. In the field of E-Business, this includes: expanding the technical capabilities of using Internet information technologies (WWW), mobile communication (UMTS/LTE), interactive television (ITV), and information exchange (virtualization capabilities, expanded use of multimedia, higher interactivity, increased individualization, data protection requirements); improving software and organizational support for the process of forming the electronic value chain of goods and services; and increasing competitiveness through the use of the digital economy (innovative updates of platforms, business models, work models, start-ups, corporate governance systems, and the development of individual elements of the shell model of the digital economy) and the informational prospects of the digital economy, associated with the implementation of principles using internet technologies such as Web 2.0 (User-generated Content), Web 2.X (Semantic Content), Web 3.0 (Request Content), Web 4.0 (Industrial Content), and Web 5.0 (Artificial Content). Current prospects in the Web 4.0 environment, characterized by the merging of physical and virtual worlds into cyber-physical systems, are linked to the transformation prospects of the BPs of manufacturing corporations based on the advantages of Machine to Machine Communication (M2M), the Internet of Things, and Cloud Computing. The transformation of commercial business processes is occurring in the use of E-Procurement, E-Commerce, E-Marketplace, E-Community, and E-Company platforms.

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CHAPTER IV. THE IMPACT OF HYBRID THREATS

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Abstract. *This chapter explores the concept of hybrid threats to state security, aiming to shed light on the complexities and challenges posed by this modern form of warfare. Hybrid threats, which blend conventional and non-conventional methods, are increasingly prominent in the international political arena, involving a mix of military, paramilitary, and civilian tactics that challenge traditional security frameworks. The primary objective of this research is to dissect the nature of hybrid threats, understand their implications for state security, and evaluate the effectiveness of current response strategies. The research questions guiding this study include: What defines hybrid threats and hybrid warfare? How do these threats exploit legal and systemic vulnerabilities? What are the political and security challenges posed by hybrid threats, and how can states effectively counter them? To address these questions, the research employs a multidisciplinary approach, combining qualitative analysis of existing literature, case studies of recent hybrid warfare incidents, and the theoretical exploration of international law and security studies. This methodology enables the creation of a comprehensive understanding of the evolving nature of hybrid threats and the multifaceted strategies employed by both state and non-state actors. The findings reveal that hybrid threats operate in a grey zone of conflict, utilizing a blend of cyber operations, disinformation campaigns, economic pressure, and conventional military tactics. These methods aim to create ambiguity, making it difficult for states to identify perpetrators and respond effectively. The study*

concludes that there is a need for clearer legal definitions and frameworks to govern hybrid warfare, ensuring that states can effectively respond to these emerging threats while adhering to international law. This chapter contributes to the growing body of knowledge on hybrid threats, offering insights into their nature.

Keywords: *hybrid threats, hybrid warfare, legal response to hybrid threats, international humanitarian law*

Introduction

Ever since the Trojan War, all means have been used to gain an advantage in war; as far as the ingenuity of the human mind allows, any methods are used. War is a state in which one goes beyond the limits of coexistence with one's neighbors, where the human mind and the greatest cruelty manifest in the pursuit of victory (Žilinskas, 2012, p. 1206). Regulating such relations has always posed a significant challenge. Historically, many wars have exhibited elements of "hybridity," often characterized by lawlessness and "unconventional" methods. The latter term implies an assumption that war can be regulated by international institutions (Johnson, 2018, p. 141). Modern hybrid warfare is distinctive because it challenges the post-World War II order, particularly US leadership in the global order. This form of warfare contests the dominance of Western military power and scientific thought. Emerging military powers, unable to directly confront the United States, are seeking to assert regional or global dominance through alternative means (Vasiliauskienė & Stumbrys, 2023, pp. 142–143).

"During the last twenty years, the global balance of power has been called into question by the emerging ambitions of China, India, Pakistan, and Iran. And they have someone to learn from – since the collapse of the Soviet Union, Russia has been a leader on the front of hybrid threats" (Vasiliauskienė & Stumbrys, 2023, p. 143). The primary characteristic of hybrid warfare is the continuous blend of

military and non-military methods of influence, presenting unique political challenges for both the military and security services (Dykyi & Kharchenko, 2016, p. 8). The terms "hybrid warfare" or "hybrid threat" are used synonymously with the terms "ambiguous warfare," "fourth or fifth-generation warfare," "non-linear warfare," "low-intensive asymmetric war," "unconventional warfare," or "full-spectrum warfare," indicating perhaps something new and different from the normal understanding of conventional "warfare" (Fogt, 2021, p. 30).

"In 1948 the USA Central Intelligence Agency was charged by the USA National Security Council with conducting espionage and counter-espionage operations abroad. It therefore was, for operational reasons, not to create a new agency for covert operations, but in times of peace to place the responsibility for them within the structure of the Central Intelligence Agency and correlate them with espionage and counter-espionage operations under the over-all control of the Director of Central Intelligence" (National Security Council Directive on Office of Special Projects, 1948; Vasiliauskienė & Stumbrys, 2023 p. 143). Covert operations were defined as activities conducted or sponsored by the government against hostile foreign states or groups, or in support of friendly foreign states or groups, designed and executed in such a way that US government involvement was not apparent to unauthorized individuals. If these operations were exposed, the US government could plausibly deny any responsibility. Specifically, such operations would include any covert activities related to: propaganda; economic warfare; preventive direct action, including sabotage, anti-sabotage, demolition, and evacuation measures; subversion against hostile states, including assistance to underground resistance movements, guerrillas, refugee liberation groups, and support for indigenous anti-communist elements in threatened countries of the free world. Such operations shall not include armed conflict by recognized military forces, espionage, counter-espionage, and cover and deception for military operations (National Security Council Directive on Office of Special Projects,

1948). It can be seen that this definition includes hybrid actions according to the current understanding, but does not call them "hybrid" actions. Speaking about the history of the use of the term, Solmaz (2022) notes that "the use of the term 'hybrid warfare' dates to the 1990s. To our best knowledge, the term 'hybrid warfare' first appeared in Thomas Mockaitis' book entitled *British Counterinsurgency in the Postimperial Era in 1995*." In later years several authors used the term with somewhat differing definitions, although in essence all indicated that "hybrid warfare" was a mode of warfare neither purely conventional nor irregular (Solmaz, 2022, Vasiliauskienė & Stumbrys, 2023, p. 143). Further mentions of hybrid warfare are related to the description of the strategy used by Hezbollah in the 2006 Lebanon War (Van Puyvelde, 2015; Vasiliauskienė & Stumbrys, 2023, p. 143).

The 2014 Russian invasion of Ukraine resulted in the illegal annexation of Crimea and the creation of two breakaway provinces in the Donbas and Luhansk regions, where the terms "hybrid war" and "hybrid threats" further entered the modern vocabulary (Bajarūnas & Keršanskas, 2016). Here, for the first time, we clearly saw that a completely different kind of conflict was taking place. Instead of a clear enemy, in Crimea we saw "green men" without distinguishing marks (Bajarūnas & Keršanskas, 2016). Russia's subtle – and initially concealed – political and military actions to incite unrest, generate internal dissent, manipulate political factions, and create confusion in Ukraine hindered both local and international awareness of the risks and threats to Ukraine. This allowed Russia to present the world with the fait accompli occupation and fragmentation of the state. The fact that Russian troops had disguised their national identities and directly supported insurgent forces in Donbas and Luhansk drew significant attention across Western Europe and prompted NATO to closely examine such activities (NATO, 2024, p. 13).

As Hybrid CoE[5] analysis notes, the topic of hybrid threats has become a dominant subject in Europe's security landscape. While some stakeholders may view it as a new issue, it is actually as old as conflict and warfare itself, now repackaged and enhanced by evolving security dynamics and new tools, concepts, and technologies that target vulnerabilities in unprecedented ways. The advancement of these tools increases the reach and effectiveness of hybrid threats in achieving several major strategic objectives, such as undermining public trust in democratic institutions, deepening unhealthy polarization both nationally and internationally, challenging the core values of democratic societies, gaining geopolitical influence and power by harming and undermining others, and impacting the decision-making capability of political leaders. Therefore, it is unsurprising that today's hybrid threats are regarded as serious and acute threats to the EU and its Member States, and are treated as such by policymakers across Europe (Giannopoulos et al., 2021, p. 6).

4.1. The search for the definition of hybrid threats

Speaking about the use of these terms, NATO (2024, p. 16) notes that "we can look to the meaning of the term hybrid to help clarify meaning. Although originally a noun, hybrid is also now used as an adjective. As a noun, hybrid refers to something composed of two different elements not normally combined, which in nature would be a new species. As an adjective, hybrid denotes something being of mixed character composed of different elements. In either form, the term refers to an unusual mating or joining together. Given that sense, we can say that with hybrid threats and hybrid warfare, the individual parts may not be new or novel. However, the combination of actions/activities is novel – although perhaps

5 Hybrid CoE is an international, autonomous network-based organization promoting a whole-of-government and whole-of-society approach to countering hybrid threats. Participation in the Centre's activities is open to all EU and NATO countries, and the number of Participating States has grown to include 36 states. https://www.hybridcoe.fi/

not unique – to traditional military conceptions of threats/ aggression and to civil authorities whose sensibilities of what constitutes a national security threat/ concern will be challenged to expand."

The term "hybrid threats" is appearing more and more often in modern international political discussions and other fields. Other terms employed include "hybrid warfare," "hybrid conflicts," "hybrid tactics," "hybrid confrontations," and "hybrid operations" (Bekkers et al., 2018, p. 6). As noted by Bekkers et al., "possibly the most accurate term for the phenomenon is 'multi-domain coercion'" (p. 6).

Speaking about international organizations, NATO has developed its definition of hybrid threats with the aim of creating a strategy to counter them. According to NATO (2010), hybrid threats are "those posed by adversaries, with the ability to simultaneously employ conventional and non-conventional means adaptively in pursuit of their objectives." NATO's interpretation of hybrid warfare depicts it as a mixture of military means and non-military means, including propaganda and cyber activities. NATO further notes, that hybrid warfare is "the highly integrated use of a wide range of overt and covert military, paramilitary and civilian means" (NATO, 2014). "This depiction describes a combination of political and nontraditional means of coercion and influence. These activities include the coercive use of military force and more subtle forms of harmful influence in the political and informational spheres." (Vasiliauskienė & Stumbrys, 2023, p. 144).

In its 2016 Joint Communication on the Joint Framework on Countering Hybrid Threats, the EU indicated that "definitions of hybrid threats vary and need to remain flexible to respond to their evolving nature, the concept aims to capture the mixture of coercive and subversive activity, conventional and unconventional methods (i.e. diplomatic, military, economic, technological), which can be used in a coordinated manner by state or non-state actors to achieve specific objectives

while remaining below the threshold of formally declared warfare" (European Commission, 2016). The document stresses that the aim of hybrid threats is usually to exploit "the vulnerabilities of the target and on generating ambiguity to hinder decision-making processes" (European Commission, 2016). Examples include massive disinformation campaigns, or using social media to control the political narrative or to radicalize, recruit, and direct proxy actors. The communication also stresses that "hybrid threats aim to exploit a country's vulnerabilities and often seek to undermine fundamental democratic values and liberties" (European Commission, 2016). The European Commission's 2018 Joint Communication on Increasing Resilience and Bolstering Capabilities to Address Hybrid Threats further develops this point, noting that the aim in case of hybrid threats is also to "destabilise countries by undermining public trust in government institutions and by challenging the core values of societies" (European Commission, 2018). The document additionally mentions such examples as: cyber-attacks disrupting the economy and public services through targeted disinformation campaigns to enhance hostile military actions; and the danger posed by chemical, biological, radiological and nuclear-related threats, which fall into a category of their own because of the potential scale of the damage they can cause and the fact that they are difficult to detect and attribute, and complex to remedy.

The Hybrid CoE indicates that an inherent characteristic of hybrid threats is the blurring of traditional dividing lines of various phenomena and the creation of ambiguity (Giannopoulos et al., 2021, p. 6). "Being 'under the radar' as much as possible is one of the characteristics of hybrid threat activities. … We are confronting a totally new situation today. The core values of Western societies, including openness and democratic decision-making, are being manipulated in order to compromise these very values" (p. 6). The Hybrid CoE (n.d.-a) defines a hybrid threat as an action carried out by state or non-state actors whose purpose is to harm or weaken the target by influencing its decision-making at the local,

regional, state, or institutional level.

Accordingly, the main features of hybrid threats according to the Hybrid CoE are:

1. Coordinated and synchronized actions deliberately targeting the systemic vulnerabilities of democratic states and institutions by various means.
2. Activities that exploit the limits of detection and attribution as well as different interfaces (war and peace, internal and external security, local and state, and national and international).
3. Activities aimed at influencing various forms of decision-making at the local (regional), state, or institutional level, and that are intended to further and/or implement the agent's strategic goals while undermining the target (Hybrid CoE, n.d.-b).

The Hybrid CoE further develops elements of the definition of hybrid threats in *The Landscape of Hybrid Threats: A Conceptual Model* (Giannopoulos et al., 2021).

When speaking about the question of the similarity of hybrid actions taken in isolation to the usual practice of states seeking influence, the Hybrid CoE observes that "we need to consider that in today's international system there may well be some new tools that we have not encountered before. Old tools might be used in a new way, or in a different context from what we are used to and surprising combinations can be created. This can challenge even the best prepared countries" (Giannopoulos et al., 2021, p. 11). The novelty of these threats comes from far-reaching globalization, hyperconnectivity, and digitization, which amplify their effectiveness and impact.

Thus, the Hybrid CoE proposes the following threshold for a regular threat turned hybrid:

"Ostensibly, it is when a hostile actor deliberately combines and synchronizes action, specifically targeting the systemic vulnerabilities in democratic societies in ways that have roots in tactics with which authoritarian states, revisionist

powers, rogue states and non-state networks that are seeking to undermine democratic state system have been trying to maintain their power, exert control and weaken opponents. …

Furthermore, there is a malign intent behind the action, characterized by the following:

- Using multiple synchronized tools (in principle, non-military) to create linear and non-linear effects […];
- Creating ambiguity (covert and plausible deniability) and hiding the real intent;
- Exhibiting deliberate threshold manipulation when it comes to detection and response
- Exploiting the seams of democratic society as well as between different jurisdictions;
- Often including a distraction element, such as action in one place, and a target somewhere else" (Giannopoulos et al., 2021, p. 11).

For the full understanding of hybrid threats, the Conceptual Model analyzes four main pillars: "actors (and their strategic objectives), tools applied by the actor, domains that are targeted, and phases (including the types of activity observed in each phase" (Giannopoulos et al., 2021, p. 11). The actor employing hybrid tactics "selects a combination of tools to achieve strategic objectives. These form the Hybrid Threats toolbox, which may vary depending on the actor in question (state actor, non-state actor) and its target. Each tool targets one or multiple domains or the interface between them. Tools can exploit, or even create a vulnerability in one or more domains, or take advantage of an opportunity. The objective can be achieved either by the direct effect of the tool on the domain or due to cascade effects. Activity in one domain may be aimed at affecting a completely different domain from the one where the activity was detected" (p. 12). The conceptual model developed by the Hybrid CoE further analyses the four elements and provides a visual representation.

4.2. Hybrid threats and hybrid warfare

The terms "hybrid threat" and "hybrid warfare" are often used as synonyms. After Russia's 2014 invasion, NATO Heads of State issued a communique that included the terms hybrid threat and hybrid warfare. The first reference combined the terms: "We will ensure that NATO is able to effectively address the specific challenges posed by hybrid warfare threats where a wide range of overt and covert military, paramilitary, and civilian measures are employed in a highly integrated design" (NATO, 2014, para. 13). Further references used threat and warfare interchangeably (NATO, 2024, p. 13). However, there are now efforts to define and delineate these terms. A suggestion has been put forward by the Hybrid CoE, where they underline that "this multidisciplinary analytical mosaic also blurs the picture of what the concept of Hybrid Threats actually entail. In this report the concept of Hybrid Threats is used as an umbrella concept, while hybrid warfare/war is part of the activity occurring under the Hybrid Threats umbrella" (Giannopoulos et al., 2021, p. 9).

The Assembly of the Council of Europe (2018) has noted that "there is no universally agreed definition of 'hybrid war' and there is no 'law of hybrid war.' However, it is commonly agreed that the main feature of this phenomenon is 'legal asymmetry,' as hybrid adversaries, as a rule, deny their responsibility for hybrid operations and try to escape the legal consequences of their actions. They exploit lacunas in the law and legal complexity, operate across legal boundaries and in under-regulated spaces, exploit legal thresholds, are prepared to commit substantial violations of the law and generate confusion and ambiguity to mask their actions."

Solmaz (2022) notes that "As such, the idea of 'hybrid warfare' has continuously been subjected to conceptual stretching, and thus, today, it seems rather a vague and ambiguous concept. Yet still, a close investigation reveals that there are

five major interpretations of the concept of 'hybrid warfare' that are related yet different:

1. 'Hybrid Warfare' as the employment of synergistic fusion of conventional weapons, irregular tactics, terrorism, and criminal activities in the same battlespace.
2. 'Hybrid Warfare' as the combined use of regular and irregular forces under a unified direction.
3. 'Hybrid Warfare' as the use of various military and non-military means to menace an enemy.
4. 'Hybrid Warfare' as sub-threshold activities involving any mix of violent and non-violent means.
5. 'Hybrid Warfare' as a way of achieving political goals by using non-violent subversive activities."

One of the most famous researchers on hybrid warfare, Hoffman (2007, p. 28), has maintained that states can shift their regular forces to irregular units and employ non-traditional warfare tactics. Hoffman's notion of hybrid warfare, refers to nonstate actors with high-tech weapons and states who adopt irregular tactics. Hoffman's idea of hybrid warfare well describes what 21st-century insurgents such as Hezbollah, Hamas, the Taliban, ISIS, and the PKK have done over the last two decades. It also captures state-based irregular fighters, such as Russia's masked troops known as "little green men," China's maritime militias, and Iran's Quds Force. Thus, although non-state actors with sophisticated weapons and states who employ irregular tactics are not completely new, today they seem dominant in modern armed conflicts, as Hoffman forecasted correctly in 2007 (Solmaz, 2022; Vasiliauskienė & Stumbrys, 2023, p. 144). Hoffman (2009) also defined hybrid threats as "any adversary that simultaneously and adaptively employs a fused mix of conventional weapons, irregular tactics, terrorism and criminal behaviour in the battle space to obtain their political objectives," and identified five characteristics of hybrid warfare that distinguish it: 1) modality

of actions – four action modules are distinguished in the area of military operations: conventional warfare, tactics characteristic of irregular groups, terrorism, and criminal actions; 2) synchronicity – all 4 types of actions are coordinated, take place at the same time and in the same space; 3) fusion – all actions of the warring groups aim for a common goal; 4) multimodality – different groups participate in military operations, characterized by a variety of tactics and weapons; and 5) criminality – an atmosphere of fear and mistrust is created in the space of military actions by means of criminal actions (Kilinskas, 2023; Vasiliauskienė & Stumbrys, 2023, p. 144).

The NATO reference curriculum on Hybrid Threats and Hybrid Warfare suggests a working definition of hybrid warfare: "Hybrid warfare is the creative use of hard, soft, and smart power by malign state or nonstate actors to achieve warlike objectives and political goals. Malign acts include a broad spectrum of military and nonmilitary instruments of coercive power beyond the conventionally conceived multidomain battlespace. Hybrid warfare encompasses politics, diplomacy, information, the economy, technology, the military and society, as well as dimensions like culture, psychology, legitimacy and morale. The coordinated performance of these malign acts occurs both overtly and covertly in the ambiguous grey zones of blurred interfaces: between war and peace, friend and foe, internal and external relations, civil and military, and state and nonstate actors, as well as in fields of responsibilities generally below the threshold of war or as an accompaniment to more regular armed conflict" (NATO, 2024, p. 16).

4.3. The response of international law– the prohibition of the use of force and hybrid warfare

Hybrid actions are often conducted in a way that would allow the perpetrating state to "fly below" the radar of the prohibitions established in international law, especially the prohibition of the use of force established in Article 1(4) of the UN

Charter (1945). "In practice, hybrid measures are designed to avoid being identified as clear violations of the Charter even when they do constitute an unlawful use of force. One way this is achieved is through an emphasis on covert action" (Cantwell, 2017). One goal of employing covert actions is to evade being directly associated with clear violations of international law. For perpetrators of hybrid warfare, covert methods are crucial because they exploit the vulnerabilities in the international enforcement system and foster inaction, particularly when aggressor states create uncertainty about the attribution or legality of their actions (Cantwell, 2017; Vasiliauskienė & Stumbrys, 2023, p. 147). "By definition, hybrid adversaries avoid any overt use of force. Hence, if a hybrid operation does not reach the required intensity level, the use of force in self-defence will be out of the question and jus ad bellum (international law regulating the resort to force) and jus in bello will not apply. Therefore, without firing a shot, hybrid adversaries can achieve their objectives and evade retaliation. Moreover, the question of attribution and thus, accountability, may also raise difficulties because hybrid adversaries will always deny involvement in such activities." (Sanz-Caballero, 2023).

Hybrid measures falling short of the use of force and measures in other fields usually do not violate Article 2(4). Disinformation, criminal activity, economic measures – all of these actions fall below the threshold of the use of force. However, such actions may be considered a form of interference, a prohibition implicit in Article 2(1) of the UN Charter (Cantwell, 2017). The General Assembly stated in 1965 that interference is the "subordination of the exercise of [a state's] sovereign rights." In 1970, the General Assembly stressed that there is a ban on intervention in the internal or external affairs of any other state along with "all other forms of interference or attempted threats against the personality of the State or against its political, economic and cultural elements" (Cantwell, 2017; UN General Assembly, 1970).

"The prohibition of the use of force is a cornerstone provision, *ius cogens* of

international law. The inherent right to self defence from an armed attack is established in Article 51 in UN Charter (1945). It states that every state has the right to defend itself in case if an armed attack occurs. However, the exact extent of the actions constituting armed attack is not as clear-cut. Armed actions of a state's armed forces will surely constitute armed attack in the sense of Article 51 and customary international law, but a question arises when the actions in question are low intensity or are perpetrated by irregular armed bands" Vasiliauskienė & Stumbrys, 2023, p. 146).

The International Court of Justice (hereinafter ICJ) has stated that "the Court sees no reason to deny that, in customary law, the prohibition of armed attacks may apply to the sending by a State of armed bands to the territory of another State, if such an operation, because of its scale and effects, would have been classified as an armed attack rather than as a mere frontier incident had it been carried out by regular armed forces" (ICJ, 1986). In the *Nicaragua v. United States of America* (1986) case, the ICJ held the view that "a mere frontier incident" – however this should be defined – does not qualify as an "armed attack" (Fogt, 2021, p. 63), thus requiring the gravity of an offensive in order to invoke the self-defense right of the state. However, Fogt (2021) argues that this restrictive and cautious interpretation has been rejected by some states and various scholars: "It seems, indeed, most convincing to depart from the view of a gravity requirement expressed by the ICJ in the Nicaragua case and regard any attack which results in or is likely to cause destruction of property and injury or loss of life as an 'armed attack,' which justifies state self-defence subject to the jus ad bellum principles of necessity and proportionality. A proportionate response to a small-scale attack, which could be conducted as part of a hybrid warfare, would in itself be limited in scale and effect in order to be lawful" (p. 63).

The question of whether multiple incidents can in accumulation constitute an armed attack is addressed by the theory of accumulated events. According to

Fard et al. (2023), "ICJ has affirmed the existence of a threshold for distinguishing between "the most extreme forms" and "less extreme forms" of the use of armed force. The theory of the accumulation of incidents refers to a series of minor incidents that have accumulated until they reach the threshold of armed conflict". This doctrine, also known as the "spiking" theory, involves a series of minor incidents accumulating until they reach the level of an armed attack, and some governments use it to justify their right to self-defense. Although this theory previously had limited support, it has gained traction as governments grapple with the significant challenges posed by transnational terrorist attacks (Fard et al., 2023).

"When applied to malicious cyber activities in the context of international law, normative aggregation may be appropriate where a series of acts can be attributed to a single State. As with normative aggregation in domestic criminal law, individual malicious cyber activities do not have to constitute a standalone wrongful act if, in the aggregate, the consequences of state action constitute a breach of an international obligation. Under international law, this theory of aggregation is called the Accumulation of Events Theory, or Nadelstichtaktik" (McLaughlin, 2023). In other sources, this is called needle-prick or pin-prick aggression.

McLaughlin (2023) asserts that the key criterion for determining if cyber or other hybrid activities qualify as an armed attack that justifies the right to self-defense is whether their effects are comparable to those caused by a kinetic weapon. To aggregate the cumulative impact of malicious activities that individually fall short of this threshold, their consequences and actions must be causally and temporally linked and attributable to a single source. The process of accumulating events starts with the initial identifiable wrongful act and continues until the activity stops. Any self-defense measures taken must be both proportionate and necessary for the effective exercise of self-defense. In addressing hybrid activities, proportionality and necessity depend on what is needed to disrupt either the

capacity or the will of the offending nation to persist in its wrongful conduct (McLaughlin, 2023; Vasiliauskienė & Stumbrys, p. 147).

In analogue with cyber activities, McLaughlin (2023) states that "When applied to malicious cyber activities in the context of international law, normative aggregation may be appropriate where a series of acts can be attributed to a single State. As with normative aggregation in domestic criminal law, individual malicious cyber activities do not have to constitute a standalone wrongful act if, in the aggregate, the consequences of state action constitute a breach of an international obligation. Under international law, this theory of aggregation is called the Accumulation of Events Theory, or Nadelstichtaktik (needle prick)." Fogt (2021) states that "the accumulation of events theory is of particular importance when discussing hybrid threats and warfare designed to stay under the triggering threshold. The asymmetric hybrid character of the low-level use of force, the flexibility regarding intensity and rapid adaptability coupled with disinformation and fake news targeted at the entire society as such may collectively constitute an 'armed attack' and, thus, justify a necessary and proportionate act in self-defence" (p. 66).

The question of attribution remains: one still has to establish whether this string of actions may be attributed to one or more specific states or a non-state group. "Both the standard evidence of attribution to such hybrid attacks to a specific state or non-state actor group, and the determination of the necessary scale and frequency of small attacks required remains unclear. On the one hand, this makes the accumulation of theory a most difficult jus ad bellum justification to apply for the state claiming self-defence or collective self-defence, but it does open the legal door of self-defence of the victim state by a series of hybrid acts" (Fogt, 2021, p. 67).

"Many other jus ad bellum issues of state self-defense also have the character of complex legal gray zones covered by uncertainties such as: the quality and quantity of the target of an armed attack (a person, unit, military facilities,

infrastructure or territory), the standard of burden of proof, the need of a possible intention (mens rea element), a duration or gravity requirement, or whether accumulation of "small" events suffices".

(Fogt, 2021, p. 66). This allows states to stay in apparent legality speaking about self-defence rules, but still conduct hybrid actions and hybrid warfare against other states.

4.4 Hybrid warfare and laws of war

When analyzing hybrid warfare, questions and issues arise regarding jus in bello or international humanitarian law (IHL). Hybrid warfare tactics frequently operate in ways that evade the direct scrutiny of international law. This includes IHL, which comes into play when the activities of the parties meet the threshold of an armed conflict (Vasiliauskienė & Stumbrys, 2023, p. 148). "The beginning of an armed conflict is the moment from which the application of the full regime of one or another international humanitarian law begins. Therefore, it can be said that the classification of the situation as an armed conflict is a legal fact of extraordinary importance" (Žilinskas, 2008, p. 92).

Accurately determining the existence of an armed conflict has significant and extensive implications in international law. The Use of Force Committee of International Law Association has stressed that "the existence of armed conflict has many significant impacts on the operation of international law beyond the well-known fact that during armed conflict international humanitarian law (IHL) will apply and states party to an armed conflict (or other emergencies) may have the right to derogate from some human rights obligations. In addition, states that provide asylum to persons fleeing the violence of armed conflict will have the duty to do so; treaty obligations may be implicated; the law of neutrality may be triggered; arms control agreements are affected, and United Nations forces engaged in armed conflict will have rights and duties not applicable in operations

outside of armed conflict. These are just some of the areas of international law that are affected by the outbreak of armed conflict." (Use of Force Committee, 2010, p. 33). The most crucial implication is that only during an armed conflict can parties exercise the rights of belligerents. Attempting to exercise these rights outside of an armed conflict risks infringing upon fundamental human rights that are upheld during peacetime (Vasiliauskienė, 2012, p. 182).

The existence of armed conflict "changes the level of protection of the right to life. In peacetime, the state may use force to maintain order, including the taking of life, but this must be absolutely necessary and strictly proportionate to the objectives pursued, according to human rights standards. In armed conflict, the deprivation of life is analysed under IHL norms, which impose quite different standards and proportionality requirements" (Vasiliauskienė, 2012, p. 182). Furthermore, a state responding in a proportionate and necessary manner in self-defense can only use force against persons and objects if it fulfils the requirements of IHL (Fogt, 2021, p. 73). An object is a legitimate target if it constitutes a military objective and if the use of force against this target is proportionate and conducted with lawful methods and means, and all feasible precautions have been taken. (Fogt, 2021, p. 73).

The International Criminal Tribunal for the former Yugoslavia (hereinafter ICTY), in the *Prosecutor v. Dusko Tadic* (1995) case, elaborated on the definition of an armed conflict, which since has been cited on numerous occasions and has become accepted as a textbook definition of armed conflict, which had not been provided for in the Geneva Conventions on the laws of war, Common article 2. The ICTY states that "an armed conflict exists whenever there is a resort to armed force between States or protracted armed violence between governmental authorities and organised armed groups or between such groups within a State" (*Prosecutor v. Dusko Tadic*, 1995, para. 70).

The UN High Commissioner for Human Rights' Special Rapporteur on

Human Rights and Terrorism defines an "armed conflict as a situation requiring that there be military operations and the use of military materiel. Long-accepted requirements for a showing of armed conflict include the use of military (rather than police) forces, the use of military (as opposed to police) weaponry and materiel, and the use of military (as opposed to police) operations." (Koufa, 2004, p. 9).

The Committee on the Use of Force of the International Law Association explored the concept of armed conflict under international law and concluded in 2010 that the definition of armed conflict provided in the *Prosecutor v. Dusko Tadic* (1995) case is supported by additional sources. The committee identified two critical elements of armed conflict: the presence of organized armed groups and engagement in combat activities of a certain intensity (Use of Force Committee, 2010, p. 2; Vasiliauskienė & Stumbrys, 2023, p. 149).

Challenges arise with both components of this definition. "Speaking about the organisational aspect, in case of the activity of states, the organisational criterion does not raise questions, as state is *ipso facto* considered an organised entity fully capable to participate in an armed conflict. But a different question arises, of attribution of particular hybrid action to the state. In case of hybrid actions, the states aim to "hide" behind proxies, armed groups, green men etc., therefore it is difficult to ascertain the organisator of hybrid actions and thus the existence of armed conflict. Furthermore, the intensity criterion is even more problematic. Manifestations of hybrid warfare in many cases do not amount to armed actions, but in totality may incur consequences similar to armed actions. Therefore a question arises whether the accumulation of actions could be considered together in order to determine whether the threshold for armed conflict has been crossed." (Vasiliauskienė & Stumbrys, 2023, p. 149).

As noted, the consequences of this determination are significant: a situation that falls just below the threshold for a non-international armed conflict will be addressed under national crisis and emergency (martial) laws and law enforcement

rules within a human rights law framework, possibly with or without military support from the state or its allies (Fogt, 2021, p. 74). Conversely, a situation that meets the criteria for armed conflict would trigger responses governed by IHL. Fogt further suggests that if a hybrid campaign and non-state armed resistance are scaled back and hostilities diminish, the threshold for a non-international armed conflict may no longer be met, leading to the reapplication of peacetime jus ad bellum (p. 74). Consequently, many questions remain unresolved.

Conclusions

The term "hybrid threats" is increasingly prevalent in international political discourse, encompassing various forms such as hybrid warfare, hybrid conflicts, and hybrid operations. NATO defines hybrid threats as involving adversaries using a mix of conventional and non-conventional methods to achieve their objectives, including propaganda and cyber activities. Similarly, the EU describes hybrid threats as a blend of coercive and subversive activities aimed at exploiting vulnerabilities and creating ambiguity to hinder decision-making. The Hybrid CoE highlights that hybrid threats blur traditional boundaries, exploiting systemic vulnerabilities and influencing decision-making at multiple levels. These threats are characterized by coordinated actions, deliberate ambiguity, and the use of both old and new tools in innovative ways, challenging even well-prepared states due to the effects of globalization, hyperconnectivity, and digitization.

The terms "hybrid threat" and "hybrid warfare" are often used as synonyms. However, there are now efforts to define and delineate these terms. The Hybrid CoE suggests that "hybrid threats" is used as an umbrella concept, while "hybrid warfare" is part of the activity occurring under the hybrid threats umbrella. The characteristics of hybrid warfare are modality of action, synchronicity, fusion, multimodality, and criminality. Hybrid warfare is the creative use of hard, soft, and smart power by malign state or nonstate actors to achieve warlike objectives

and political goals.

Hybrid actions are often conducted in a way that would allow the perpetrating state to evade the prohibitions established in international law, especially the prohibition of the use of force established in Article 1(4) of the UN Charter. Disinformation, criminal activity, economic measures – all of these actions fall below the threshold of the use of force. However, such actions may be considered a form of interference, a prohibition implicit in Article 2(1) of the UN Charter. The theory of accumulated events suggested by some scholars in the field of self-defense would allow multiple hybrid actions to be considered as armed attack, triggering the right to self-defense. However, the question of attribution may be problematic, and the state must follow the requirements of necessity and proportionality when responding in self-defense.

Hybrid warfare raises significant questions regarding IHL, particularly in how these conflicts evade direct scrutiny under IHL standards. IHL applies once activities reach the threshold of an armed conflict, which has extensive implications including shifts in contractual obligations, refugee rights, and arms control standards. During an armed conflict, the protection of the right to life transitions from peacetime human rights norms to IHL standards. The ICTY's *Prosecutor v. Dusko Tadic* case provides a widely accepted definition of armed conflict, involving organized armed groups and combat activities of a certain intensity. However, hybrid warfare complicates this definition, as states often use proxies to obscure involvement, challenging the identification of the true organizers and the cumulative assessment of hybrid actions. If a situation falls below the threshold of an armed conflict, it is managed under national laws and human rights frameworks, but meeting the threshold triggers IHL governance. Consequently, many aspects of hybrid warfare's interaction with IHL remain unresolved, underscoring the complexity of applying traditional legal frameworks to modern conflicts.

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CHAPTER V. THE DEFINITION OF TERRORISM: INTERNATIONAL LEGAL REGULATION AND POLICY

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Abstract *This chapter addresses the complex and contentious issue of defining terrorism within international law and policy. Despite the severe threat that terrorism poses to international and national security, resulting in significant loss of life and the disruption of societal stability, a universally accepted definition of terrorism remains elusive. This paper aims to clarify the current definitions and the challenges in reaching a consensus. The research investigates the various international and regional definitions of terrorism, examining key documents and conventions, such as the United Nations Global Counter-Terrorism Strategy, the EU Terrorism Situation and Trend Report (TESAT), and other significant treaties and resolutions. Through a comparative analysis, the study identifies the core elements commonly recognized in these definitions: the unlawful and intentional nature of the act, the serious harm caused, and the primary objective of intimidation or coercion. Employing a qualitative research design, the methodology involves a thorough literature review and an analysis of international legal instruments and policy documents. The paper scrutinizes definitions from diverse sources, highlighting discrepancies and commonalities, and evaluates the implications of these definitions on international cooperation and legal frameworks. The findings reveal a fragmented landscape, where definitions of terrorism vary significantly across different international and regional bodies. The lack of a unified definition complicates legal proceedings, extradition, and*

international cooperation in counter-terrorism efforts. The paper underscores the importance of a clear and comprehensive definition to enhance the effectiveness of global counter-terrorism strategies and to ensure consistent legal standards. In conclusion, this paper contributes to the ongoing debate by mapping out existing definitions and proposing pathways towards a more cohesive international legal framework. It calls for intensified efforts to bridge the definitional gaps and to develop a universally accepted definition that can effectively address the multifaceted nature of terrorism.

Keywords: *terrorism, international law, definition, security, counter-terrorism, policy*

5.1. Terrorism as a threat to international and national security

Terrorism poses a significant danger and threat by instilling fear, disrupting societies, and causing loss of life and property. It undermines stability and security, often targeting innocent civilians and critical infrastructure to achieve political, ideological, or religious goals. The unpredictable nature of terrorist attacks makes them particularly challenging to prevent and combat, exacerbating their impact on global peace and security.

This is underlined in various strategies and policies at both the international and national levels. The United Nations Global Counter-Terrorism Strategy (2004) has underscored that "acts, methods and practices of terrorism in all its forms and manifestations are activities aimed at the destruction of human rights, fundamental freedoms and democracy, threatening territorial integrity, security of States and destabilizing legitimately constituted Governments."

TESAT, or the EU Terrorism Situation and Trend Report, is an annual publication by Europol that provides a comprehensive overview of the terrorism landscape in the EU, including statistical data, trends, and the analysis of terrorist

activities and counter-terrorism measures. The 2023 TESAT (Europol, 2023) again stressed that "terrorism constitutes an attack on our society intending to create fear and chaos among EU citizens" (p. 4). Speaking about numbers, TESAT indicates that "in 2022, 16 terrorist attacks took place in the EU and an additional 12 attacks failed or were foiled. While the attacks directly affected seven Member States, more Member States arrested suspects in terrorism-related cases. Tragically, four people were killed in terrorist attacks in the EU, two resulting from jihadist attacks and two from a right-wing terrorist attack" (p. 4)

Thus, the threat is evident and is always relevant; however, its definition is far from clear, as will be demonstrated below.

5.2. The problem and significance of defining terrorism

As Kalliopi Koufa, the United Nations (UN) Rapporteur on Human Rights and Terrorism (2004, p. 8), has pointed out, the issue of terrorism is one of the most controversial issues in international law and politics today. Perhaps no word in the modern language evokes such a range of emotions, from faith in radical change to rage and condemnation. The popular saying "one man's terrorist is another man's freedom fighter" is also reflected in the debate on the definition of terrorism, a problem that contributes greatly to the complexity of the issue (Vasiliauskienė, 2014, p. 32). The term "terrorism" itself (*terreur*) was coined to describe the policy of intimidation used during the French Revolution.

An early international legal document which aimed to define terrorism was the Convention for the Prevention and Punishment of Terrorism, which was adopted by the 24 Member States of the League of Nations on November 16, 1937. Article 1 of the Convention defined acts of terrorism as "criminal acts directed against a State and intended or calculated to create a state of terror in the minds of particular persons or a group of persons or the general public." The Convention specified the kinds of anti-state actions that were to be considered acts of terror (e.g.,

attacking public officials, heads of state and their families, or the destruction of public facilities). It required signatory states to enact laws making such acts extraditable offenses in the event one of their nationals committing an act of terror in a foreign country. The Convention never came into effect, in part because disputes among the Member States over the articles on extradition prevented ratification (Convention for the Prevention and Punishment of Terrorism, 1937).

Terrorism is also difficult to define because it involves a political assessment of the actions and motivations of the individuals or organizations concerned. Often, the term is used irresponsibly in political disputes in order to humiliate the opponent, as the word "terrorist" itself is stigmatizing. Thus, it is often the case that the evaluation and labelling of terrorist acts depends on the sympathies and support of the evaluator, so that a terrorist attack might be labelled as a "fight for independence" by a state that supports the movement in question, while another hostile state would label it as a "heinous terrorist attack." However, these political considerations should not affect the legal content of the definition of terrorism (Vasiliauskienė, 2014, p. 31).

It should be stressed that international efforts to define the term terrorism are not as fruitless as they may seem at first sight. There is a reciprocal relationship between national and international law, so that provisions enshrined in national legislation can provide a signal to the international community as to the direction in which international law should move, i.e., which elements should be included in the definition of terrorism. However, there is also movement in the opposite direction, with international efforts to establish a single definition of terrorism having an impact on states, which then revise or introduce for the first time a definition of terrorism, as happened with Canada in 2001 (Wagner, 2003).

From a criminal law perspective, it should be noted that terrorist attacks differ from other "ordinary" crimes in that in the case of "ordinary" crimes, the chances of the police tracking down the perpetrators and solving the crime are greater,

as they may, for example, know how the crime is planned, allowing it to proceed to the very last phase and apprehending the perpetrators at the scene. Ordinary crimes usually have a specific geographic target and a defined victim base, so that skilled police officers can detect them and apprehend suspects. In the case of terrorist crimes, those committed by fanatical individuals are much less predictable, especially in the case of suicide bombings, where the date, time, and location of the attack can be changed in the blink of an eye (Lord Carlile of Berriew, 2007, p. 24). It is therefore relevant to define terrorism as a criminal offence and to identify the means that can be used to combat it.

Marcello Di Filippo (2014) observed that: "As far as international law and terrorism are concerned, reference may be made to enhanced inter-state co-operation tools; derogations from guarantees usually accorded to individuals (in human rights, refugee, or extradition law); special security measures adopted by the United Nations Security Council or other international agencies (including in the financial sector); the application of the international crimes regime; the attribution of violent activity to a state under the law of state responsibility; the justification of the use of armed force; and so on" p. 2).

5.3. The definition of terrorism in international law: the universal level

After the failure of the attempt by the League of Nations and thus lacking a comprehensive strategy, the international community's efforts to define mechanisms for combating terrorism were for a long time characterized by selective and random interventions. This is particularly noticeable at the global level: the UN and some specialized or related agencies adopted various piecemeal or sector-specific conventions that addressed specific aspects of the issue. Additionally, the offenses in these treaties were typically broad enough to encompass conduct regardless of whether it was motivated by terrorist, political, or other purposes. A partial shift from this cautious, sectoral approach occurred with the 1999

Convention on the Suppression of the Financing of Terrorism (Di Filippo, 2014, p. 5).

Sectoral conventions[6] criminalize: offences committed on-board aircraft,[7] the unlawful seizure of aircraft,[8] and unlawful acts against the safety of civil aviation[9]; acts against internationally protected persons[10]; the taking of hostages[11]; and acts against the safety of maritime navigation.[12] Further conventions include those regarding the marking of plastic explosives for the purpose of detection[13] and those prohibiting terrorist bombings,[14] terrorist financing,[15] acts of nuclear terrorism,[16] and acts against the safety of nuclear material and facilities.[17] These offences are considered terroristic in nature and there is some variation regarding which of these conventions are related to terrorism, but the approach remains the same – to consider the acts listed in all or some of these conventions as terrorist.

In 1972, the UN General Assembly created an ad hoc committee with a mandate to discuss the draft General Convention on Terrorism and define terrorism. This committee did not reach an agreement on the definition of terrorism, but

6 The list was taken from https://www.osce.org/files/f/documents/5/8/17138_0.pdf

7 1963 Convention on Offences and Certain Other Acts Committed On Board Aircraft and 2014 Protocol to the Convention on Offences and Certain other Acts Committed on Board Aircraft.

8 1970 Convention for the Suppression of unlawful seizure of aircraft and 2010 Protocol Supplementary to the Convention for the Suppression of Unlawful Seizure of Aircraft.

9 1971 Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation and 1988 Protocol for the Suppression of Unlawful Acts of Violence at Airports Serving International Civil Aviation; 2010 Convention on the Suppression of Unlawful Acts Relating to International Civil Aviation

10 1973 Convention on the Prevention and Punishment of Crimes against Internationally Protected Persons, including Diplomatic Agents

11 1979 International Convention against the Taking of Hostages.

12 1988 Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation; 1988 Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf; 2005 Protocol to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation; 2005 Protocol to the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf.

13 1991 Convention on the Marking of Plastic Explosives for the Purpose of Detection.

14 1997 International Convention for the Suppression of Terrorist Bombings.

15 1999 International Convention for the Suppression of the Financing of Terrorism.

16 2005 International Convention for the Suppression of Acts of Nuclear Terrorism.

17 1980 Convention on the Physical Protection of Nuclear Material; 2005 Amendment to the Convention on the Physical Protection of Nuclear Material.

in its report, it stressed that the main issue on which there was disagreement was whether or not the actions of national liberation movements should be included in the definition of terrorism (Duffy, 2005).

In the 1990s, the change in the international situation (the end of the Cold War and apartheid, the independence of African countries, etc.) made it possible to hope that a common definition of terrorism was within reach. In 1995, UN General Assembly declaration No. 50/53 (1994) indirectly defined terrorist acts as "criminal acts intended or calculated to provoke a state of terror in the general public, a group of persons or particular persons for political purposes," and stated that such acts "are in any circumstances unjustifiable, whatever the considerations of a political, philosophical, ideological, racial, ethnic, religious or other nature that may be invoked to justify them."

To further develop the definition of terrorism, the General Assembly, via Resolution 51/210 of 1996, established a new ad hoc committee, one of the tasks of which was to reach agreement on a definition of terrorism to be enshrined in the Comprehensive Convention on International Terrorism (hereinafter the Convention; Vasiliauskienė, 2014, p. 35). This Convention has not yet been adopted, but two other international conventions related to terrorism have been adopted during the Committee's work: the International Convention for the Suppression of the Financing of Terrorism, adopted on 9 December 1999; and the International Convention for the Suppression of Acts of Nuclear Terrorism, adopted on 13 April 2005.

The International Convention for the Suppression of the Financing of Terrorism (1999), even though it applies only to one element of the fight against terrorism, is a step towards a universal definition of terrorism as it includes the first abstract definition of terrorism in a universal international legal act. It states that "any person commits an offence within the meaning of this Convention if that person by any means, directly or indirectly, unlawfully and wilfully, provides

or collects funds with the intention that they should be used or in the knowledge that they are to be used, in full or in part, in order to carry out: (a) An act which constitutes an offence within the scope of and as defined in one of the treaties listed in the annex; or (b) Any other act intended to cause death or serious bodily injury to a civilian, or to any other person not taking an active part in the hostilities in a situation of armed conflict, when the purpose of such act, by its nature or context, is to intimidate a population, or to compel a government or an international organization to do or to abstain from doing any act" (Art. 2).

Following the attacks of September 11, 2001, the international community unanimously condemned terrorism, expressing its support for the conventions already adopted and its determination to adopt the conventions under preparation (Duffy, 2005, p. 20). The states participating in the Committee's work have been unanimous in their condemnation of terrorism in whatever form it may take. However, this was not enough to adopt the Comprehensive Convention on International Terrorism (2000). Most of the text of the Convention has been agreed on, but there are still outstanding issues.

The main aims of the states drafting Comprehensive Convention on International Terrorism (2000) are:

1) "the suppression of acts of international terrorism, including those which are committed or supported by States, directly or indirectly", which in the opinion of the drafters of the Convention, "is an essential element in the maintenance of international peace and security and the sovereignty and territorial integrity of States", and
2) "to take effective measures to prevent acts of terrorism and to ensure that perpetrators of terrorist acts do not escape prosecution and punishment by providing for their extradition or prosecution."

Thus, it is mostly aimed at ensuring domestic prosecution for terrorist acts and their perpetrators.

Speaking about the proposed definition of terrorism, Article 2 defines

terrorism as an "offence within the meaning of this Convention if that person, by any means, unlawfully and intentionally, does an act intended to cause:

(a) Death or serious bodily injury to any person; or
(b) Serious damage to a State or government facility, a public transportation system, communication system or infrastructure facility with the intent to cause extensive destruction of such a place, facility or system, or where such destruction results or is likely to result in major economic loss;

when the purpose of such act, by its nature or context, is to intimidate a population, or to compel a Government or an international organization to do or abstain from doing any act."

The Draft Comprehensive Convention on International Terrorism (2000) outlines additional offences related to the acts of terrorism described in Article 2. It criminalizes attempts, participation as an accomplice, and involvement in organizing, directing, instigating, aiding, abetting, facilitating, or counselling the commission of terrorist acts. Furthermore, it addresses contributions to these offences by groups with a common purpose, emphasizing that such contributions must be intentional, aimed at furthering the group's criminal activities, or made with knowledge of the group's intentions. The Convention specifies that it does not apply to offences committed within a single state by its nationals if no other state has jurisdiction under specific conditions (Art. 2–3).

To ensure the effectiveness of the Convention, each state party is required to adopt necessary measures to establish the outlined terrorist acts as criminal offences under domestic law and to impose appropriate penalties reflecting the gravity of these offences. Additionally, states must implement legislation ensuring that such criminal acts are not justifiable by political, philosophical, ideological, racial, ethnic, religious, or other similar considerations. The Convention also mandates that each state party establish its jurisdiction over these offences when committed within its territory, on board its registered ships or aircraft, or in other

specified situations (Art. 4–5).

5.4. Regional definitions of terrorism

The Council of Europe. The European Convention on the Suppression of Terrorism (1977) defines terrorism by referencing the offences previously prohibited by other international conventions. It aims at strengthening the extradition of persons suspected of terrorism. Article 1 states that "for the purposes of extradition between Contracting States, none of the following offences shall be regarded as a political offence or as an offence connected with a political offence or as an offence inspired by political motives:

a) an offence within the scope of the Convention for the Suppression of Unlawful Seizure of Aircraft, signed at The Hague on 16 December 1970;
b) an offence within the scope of the Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation, signed at Montreal on 23 September 1971;
c) a serious offence involving an attack against the life, physical integrity or liberty of internationally protected persons, including diplomatic agents;
d) an offence involving kidnapping, the taking of a hostage or serious unlawful detention;
e) an offence involving the use of a bomb, grenade, rocket, automatic firearm or letter or parcel bomb if this use endangers persons;
f) an attempt to commit any of the foregoing offences or participation as an accomplice of a person who commits or attempts to commit such an offence."

The Council of Europe Convention on the Prevention of Terrorism (2005) adopts a similar approach to that of the 1977 Convention, where it defines a terrorist offence as "any of the offences within the scope of and as defined in one of the treaties listed in the Appendix."[18] A State Party may make a reservation of

18 The Appendix lists the following treaties: 1) Convention for the Suppression of Unlawful Seizure of Aircraft, signed at The Hague on 16 December 1970; 2) Convention for the Suppression of Unlawful Acts Against the Safety of Civil Aviation, concluded at Montreal on 23 September 1971; 3) Convention on the Prevention and

non-application regarding certain treaties which have not yet entered into force for that particular state. After their entry into force, the reservation ceases to be valid.

The European Union. Directive (EU) 2017/541 (2017) aims to adapt EU law to evolving terrorist threats by establishing minimum rules for defining terrorism-related offences and sanctions, and by introducing measures for the protection, support, and assistance of victims. Article 3 sets a general definition of terrorism, not linked to the list of international conventions. Article 3 states that terrorist offences are the following intentional acts, which, given their nature or context, may seriously damage a country or an international organization:

(a) attacks upon a person's life which may cause death;
(b) attacks upon the physical integrity of a person;
(c) kidnapping or hostage-taking;
(d) causing extensive destruction to a government or public facility, a transport system, an infrastructure facility, including an information system, a fixed platform located on the continental shelf, a public place or private property likely to endanger human life or result in major economic loss;
(e) seizure of aircraft, ships or other means of public or goods transport;
(f) manufacture, possession, acquisition, transport, supply or use of explosives or weapons, including chemical, biological, radiological or nuclear weapons, as well as research into, and development of, chemical, biological, radiological or nuclear weapons;
(g) release of dangerous substances, or causing fires, floods or explosions, the effect of which is to endanger human life;

Punishment of Crimes Against Internationally Protected Persons, Including Diplomatic Agents, adopted in New York on 14 December 1973; 4) International Convention Against the Taking of Hostages, adopted in New York on 17 December 1979; 5) Convention on the Physical Protection of Nuclear Material, adopted in Vienna on 3 March 1980; 6) Protocol for the Suppression of Unlawful Acts of Violence at Airports Serving International Civil Aviation, done at Montreal on 24 February 1988; 7) Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation, done at Rome on 10 March 1988; 8) Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms Located on the Continental Shelf, done at Rome on 10 March 1988; 9) International Convention for the Suppression of Terrorist Bombings, adopted in New York on 15 December 1997; 10) International Convention for the Suppression of the Financing of Terrorism, adopted in New York on 9 December 1999; 11) International Convention for the Suppression of Acts of Nuclear Terrorism, adopted in New York on 13 April 2005.

(h) interfering with or disrupting the supply of water, power or any other fundamental natural resource, the effect of which is to endanger human life;
(i) illegal system interference, as referred to in Article 4 of Directive 2013/40/EU of the European Parliament and of the Council (19) in cases where Article 9(3) or point (b) or (c) of Article 9(4) of that Directive applies, and illegal data interference, as referred to in Article 5 of that Directive in cases where point (c) of Article 9(4) of that Directive applies;
(j) threatening to commit any of the acts listed in points (a) to (i)."

Furthermore, Directive (EU) 2017/541 states that the abovementioned acts have to be committed with one of the following aims:

(a) seriously intimidating a population;
(b) unduly compelling a government or an international organisation to perform or abstain from performing any act;
(c) seriously destabilising or destroying the fundamental political, constitutional, economic or social structures of a country or an international organisation" (Art. 3).

Directive (EU) 2017/541 also requires states to criminalize the following offences relating to a terrorist group: "directing a terrorist group; participating in the activities of a terrorist group, including by supplying information or material resources, or by funding its activities in any way, with knowledge of the fact that such participation will contribute to the criminal activities of the terrorist group" (Art. 4).

The League of Arab States. The definition of terrorism provided in the Arab Convention for the Suppression of Terrorism (1998, Art. 1(2)) defines terrorism as "any act or threat of violence, whatever its motives or purposes, that occurs in the advancement of an individual or collective criminal agenda and seeking to sow panic among people, causing fear by harming them, or placing their lives, liberty or security in danger, or seeking to cause damage to the environment or to public or private installations or property or to occupying or seizing them, or

seeking to jeopardize a national resources."

It defines a terrorist offence by offering a general definition, also adding a list of conventions which define terrorist acts. Hence, a terrorist offence is "any offence or attempted offence committed in furtherance of a terrorist objective in any of the Contracting States, or against their nationals, property or interests, that is punishable by their domestic law. The offences stipulated in the following conventions, except where conventions have not been ratified by Contracting States or where offences have been excluded by their legislation, shall also be regarded as terrorist offences:

a. The Tokyo Convention on offences and Certain Other Acts Committed on Board Aircraft, of 14 September 1963;
b. The Hague Convention for the Suppression of Unlawful Seizure of Aircraft, of 16 December 1970;
c. The Montreal Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation, of 23 September 1971, and the Protocol thereto of 10 May 1984;
d. The Convention on the Prevention and Punishment of Crimes against Internationally Protected Persons, including Diplomatic Agents, of 14 December 1973;
e. The International Convention against the Taking of Hostages, of 17 December 1979;
f. The provisions of the United Nations Convention on the Law of the Sea, of 1982, relating to piracy on the high seas" (Art. 1(3)).

This definition is very broad, as there is no criterion of significant harm to distinguish the crime of terrorism from similar acts that are not considered terrorist attacks because the harm caused is minor. This leaves room for abuse, whereby acts carried out, for example, in the exercise of the freedom of expression and peaceful assembly, or in similar cases, could also be considered terrorist attacks. The range of objects covered by the definition of terrorism is also much broader than, for example, the EU definition, as it is foreseen that threats to the

freedom or security of individuals are also considered as part of a terrorist attack (Vasiliauskienė, 2014, p. 40).

The Organization of the Islamic Conference. The Convention of the Organisation of The Islamic Conference on Combating International Terrorism (1999) aims to "to combat[e] all forms and manifestations of terrorism and eliminating its objectives and causes which target the lives and properties of people." Article 1 of this Convention also defines terrorism quite broadly, almost replicating the definition of the League of Arab States Convention but adding that terrorism also includes threats to international infrastructure or to the stability, territorial integrity, political unity, or sovereignty of independent states.

The Organization of American States. The OAS has adopted two conventions on the question of fighting terrorism. The Convention to Prevent and Punish the Acts of Terrorism Taking the Form of Crimes Against Persons and Related Extortion that are of International Significance (1971, Art. 1–2) defines prohibited acts as kidnapping, murder, and other assaults against individuals who are accorded special protection under international law, as well as extortion related to these crimes. These acts are considered common crimes of international significance, irrespective of the motive behind them. The contracting states agree to cooperate and take effective measures, as per their own laws and the Convention, to prevent and punish these acts of terrorism. The second anti-terrorism treaty, the 2002 Inter-American Convention against Terrorism, which was negotiated and adopted following the 9/11 terrorist attacks, also adopts a list approach regarding the definition of terrorism.[19]

19 **Article 2. Applicable international instruments**
1.For the purposes of this Convention, "offenses" means the offenses established in the international instruments listed below:
a. Convention for the Suppression of Unlawful Seizure of Aircraft, signed at The Hague on December 16, 1970.
b. Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation, signed at Montreal on September 23, 1971.
c. Convention on the Prevention and Punishment of Crimes against Internationally Protected Persons, including Diplomatic Agents, adopted by the General Assembly of the United Nations on December 14, 1973.

The African Union. The definition of terrorism of the African Union (previously the Organisation of African Unity) is included in Organisation of African Unity Convention on the Prevention and Combating of Terrorism (1999). Article 1 defines a terrorist act as "any act which is a violation of the criminal laws of a State Party and which may endanger the life, physical integrity or freedom of, or cause serious injury or death to, any person any number or group of persons or causes or may cause damage to public or private property, natural resources, environmental or cultural heritage and is calculated or intended to:

i) intimidate, put in fear, force, coerce or induce any government, body, institution, the general public or segment thereof, to do or abstain from doing any act, or to adopt or abandon a particular standpoint, or to act according to certain principles; or
ii) disrupt any public service, the delivery of any essential service to the public or to create a public emergency; or
iii) create general insurrection in a State."

It further criminalizes "any promotion, sponsoring, contribution to, command, aid, incitement, encouragement, attempt, threat, conspiracy, organizing, or procurement of any person with the intent to commit any act referred to" above.

The Convention (1999) includes an exception regarding the self-determination of peoples. Article 3 states that "notwithstanding the provisions of Article 1, the struggle waged by peoples in accordance with the principles of international

d. International Convention against the Taking of Hostages, adopted by the General Assembly of the United Nations on December 17, 1979.
e. Convention on the Physical Protection of Nuclear Material, signed at Vienna on March 3, 1980.
f. Protocol on the Suppression of Unlawful Acts of Violence at Airports Serving International Civil Aviation, supplementary to the Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation, signed at Montreal on February 24, 1988.
g. Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation, done at Rome on March 10, 1988.
h. Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf, done at Rome on March 10, 1988.
i. International Convention for the Suppression of Terrorist Bombings, adopted by the General Assembly of the United Nations on December 15, 1997.
j. International Convention for the Suppression of the Financing of Terrorism, adopted by the General Assembly of the United Nations on December 9, 1999.

law for their liberation or self-determination, including armed struggle against colonialism, occupation, aggression and domination by foreign forces shall not be considered as terrorist acts."

This definition defines the purpose of such an act quite broadly, introducing a new element – the intention to cause a general uprising in the state. The harm caused is defined as grave harm – a threat to life, health, liberty, or the large-scale violation of these goods. The key elements of this definition are therefore the unlawful nature of the act, the serious harm caused, and the purpose of the act – to intimidate, disrupt public services, or cause a general uprising (Vasiliauskienė, 2014, p. 42).

The South Asian Association for Regional Cooperation. The Convention on the Suppression of Terrorism (1987) deals with extradition issues and adopts a dual approach, providing a list of acts prohibited by certain conventions[20] and as well indicating that "murder, manslaughter, assault causing bodily harm, kidnapping hostage-taking and offences relating to firearms, weapons, explosives and dangerous substances when used as a means to perpetrate indiscriminate violence involving death or serious bodily injury to persons or serious damage to property" will be considered as terroristic and shall not be regarded as political offences. The Additional Protocol to the SAARC Regional Convention on Suppression of Terrorism (2004) aimed at combating the financing of terrorism adds the element of the purpose to the definition: the act is considered terrorist where the purpose of the act, by its nature or context, is to intimidate the public or to compel a government or an international organization to perform or refrain from performing a particular act (Art. 3(1)(b)).

20 Article 1 states: „An offence within the scope of the Convention for the Suppression of Unlawful Seizure of Aircraft, […]; An offence within the scope of the Convention for the Suppression of Unlawful acts against the safety of Civil Aviation, […]; An offence within the scope of the Convention on the Prevention and Punishment of Crimes against Internationally Protected Persons, including Diplomatic Agents, […]; An offence withing the scope of Any Convention to which SAARC Member States concerned are parties and which obliges the parties to prosecute or grant extradition".

Thus, in virtually all regions of the world, international organizations have adopted treaties that in one way or another define or regulate the definition of terrorism. The OAS and Council of Europe conventions relating to terrorism define terrorism only in terms of acts that are already prohibited by other conventions regulating terrorist acts, with the aim of regulating extradition procedures. In contrast, other conventions reflect, more or less broadly, the basic elements of the definition of terrorism: the seriousness of the act and the terroristic objective. Thus, it can be stated that international law defining terrorism is dominated by sectoral regulation, defining and prohibiting particular types of terrorist attacks. Although there is no accepted universal definition of terrorism, an analysis of various international treaties and resolutions suggests that terrorism as a criminal offence is defined as an unlawful and intentional act by a person which causes death or serious bodily injury to a person or serious damage to public or private property, if the purpose of the act is to intimidate the public or to compel a government or an international organization to perform or refrain from performing an act (Vasiliauskienė, 2014, pp. 43–44).

Conclusions

In 1972, the UN General Assembly formed an ad hoc committee to draft a General Convention on Terrorism and define terrorism, but it failed to agree on a definition, particularly regarding whether actions by national liberation movements should be included. The 1990s saw renewed hope for a consensus due to significant global changes, leading to the UN's 1995 declaration indirectly defining terrorism as criminal acts intended to provoke terror for political purposes. In 1996, the General Assembly established another ad hoc committee to finalize a definition in the Comprehensive Convention on International Terrorism, which remains unadopted, although significant related conventions were established, including the International Convention for the Suppression of the Financing of

Terrorism in 1999. Post-9/11, the global consensus against terrorism strengthened, but unresolved issues have delayed the adoption of the comprehensive Convention, which aims to suppress international terrorism, ensure the prosecution of perpetrators, and prevent terrorist acts, with Article 2 detailing the proposed definition and criminalizing related offences.

International organizations worldwide have adopted treaties that define or regulate terrorism. The OAS and Council of Europe conventions focus on acts already prohibited by other conventions, primarily to regulate extradition procedures. Other conventions incorporate the core elements of terrorism: the seriousness of the act and the terrorist objective. International law on terrorism is thus dominated by sectoral regulation, targeting specific types of attacks. While there is no universal definition, various treaties and resolutions suggest that terrorism involves unlawful, intentional acts causing death, serious injury, or significant property damage, aimed at intimidating the public or coercing governments or international organizations.

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CHAPTER VI. THE IMPACT OF ECONOMIC SECURITY ON BUSINESS

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Abstract. *For each country, self-development and progress means the ability to pursue and defend national interests independently, to create an environment conducive to investment and innovation, and to develop intellectual potential. An economy that is constantly evolving can withstand internal and external threats. The robustness and efficiency of economic processes can mitigate the impact of destabilizing processes.* ***The aim of this paper*** *is to highlight the impact of economic security on business.*

Economic security is the ***subject of the study.***

Study objectives:

- *to highlight the need for economic security;*
- *to analyze theories of economic security;*
- *to describe Lithuania's concept of economic security;*
- *to analyze Lithuania's policy on small and medium-sized enterprise formation and its implementation.*

Research methods. *The analysis of scientific literature was used to clarify the concept of economic security. The analysis of legislation was used to reveal the*

perception of economic security in Lithuania. The analysis of statistical data was used to reveal the importance of economic security in shaping the country's competitiveness.

Studies have shown that there is no consensus on the perception of economic security. Depending on what should be considered as the main threat to national economic security and how it should be tackled, three main schools of thought on economic security have emerged worldwide. Economic security in Lithuania is enshrined in legislation: the Lithuanian National Security Strategy and the Law on National Security Framework. The Lithuanian National Security Strategy (current version, 2021) identifies the following overriding national security interests: the state seeks to create the most favorable conditions for entrepreneurs to exploit their potential in the course of business regulation. The best example in analyzing the formulation and implementation of the State's SME policy is the establishment of small partnerships (2012), which allowed new business enterprises to be established under simplified conditions. Studies have shown that the main problem in the formulation and implementation of SME policy lies in the complexity of the business environment and the lack of simple forms of company formation that are attractive to small businesses. The idea of the small partnership was a progressive, very welcome, and encouraging one, but it remains under the governmental control, and sole proprietorships are also unpopular because of high taxes.

***Keywords**: economic security, theories of economic security, small and medium-sized business, Lithuanian economic security concept.*

Introduction

Recently, economic security theory has become a central part of economic science. Economic security is an important priority issue for every state. Every human activity is characterized by certain threats and risks that must be assessed in order to achieve the objectives of society, business, and the individual. On the

other hand, due to the unevenness of economic development and the variety of opportunities, the importance of security is increasing. Failure to assess the implications of security and economic reforms for the individual, society, and the state can lead to severe setbacks, which may even destroy the state and the viability of society. This is why, in the current context, the economic security of a country is of particular importance, as it points in the direction of the right socio-economic decisions and plays a key role in assessing the driving forces behind economic growth.

The concept of economic security began to be used in the US around 1930, when the country was looking for a way out of economic crisis. In 1934, President Roosevelt set up a special Federal Committee on Economic Security to normalize and stabilize the social situation in the country by creating legislation to provide social insurance for the unemployed and public pensions. Since then, the issue of economic security has always been an important one, and this has become more and more urgent as the economic situation has become more acute. Economic security is a topic of great interest to researchers worldwide. The growing global competition and the emergence of new strategic risks, exacerbated by the global financial crisis, have increased the role of economic security, and it is therefore particularly important to find a link between economic security and small and medium-sized enterprises (SMEs). The latter institutions are one of the key components of a market-based economy, and have a decisive impact on the economic growth of a region and on the stability of social relations. Low capital requirements; rapid response to and flexibility in adapting to market changes; filling new markets or niches; competing with large enterprises; servicing large enterprises; developing new and often better-quality products, services, and production processes; a favorable form of family business; the effective training of specialists – these are the main advantages of SMEs, highlighting their efficiency and importance.

Alongside big businesses, Lithuania has seen the rapid development of SMEs, which have encountered several problems that have hampered their progress. One problem is the state's assessment of performance. The centrally planned economy left a deformed economy in which the state was an omniscient monster – it was the only actor trying to answer the basic questions of the economy: what to produce, how to produce, how much to produce. In developed countries, the market provided the answer to these questions. Perhaps that is why, today, there is a strong desire on the part of entrepreneurs, farmers, and scientists alike to isolate the objects of the state's activity as little as possible from the many spheres that it used to control. Clearly, the state has a role to play in the development of business, on the one hand by supplementing market relations with elements of state regulation and on the other hand by using non-market methods to resolve those issues that the market cannot effectively address. Therefore, from the point of view of public administration, it is very important to analyze how the policy on SMEs has been formed, how it has been implemented, and what results have been achieved.

6.1. The emergence of economic security

The first ideas about security date back to antiquity. The first mention of security is found in the Old Testament, in the book of Ezekiel. Translated from the Greek, security means to control a situation. Aristotle thus linked the concept of security to self-preservation.

The term "security" itself dates back to 1190 and refers to a state of peace of mind. However, the term was rarely used in this form until the 17th century. In the 17th and 18th centuries, almost all countries agreed that the main goal of the state was common welfare and security. During this period, the concept of security took on a new meaning, i.e., a calm situation, the absence of any real danger (physical, moral), as well as new material, economic, and political conditions and the appropriate organizations and institutions to help create this. The clarification

of the concept of security is necessary for a more detailed understanding of the concept of economic security. Modern approaches to security emerged relatively recently because of wars and revolutions in the 20th century and the increased risk of technogenic and ecological disasters. As a result, the concept of security has undergone changes and transformations from the individual to the society, the state, and the global space. Such changes have led to the importance of the security problem becoming a priority policy for every state. While theoretical studies of economic security date back to the 19th century, institutional structures related to economic security began to be established only in the 20th century. The concept of economic security appeared in global economic science and practice in the 20th century. It is generally accepted that the concept of economic security was introduced by President Roosevelt in 1934, when, realizing the need for state regulation of the economy, the classical practice of non-interference of the state in economic life was abandoned and the Federal Committee on Economic Security was created. Since then, economic security has always been an issue.

The definition of the essence and content of economic security allows us to answer the question of what economic security, as a scientific subject, deals with. The subject of economic security is, on the one hand, related to the ability of the economic system, economic entities, and their parts to resist threats. On the other hand, it concerns the specific functions of the state as a macro-economic regulator in ensuring economic security and the creation of special institutes for this purpose.

The understanding and description of economic security comes from the intersection of several fields, chiefly economics and political science. This is perhaps why there is no single understanding of economic security today. Often, scholars give their own definitions of the essence of economic security, using various combinations of the categories of economic sovereignty, independence, stability, sustainability, and economic interests.

According to international scholars, the economic security of a state is of primary importance and is determined by: the necessity of the sovereignty of the state, both in domestic decision-making and in the international situation; the preservation of the country's economic autonomy; and the raising of the standard of living achieved.

In this context, it is pertinent to briefly examine the evolution of the concept of economic security in the United States (US), Japan, the European Union (EU), China, and Lithuania. The concept of economic security has been used because of the use of another term – national security. The concept of national security (Simanavicius, A., Šubonytė, J., & Simanavičienė, Ž., 2019) as a philosophy of sustainable development of the state was associated with the events of the so-called Peace of Westphalia (1648), in which the concept of a sovereign state ruled by an independent ruler became the basis for a new international order in nation states. The earliest reference to the concept of national security was at Yale University (US) in 1790. The historical perception of national security included the political, military, and economic spheres. Theodore Roosevelt justified the Panama Canal link as a national security interest in his report to the US Congress in 1904 (Diaz-Espino, 2014). Franklin Roosevelt, re-elected as president of the US in 1934 during the Great Depression, used the phrase "national economic security" in his address to the nation. In 1934, the first Committee on Economic Security was created in the US, with the main objective of stabilizing the social environment in the country. The concept of national security became a guiding principle of US international policy when President Truman signed the National Security Act (1947). As president, Bill Clinton created the National Economic Committee for the Establishment and Maintenance of Measures for National Economic Security. Every year, the US administration prepares and publishes a document called the "National Security Strategy," which is a declaration of the democratic course that anticipates the opportunities and challenges the country may face. The content of

this strategy is strictly regulated by law, and concerns:

1. US interests, goals, and objectives that are international in nature and vital to US national security.
2. The foreign policies, the nature of international commitments, and the level of US military capability to deter aggression against the American state and to implement the national security strategy.
3. Proposals concerning the short- and long-term use of political, economic, military, and other elements of American national power to protect national interests and achieve goals and objectives vital to US national security.
4. Assessments of US capabilities to implement national security strategy.
5. All other data needed to inform the US Congress on national security strategy. The document is intended to be presented in two ways: secret and public.

Before World War II, the concept of defense was more commonly used. According to American scholars (Machovski, 1985; Maull, 1984; Murdoch, 2001), economic security must meet two conditions:

- Preserving the country's economic autonomy, and its capacity to take decisions in its own interests regarding economic development;
- Maintaining existing living standards and their continued growth.

Makhovski (1985) considers that economic security must ensure a high degree of independence from the partner in terms of vital economic parameters, i.e., those which may influence even political decisions and may not be commercially acceptable. Maull (1984) describes economic security as the absence of acute threats to core values. This threat arises when external economic parameters change in such a way that conditions arise which are capable of destroying the existing socio-political system. More specifically, Murdoch (2001) argues that a threat only arises when change occurs in:

- the volume and distribution of revenues and assets;
- employment levels, inflation, the availability of raw materials on the supply market, etc.;

- economic sovereignty, i.e., the ability to control a wide range of policy instruments and resources.

Thus, according to American experts, the key to the perception of economic security lies in ensuring the sovereignty of the state, in both internal and external political decisions. In this view, economic security is understood primarily as the defense of national interests. However, the fully fledged scientific category of economic security has not been formulated in the US. The situation is different in the EU.

In the EU, economic security has two meanings. The first refers to the EU's position in the global economic system. The official portal of the EU, Europa.eu, provides a range of links relating to the economic objectives of the EU and the interpretation of the term "economic security." The EU stresses the importance of European integration into the globalization of a competitive world economy. Compared to the rest of the world, European countries have historically had fewer quantitative resources and fewer working people. The largest official organization dealing with complex security issues in Europe is the Organisation for Security and Co-operation in Europe (OSCE), the world's largest regional international organization developing measures to reduce military confrontation and strengthen security in Europe. It brings together 57 countries in North America, Europe and Central Asia (https://www.osce.org/). Founded in 1973, initially it was named the Conference on Security and Cooperation in European (CSCE), but the name was changed to OSCE on 1 January 1995. The OSCE Security Concept has several components. These include a political and military dimension, known as the "first basket," an economic dimension, known as the "second basket," and human rights and related issues, known as the "third basket." Decisions are taken by consensus.

In France, economic security issues began to be addressed in the 1950s, with a strong focus on the economic security of business. In the late 1990s, the French

government adopted a series of regulations aimed at improving the socio-economic security of business operators. This was necessary due to France's integration into the EU. French socio-economic security at the end of the twentieth century was regulated along three lines:

- The protection of companies' property, their intellectual property, as well as the their proprietary rights and information, i.e., the protection of the assets of all companies;
- A permanent monitoring system of competitors on domestic and foreign markets was put in place, and criteria were defined to measure how far companies have fallen behind their competitors;
- The regulation of crisis phenomena in the economy by the state, and by corporate professionals. Particular attention was paid to the identification and timely avoidance of threats caused by ineffective management decisions due to lack of information (Merriam-Webster, 2018).

Measures to ensure the economic security of UK, Italian, and Spanish companies are similar. The stable and influential economic security framework in these countries is based on an effective regulatory and legal framework. Spain is a case in point (Spanish National Security Strategy, 2017), where companies' economic security was ensured by the Law on the Improvement and Protection of National Industry. In Italy, Schröder (2008) observes that the state supports foreign companies that depend on goods and services from Italian companies.

Japan was the first country in the Far East to clearly demonstrate its ability to adapt its knowledge of global governance and technology to the conditions of Asian society, in its own national interest. The Japanese government realized that in the current economic climate, competition is intensifying as the economy globalizes. SMEs in particular require government support and assistance. It should be noted that the Japanese are able to maintain their culture and traditional institutional and relational foundations, changing them only to the extent that is necessary in order to improve the efficiency and competitiveness of the

country and its enterprises in the post-industrial era and in the period of global development. Particular attention is paid to management culture and macroeconomic regulation. Japan has become the world's largest creditor, and is in second place regarding gold and foreign reserve holdings (after China). This has led to a high degree of competitiveness for Japanese companies and a consequently high socio-economic level in the country. Japan's 2013 Revitalization Strategy called for the active use of foreign development assistance to gain a higher percentage of global infrastructure projects and medical markets, which would revitalize Japan's economy in line with the growth of developing countries and support the development of SMEs (Kokubun & Glosserman, 2018). Japan's main characteristics include stability, sustainable development, low inflation and high household savings, a favorable investment climate, quality in education and health care, high living standards, exceptional life expectancy, etc.

The economic security of Japanese companies is shaped by two main principles: the development of the country's economic stability; and the creation of an internal environment conducive to the improvement of the country's national interests. Japan has certain national characteristics, a low proportion of foreign investment, and a relatively closed nature to its society, which in turn affect the country's economic security. The general doctrine of Japan's national interests dates back to the early 1990s, covering several areas: public security, national military security, and foreign economic stability. In addition, the main objective of the economic security policy was to increase the influence of Japan's foreign policy on the basis of its great economic potential. This was achieved through the comprehensive promotion of market relations in the world economy. Two main trends could be identified in the restructuring and development of Japan's economic security system. Firstly, the introduction of the Japanese economy into the world economy, and secondly, its partial autonomy in alliance with the USA. It should be noted that the more Japan sees itself as an influential power, the fewer

conservative aspects remain in its economic security system.

The most important of the modern world's new Asian powers is China, which has been gaining importance not only regionally, but also globally in recent years. China is positioning itself as a developing country. The specific nature of China's economy (a market in a socialist economy) and its unique location help it to strengthen its global economic ties and give it a special status regarding economic issues common to the whole world. This applies in particular to the problem of economic security in China. At the heart of China's perception of economic security is economic sovereignty, particularly in decision-making. However, according to Chinese scholars (Zha, 1999; Zhengyi, 2004; Harney & Stearns, 2018), there is no reason for optimism in China today. Economic sovereignty is strongly influenced not only by internal, but also by external interest groups. China's per capita resource endowment is also well below global rates. Industry is dependent on foreign financial capital, which squeezes all the profits for itself. Many Chinese companies have to submit to transnational corporations and become just an element in their production chain. The main threats to China are therefore in the area of economic sovereignty. For developing countries such as China, economic security is best defined as the ability to ensure a gradual increase in the standard of living of the entire population through national economic development, while maintaining economic independence. In other words, there are two sides to economic security: competitiveness and independent economic sovereignty.

6.2. Theories of economic security

Three main schools of economic security have emerged around the world, depending on what should be considered the main threat to national economic security and how it should be addressed:

- The concept of chamberism (since the mid-19th century);
- Keynesianism (from the second half of the 20th century);

- The concept of institutionalism (since the late 20th century).

The concept of cameralism. One of the meanings of the Latin word "camera" is "royal treasury"; the office that handled the king's revenue. Chamber studies is a special subject in administration and economics taught in medieval European universities. As Smalskys (2002) points out, cameralism in the broad sense of Western European economic development was a German variant of mercantilism. In his view, Cameralism summarized the totality of the theories and practices of the state economic policy of German absolutism in the 17th and 18th centuries, with the aim of centralization and the creation of a unitary German state. It covered governance, economic policy, finance, taxation, the reproduction of the population, the legal and technical matters and means of production, trade, and the distribution of goods, and focused on the development of a mercantilist economy. It was a theory and practice that placed great emphasis on public revenues, and in particular on taxation as the basis for the material well-being of the nation. The theories of cameralism supported the intervention of political power in the economy and emphasized the importance of technology for the welfare of the state. Chamberism was based on the primacy of the community interest: it called for individual interests to be subordinated to the interests of the state and society. The state was considered to be above all other objectives. The theories of Cameralism reflected the aspirations of Prussian absolutism to create a unified, centralized German Empire and to strengthen state control over many areas of citizens' social life. In this sense, chamberism was similar to the authoritarian political systems of 20th-century Europe.

All classical political economists, starting with Adam Smith, based their concepts on one paradigm. According to the classical liberal paradigm, each person has their own personal interests and is capable of defending them in their own actions. Society, in this view, is a collection of individuals, and the interests of society are the mechanical sum of individual interests. Liberal political economists

consider the best society to be the one that is most conducive to individuals freely pursuing their personal interests. In the view of classical liberals, the state is created for the protection of the constitutional rights established by free people. As Urbonas et al. (2009) argue, Smith's economic teaching was that people are inherently selfish, which encourages them to act out of selfish motives in order to improve living conditions. Driven by egoism, they think of personal gain and act according to their nature. Smith (2004) explains the concept of "economic man" by stating that man is driven by the desire for personal gain in the production of goods and services for others, in the exchange of labor and its products. According to Smith, an "invisible hand," independent of the wishes and will of the "economic man," guides the individual and society as a whole towards the best outcomes and the greatest benefits by putting the private interest above the public. However, this is precisely what denied the existence of national economic interests. Classical economists believed that people have only one need: to have their hands free to engage in economic activity on their own. Any action by the state to protect its citizens from "foreigners" (e.g., protectionist taxation) was seen as a feudal relic.

The first to criticize the classics of political economy was German economist Friedrich List. In his monograph *The National System of Political Economy* (1841), he justified political economy as a historical science rather than as a universal system of laws for an ideal society. List distinguished 5 stages of a nation's economic development, where each nation has special economic interests: hunting, animal husbandry, agriculture, agriculture and industry, and industry and trade (Šalčius, 1991, p. 62). As Gide and Rist (1932, p. 287) point out, List's criticism of Smith and his followers was that they made a cosmopolitan assumption. They thought as if all human beings were already united in one big community from which war had been removed. In fact, under such a hypothesis, humanity consists only of individuals; their individual interests are irrelevant, and there can be no

justification for any impediment to their economic liberty. List argued that free trade is profitable primarily for advanced nations, and saw nations not only as moral and political communities created by history, but also as economic communities. Further, he argued that just as a nation becomes politically stronger through the moral union of its citizens, so its economic union increases the productive energy and wealth of each of them, and thus it is the duty of a government to maintain its economic unity (Gide & Rist, 1932, p. 306). List broadened the political horizons of the classical economists by introducing a concern with economic progress. He explored the economy dynamically, in its constant process of unfolding, and defended the idea of the integrated development of his country (Germany), combining factory industry with agriculture. List also called for the introduction of a protectionist policy to defend Germany's weak industry against competition from cheap imports. In his view, the inevitable price rises resulting from a policy of protectionism would serve as a means of industrial training for the nation and of defending Germany's national economic interests.

List is considered to be a representative of the theory of chamberism, which explores the problems of state farming. His theory of national economic interests and national economic security, with its emphasis on external economic threats, can be called the cameralism school. The cameralism view of national economic security assumes that the central government is responsible for ensuring security by initiating import restriction laws and creating customs and border services to fight against contraband.

The Keynesian concept of economic security. Until the 20th century, the protection of national economic security was only necessary for peripheral countries. However, in the first half of the 20th century, even developed countries recognized the existence of dangerous threats to economic security. The perception of such threats and the ways to combat them have changed radically. Peripheral countries (which until the 19th century included Germany) saw external threats

to national economic security as competing with economically developed countries. At the time of the Great Depression in America, other highly developed countries were also on the brink of economic disaster. This led to the realization that not only external, but also internal resistance to various threats was important for national economic security.

The Great Depression, which engulfed practically the entire capitalist world, changed economic structures. The economy was in a critical state, with the fall in demand in the industrialized countries leading to a fall in the prices of exported raw materials in Latin America, Africa, and Asia. The crisis led industrialized governments to restrict import trade in order to boost employment and demand for domestically produced goods. Such policies indirectly increased unemployment in other foreign countries. When almost all the countries of the world adopted such policies, international trade suffered its worst recession and global unemployment reached critical levels. This was the deepest and longest crisis ever, with the US and the most developed countries of Western Europe particularly affected. The global economic crisis of 1929–1933, followed by the Second World War, which barely left time for a minor upturn in between, demanded major economic changes. There was no consensus among economists on the causes of the downturn, and various prescriptions were proposed to overcome the economic crisis.

A new paradigm in economic theory, as well as a new approach to understanding national economic security, was formulated by English economist John Maynard Keynes in 1930. For him, the main threats to the national economy were not competition from foreign goods, but unemployment and economic depression. In his book *The General Theory of Employment, Interest and Money* (1936), Keynes argued that in order to cope with threats, the state must actively regulate economic activity, not only by means of public orders and subsidies, but also by direct control of competition. He argued that "material poverty encourages upheaval precisely under the conditions that are least conducive to experimentation.

Material wealth inhibits the efforts that might lead to coups. Our task is to create an organisation of society that is as productive as possible without offending the ideas of a satisfying life" (Šalčius, 1991, p. 374). In his view, public works can reduce threats to the economy by increasing the state's impact on employment by stimulating demand.

The Keynesians further developed the concept of national economic security, focusing on the internal macroeconomic conditions for national economic growth. This concept is known as the Keynesian version. However, as practice has shown, the theory was incomplete. Under certain circumstances, the state can indeed stimulate economic growth and create a boom by intervening in the market, but intervention in the market invariably and inevitably leads to negative consequences: inflation, inefficient allocation of resources in the market, high taxes that reduce the motivation of market participants to act, and a business cycle that ultimately ends in recession and depression. With the waning influence of Keynesian theory, neoclassical economic theory has been revived. While the Keynesians advocated for the wisdom of state regulation, in the second half of the 20th century the neo-classicists stressed its limitations. While the neoclassicists proposed fundamentally different approaches to dealing with threats to national economic security, they adopted the Keynesian perception of national economic security interests as a basis. While the neoclassicists declared that the individual is the sole economic subject, they de facto accepted the Keynesian perception that there are common economic problems (unemployment, inflation, declining growth rates), the existence of which is determined by the internal development of the national economy.

The institutional concept of national economic security. The late 20th century saw a crisis in neoclassical economic theory. Modern economists increasingly began to question the economic man model, and states in various countries began to question the effectiveness of the measures proposed by the neoclassicists.

Institutionalism, an economic paradigm that emphasizes a focus on the economic "rules of the game" – i.e., institutions – thus became the preferred economic theory. As Urbonas et al. (2009) point out, institutionalism emerged as a distinct strand of economic theory in the US at the turn of the 19th and 20th centuries, as a critique of the neoclassical school, which was then the dominant school of economic theory. The core of this line of analysis are the economic and non-economic problems of social and economic development, the solutions to which are driven by spiritual, moral, legal, and other social factors, along with material factors, and which are examined in a historical context. The object of research is the institutes, which are analyzed as a whole, without distinguishing between primary and secondary, without conflating them, and without presenting them as a system.

One of the most important theorists of national economic security via institutionalism was the Peruvian economist Ernando de Soto, a specialist in the shadow economy. De Soto's monograph *The Other Way* (1989) revolutionized scholarly opinion on the role and significance of the shadow economy in the market. De Soto's main discovery was a fundamentally new understanding and interpretation of the causes of the shadow economy. The root cause lies not in underdevelopment or in the criminal situation of migrants and the poor, who are unable to find a place in the legal sector, but in the excessive bureaucratic red tape that hinders the development of competitive relations. In other words, the researcher turned the qualitative analysis of the shadow economy and legal business in peripheral and semi-peripheral countries on its head. The legal sector was seen as the bearer of modern economic culture, while the informal sector was seen as a brake on economic activity. In fact, De Soto argued that legal economies are shackled by mercantilist interests, with shadow businesses imposing a democratic economic order by organizing their private businesses on the basis of free competition.

Mercantilism emerged as a market economic theory at the end of the 18th

century, and is an economic outlook and idea that emphasizes the importance of barter, trade, and gold as a source of national wealth, as well as the role of state-protected exports in foreign trade (Urbonas et al., 2009, p. 42). De Soto (1989) pointed out that mercantilism was a politicized system in which the behavior of entrepreneurs was regulated in detail. The state did not allow consumers to decide what was to be produced, and had the right to exclude and develop those economic activities that it considered desirable and prohibit activities that it did not like. This belief in the superior wisdom of officials has long been forgotten in the developed world. However, the policy of mercantilism, as indicated in the periphery, persists. It is this policy of mercantilism that creates administrative barriers – inefficient, costly and time-consuming rules that govern the registration and operation of economic activities. As the researcher points out, the main cause of massive shadow economy activity is the inefficiency of the legal regime, whereby a company's well-being depends less on its good performance and more on the costs imposed by government. The entrepreneur who has connections with the government performs better. In this case, the main threat to national economic security is not market failure, but state failure. De Soto's view is that to move away from violence and poverty requires the recognition of property and human labor, which are currently marginalized by the legal sector. In his view, instead of riots there must be cooperation and responsibility.

To summarize, according to de Soto's institutional vision, the main threats to national economic security are administrative barriers: bad laws and/or the poor enforcement of good laws. Real or potential threats to the national economy can be created by foreign competitors (according to List), market failure (according to Keynes), or state failure (according to de Soto). The aim of national policy is to avoid the most dangerous threats without wasting scarce resources.

The priorities for protecting national economic security are primarily determined by the grouping in which the country is placed. The Keynesian approach

is perhaps the most relevant for the more developed countries, and the de Soto approach for the less developed countries. The List approach is applicable to all countries, but is perhaps more subordinate.

In summary, there are three main paradigms of national economic security: the Cameralism the Keynesian, and the Institutionalist. They are not mutually exclusive, but complementary (see Table 1).

Table 1. Theoretical concepts of economic security

Source: compiled by the authors

	Cameralism	Keynesian	Institutionalist
Time of emergence, pioneer of the concept	1840 F. List	1930 J. M. Keynes	1980 E. de Soto
Understanding of the main threats to economic security	Competition or other actions by foreign countries	Market "crashes" – instability in economic growth, unemployment, inflation	
Goal of the fight for economic security	Economic independence	Economic and social stability	Protection of property rights
Methods of fighting for economic security	Protectionist policies	State regulation of production, employment, and money circulation	Reducing bureaucratic procedures and taxes, fighting corruption and bureaucracy

6.3. The concept of economic security in Lithuania

Economic security in Lithuania is enshrined in the Lithuanian National Security Strategy (current version, 2021) and the Law on National Security Framework (2024). The Lithuanian National Security Strategy identifies the overriding national security interests:

- The viability of NATO and the EU and the security, democracy, and prosperity of all the countries of the Euro-Atlantic community;
- Democracy, freedom, and respect for human rights and fundamental freedoms in neighboring countries;
- Global and regional security and stability;
- Credible national defense capabilities backed by national defense funding

that matches defense needs and commitments to allies;
- Economic and energy security;
- Infrastructure security in sectors of the economy that are strategically important for national security;
- Information security;
- Cyber security;
- National and cultural identity;
- A safe region – both ecologically and in terms of public health.

As we can see, security aspects such as energy security and financial security are dealt with within the framework of economic security. However, when formulating the policy of ensuring internal security and determining its priorities and tasks, economic security is singled out. Moreover, in addition to the analysis of threats, crisis prevention, and management, tasks are already being formulated for Lithuania in the spheres of economic and financial security (National Security Strategy, 2021):

- Implementing sustainable macroeconomic policies, focusing on fiscal and monetary stability, and preventing financial and economic crises;
- participating actively in the EU's Single Market and in the EU's economic and monetary union;
- reducing restrictions on economic activity, creating conditions for free and fair competition, and creating a favorable environment for the development of business (especially SMEs) and innovation, foreign investment, and export diversification;
- taking measures to prevent a single Lithuanian or foreign investor from dominating strategic sectors of the economy, to prevent the infiltration of capital of uncertain origin into domestic enterprises and to ensure the protection of strategic economic sectors, enterprises, and facilities;
- reducing social and economic disparities between and within regions.

Table 2. The relationship between economic security challenges and the means to achieve them

Source: compiled by the authors

Macroeconomic policy	EU Single Market	EU economic and monetary union	Economic activity	Uncertain origin of capital and dominance of one investor	Regional development
Means of implementation					
Financial and monetary stability	Free movement of persons, goods, services, and capital	Coordinating economic and fiscal policy strategies	Free and fair competition	Protecting strategic companies and facilities	Reducing social and economic disparities
Preventing financial and economic crises	Tax harmonization	General monetary policy	A favorable business environment		
		Common currency, euro	Foreign investment		
			Export diversification		

The analysis of economic security challenges suggests that the economic security of a country is based on its economic system, economic indicators, and competitiveness, which determines Lithuania's overall rise in the EU and global context. National security is also based on economic security. The Law on National Security Framework of the Republic of Lithuania (current version, 2024), which sets out the provisions for ensuring Lithuania's internal security in the area of economic policy, states that the Seimas must determine by law which enterprises and facilities (including those to be established) are of strategic importance to national security, and even declares what form of ownership this may take. Economic security also includes alternative sources of fuel and raw materials independent of the monopoly supplier, the provision of energy resources, foreign investment, the activities of foreign entities in the natural monopoly sector, and the financial system. It is important to note that the Law on National Security

Framework identifies potential external and internal risk factors and challenges, as well as potential threats in the economic sphere caused by the geopolitical environment (see Table 3). As we can see, economic security is challenging because many of the risks and hazards are of a continuous nature and are difficult to identify in time and eliminate completely.

Table 3. External and internal risk factors for economic security

Source: compiled by the authors

External risks, challenges, and potential risks in the economic sphere due to the geopolitical environment	**Potential internal risk factors and internal economic crises**
Economic pressure, blockades, or other hostile economic actions	Jobs, output, and national product fall to critical levels
Dependence of an entire economy on any one country or group of countries	Structural and technological underdevelopment of the economy
Capital investments for political purposes: taking over ownership or management control of energy and other industries of strategic importance to national security, financial and credit institutions, and major communications (railways, highways, pipelines, seaports, airports)	Criminalization of the economy; out-of-control economic crime
Energy dependence on the resources of one country or group of countries; vulnerability of the energy system	Banking/financial system crises and financial panic
The scale of foreign indebtedness destabilizing the country's financial system	Destabilization of the national currency, decline in the Bank of Lithuania's foreign exchange reserves below the critical threshold
Destabilizing interventions and disruptive effects in the Lithuanian financial and banking system	Domestic debt that exceeds the country's financial capacity

In summary, the current approach to understanding economic security can be divided into three groups, depending on what is meant by the term:

- The main criterion of economic security is sustainability, i.e., the set of conditions and factors that determine the sustainable functioning of a country's economy, its independence, stability, and its capacity for renewal and improvement. This opinion can be found in the works of such scientists as Abalkin et al.

- The second group of scholars (Smith) define economic security through interests, meaning that the position of economic and governmental institutions are guaranteed, where the protection of national interests, the social stability of politics, and sufficient military potential are maintained, even in the event of unfavorable conditions of internal and external processes.
- The third group of scholars (List.) define the category of economic security through independence. National economic security, it is argued, is a state of the national economy in which the exercise of economic sovereignty, the strengthening of economic power, and the increase in the quality of life are guaranteed.

6.4. The objects of economic security

The objects of economic security can include the state, society, citizens, companies, institutions and organizations, territories, and individual objects. The main subject of economic security is the State, which exercises its functions in the field of economic security through the legislative, executive, and judicial branches of government.

There are several levels of economic security. Babachinaitė (2006) points out that the concept of security is examined at three levels: individual, national, and international. The security of individuals and various social groups of the population is influenced by military, defense, political, economic, and other social factors, as well as by the quality of the environment and its protection. Šimašius and Vilpišauskas (2006) distinguish two levels: individual and state. Meanwhile, Pukelienė and Čepaitienė (2007) argue that the concept of security has undergone a fundamental transformation, beginning with its use in the narrowest sense of military security, expanding in the 1980s and 1990s to include a wider range of issues, and finally deepening, shifting the focus from international or global security issues to the level of individual or human security (with the intermediate levels of regional and societal security also being distinguished). According to

Grebliauskas and Miliauskas (2008), the main actors in the economic security system are the government and economic actors. By taking care of the economic security of their commercial systems, economic operators simultaneously strengthen the economic security of the country.

After examining the works of many scholars on the subject, Jėčiuvienė (2004) defined the concept as follows: a sufficient level of national economic security consists of a stable economic condition, when a high standard of living is ensured, when the state is sufficiently provided with the resources necessary for the country's defense policy, the protection of its citizens, the resources of land, water, the atmosphere, and nature, as well as the ability to protect them, and when integration in domestic and foreign policies is guaranteed. The researcher notes that this can only be achieved through the quality management of resources and intellectual property, and through targeted government policies.

According to Šimašius and Vilpišauskas (2006), there is a fundamental difference between the two camps in social sciences, which treat the object of analysis differently – the holistic (in this case the holistic concept is based on the concept of sovereignty of the states) and the individualistic approach. The holistic concept analyzes security from the point of view of the state, while the individualistic analyzes it from the point of view of the individual. This methodological divide results in a different approach to both economic threats and economic security objectives. In Šimašius and Vilpišauskas's view, the holists assume that economic security is the security of the state against threats from other states or other types of threats. In the view of the individualist camp, economic security concerns protecting people's interests against economic threats. Thus, the holistic and individualist approaches are distinguished by two quite different questions: 1) whose security is being addressed (the individual or the state); and 2) what methodology is considered appropriate for addressing security issues. On the other hand, Šimašius and Vilpišauskas (2007) points out that the spectrum of

economic security is quite broad and includes the stability of the state's economic power, the secured financing of defense needs, the country's supply of "strategic products," its independence from hegemonic actors on the international market, good macroeconomic indicators, the security of personal intellectual property and the social security of citizens, the policy of employment, the competitiveness of organizations in the domestic market, and so on.

Makštutis (2005a, 2005b) has extensively analyzed economic security, defining the object of economic security as a certain state of economic and governmental institutions in which the protection of priority national interests is ensured, the sustainable, socially oriented development of the country as a whole is guaranteed, and sufficient economic and defense potential exists, despite positive or negative developments in internal or foreign processes. The researcher identifies the economic security of a state as involving:

- the stability of economic power and ability to finance defense needs;
- the supply of "strategic products" (e.g., energy, etc.);
- the diversification of foreign trade;
- independence from the dominant players in the international economy;
- security against economic espionage;
- good macroeconomic indicators;
- the security of property;
- an individual's social security, a certain level of income necessary for subsistence;
- employment, job security;
- economic efficiency.

Pukelienė and Čepaitienė (2007) also provide a detailed analysis of the concept of economic security. As one of the most distinctive definitions of economic security, the authors present the alternative proposed by Nesadurai (2005), who noted that three conditions are required for minimum economic security: (a) a ratio of income to expenditure for the minimum necessary needs of the individual

and the family; (b) a degree of market integration; and (c) equitable distribution, or social equality. The authors summarize the definition as follows: economic security is the totality of the responses of a country's economic system to external and internal factors that determine the country's economic performance and development.

Sviderskė (2014) notes that economic security can be understood as:

- a key factor of national security, i.e., one of the resources that ensure the balance between the other components of the system (national security);
- one of the components of national, regional and global security, which is the goal of every individual, community, and country;
- a priority for governments and regional and international organizations working to ensure global human security;
- the state of a country's economy, which is seen as the source and basis for reducing poverty, hunger and socio-economic inequalities for countries and regions within a country.

Sviderskė (2014) also points out that most of the concepts of economic security put forward by scholars in different countries can be divided into three categories:

- concepts that identify economic security in relation to its objectives;
- concepts that identify economic security in the context of a country's economic health;
- concepts that see economic security as an element of production stability.

In her view, there are three main components: the economic security of the country, the economic security of businesses, and the economic security of consumers. The balance of the three is crucial for the security of the economy as a whole.

It is appropriate to further examine how scholars define economic security, as research on economic security is complex and requires a broad interdisciplinary approach.

Grebliauskas and Miliauskas (2008) distinguish the economic security of a country and describe it as the ability (political will, capacity, ability to pay) of the state and the country's entities to maintain the balance of economic objects – systems – which is the basic (necessary and sufficient) condition for the extended development of the state and the country's entities.

Kupstaitytė (2014) considers economic security to be an integral part of state security. Matulionytė (2008) defines the economic security of a country as the ability (political will, ability to pay) of the state and the country's entities to maintain the balance of the economic objects and systems, which is the basic (necessary and sufficient) condition for the development of the state and the country's entities.

After World War II, this idea became a central motif in national and international politics. Pukelienė and Čepaitienė (2007) and De Martino et al (2005) distinguish the following stages in the development of the security concept:

- Before World War II – security studies covered strategic military and diplomatic structures.
- Golden Age (1950s) – the importance of national-military defense dominated, but alternative peace approaches were studied, and a lot of research was done.
- 1960s – current international political economy, the role of independence.
- Renaissance of Security Studies (1970) – the use of comparative analytical methods to predict the future direction of international relations.
- 1970–1980 – the concept of security was developed from the economic, social, and human rights perspectives, and the traditional narrow conception of security was criticized.

Foreign scholars have also looked at economic security at different levels. Buzan (1998) pointed out that it is appropriate to elaborate on the levels of economic security – individual, organizational, class, state, and international system – in order to create a coherent set of economic policy measures that will lead to

the economic power of the state in the international system. Buzan (1998) also sought to deepen the understanding of security by moving away from the traditional focus on state security (national security) to address individual (human security), society (societal security), and international system (systemic/global security) issues. Gečienė (2015) pointed out that although Buzan himself did not explore the level of security of the individual, his insights have given great impetus to the study of subjective security. The focus on the individual level of security has gradually led to the emergence of the field of human security. The theoretical foundations of human security research have evolved, and the need has become clearer to identify the threats to security perceived by people themselves, to explore the extent to which these threats are potential or real, to assess how different groups in society perceive threats and develop survival strategies, and to consider how subjective perceptions of threats and security are influenced by changing political, social, economic, and other circumstances (United Nations Development Programme, 1994; Hampson, F. O., 2013. Tadjbakhsh & Chenoy, 2007; Kerr, 2013; Hampson, 2013; Schnabel, 2014).

Gečienė (2015) extended Buzan's list of key security sector threats at the individual level in the Lithuanian context. The military sector includes the following threats: military conflicts in neighboring countries, the possibility of military aggression from strong neighboring countries, the weak capacity of the country to counter military aggression due to its geographical location and demographic capabilities, propaganda, and information warfare. Threats in the political sector include: political power games, party disagreements, lack of competence and preparedness of a government, and governmental abandonment of democratic values. Economic sector threats include: economic malaise, the insecurity of material well-being and employment, and financial and energy insecurity. Social sector threats include: health problems, poor health care, crime and domestic violence, emigration, falling birth rates, the deterioration of relations between

people, and a lack of public awareness and patriotism. According to Gečienė (2015), the threats perceived by a country's population depend to a large extent on the specific political, economic, social, and ecological circumstances and external threats of a given period.

The United Nations Development Programme's (1994) Human Development Report states that "for too long, the concept of security has been associated with potential conflicts between countries," and that "job security, income security, health security, environmental security, and criminal security are all issues of concern for human security around the world" (p. 3). Based on this, the report categorizes threats to human security into seven main groups: economic security (e.g., living in poverty), food security (e.g., access to food resources), health security (e.g., access to affordable health care, protection from disease), environmental security (e.g., access to health care, protection from disease), *personal* security (e.g., physical safety from torture, war, crime, violence, drug use, suicide, etc.), community security (e.g., preservation of traditional culture and survival of ethnic groups), and political security (e.g., enjoyment of civil and political rights, living free from political oppression) (pp. 24–33).

In contrast, Hacker, J. S et al. (2010) examine economic security at all levels. In their view, economic security can be considered as the readiness of a country's economic situation to ensure adequate living conditions and personal development, socio-economic stability, and the political-military capacity of a society and a country to deal with internal and external threats. The authors further note that because of the multilateral and multidimensional nature of economic security, there is no well-developed and accepted concept of economic security.

As Tamošiūnienė and Munteanu (2015) argue, in the 20th and early 21st centuries, a whole series of economic security concepts were developed, which were used to define a synergistic approach, to perceive the interests of the state, to understand threats to stability, to define the possibility of self-improvement, and

so on. Therefore, according to these authors, the concept of security encompasses the minimum protection of physiological, socio-economic, spiritual and situational resources, technology, information, and moral ideals necessary for vital activities and the well-being of society. Tamošiūnienė and Munteanu's research on economic security is worth further examination because, they provide a broader analysis of economic security concepts, distinguishing between macro and micro approaches (see Figure 1).

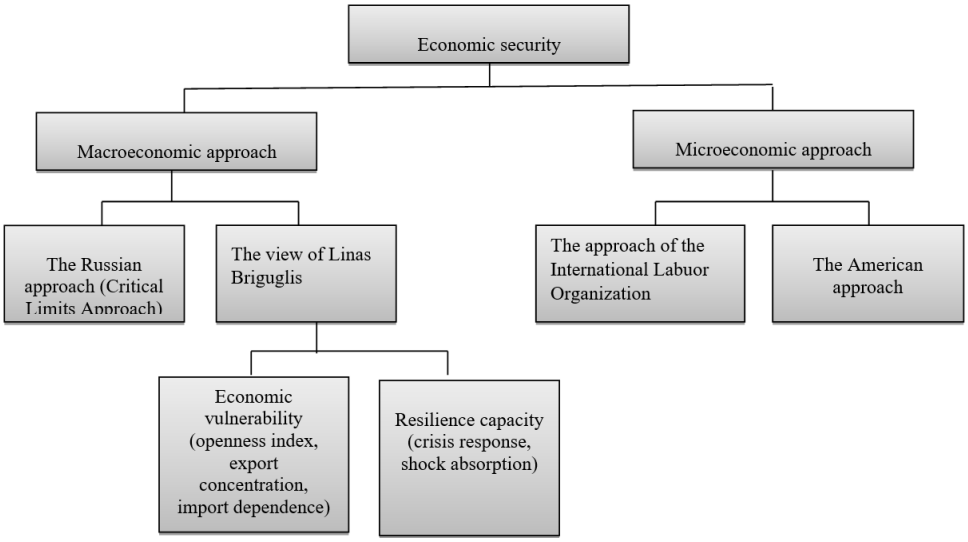


Figure 1. Framework of approaches to economic security

Source: Tamošiūnienė & Munteanu (2015, p. 63)

According to Tamošiūnienė and Munteanu (2015), the Asian (macroeconomic) approach treats security as a combination of military, economic, energy, environmental security and similar frameworks, with levers to address each specific risk. Thus, there is a shift from threats to vulnerabilities and risks. The macroeconomic approach has been particularly challenging to grasp because this period coincided with the two World Wars.

The individual, or Anglo-Saxon, approach is another methodology. Given the changes in the international market and the transformations that have taken place

domestically, economic security tends to accumulate new and important problems for human existence. Thus, Mark Rupert (2007), in his Marxism. In *International Relations Theory for the Twenty-First Century* , defines personal economic security as having a stable income and other resources to maintain a standard of living now and in the near future, which implies continued solvency, predictable cash flow, and the efficient use of human capital.

The International Labour Organisation (ILO) has developed an approach to individual economic security. In its 2004 report, ILO researchers analyzed 90 countries, covering 85% of the world's population, by dividing them into four categories (tone-setters, pragmatists, habitual, and promising). The individual approach is also used by the Americas School, which calculates the Economic Security Index (ESI). The ESI shows that economic insecurity has disproportionately affected the less advantaged, but has generally increased for all Americans (Hacker et al., 2014).

Stone (2009) points out that several types of security content can be distinguished, depending on the areas of society and human activities: political, economic, information, environmental, military, etc. Economic security occupies a special place among the various types of security, as not all types can be sufficiently realized without an economic dimension. Obviously, economic security makes it easier to identify other levels of security.

According to Polish scholars (Wysokińska-Senkus & Raczkowski, 2013), economic security can be analyzed at three levels: micro – individuals, families; meso – companies, business associations; and macro – states, interstate relations, the world. The authors argue that while the macro level seems to be very important, it is in fact enterprises that actually create the money and jobs that decide the appropriate level of economic security and the confirmation of sustainability. That is why, in the opinion of the researchers, the meso level should be closely monitored by the government.

According to Ianioglo and Polajeva (2016), the economic security of an enterprise is a condition that characterizes the ability of an entity to ensure the efficient use of resources and entrepreneurial opportunities in order to avoid potential threats and to achieve stable functioning and business objectives. Ensuring the economic security of an enterprise is important for the implementation of the continuous reproduction process. Therefore, the authors examine economic security at the level of the firm.

Osberg and Sharpe (2009) describe economic security in terms of insecurity. For them, economic insecurity is understood as the anxiety caused by a lack of economic security, i.e., the inability to obtain protection against subjectively large potential economic losses. As an alternative definition, they suggest an individual's perception of economic distress.

Tang (2015) argues that, in essence, human security puts forward the basic assumption that the security approach is primarily characterized by a state perspective. The state-specific model, sometimes conveniently categorized as "traditional security," is the primacy of the state and national interests. Territorial integrity and sovereignty are paramount. Tang examines two versions: the realist and the neorealist. According to him, realism represents the dominant paradigm in international relations, putting domestic and national politics in "black boxes." The neo-realist version assumes that there is no differentiation of roles and that all states will behave rationally and pursue the same goals. In the context of great power struggles and the need to defend against threats to liberal democracy and communism (depending on which category one falls into), it is understood that security is essentially the domain of the state. Tang points out that economic security is one of the main pillars of human security, and can be defined differently in different areas. Economic security embodies the philosophical basis of human security, but above all, in the scholar's view, security is about protecting and improving people's quality of life.

Nesadurai (2004) points out that only when we take a holistic approach to economic security through long-term micro- and macro-economic programs can the security of states and their peoples be achieved. In her view, from a neoclassical perspective, for individuals, the presence of economic insecurity encourages people to seek employment. Meanwhile, individual economic insecurity is a necessary by-product of the "creative destruction" that is the basis of Schumpeter's capitalist model. Nesadurai points out that in both models, economic security for national communities (in terms of national economic growth) is achieved through processes that depend on a certain level of individual economic insecurity. Moreover, any attempt to ensure the economic security of the individual may interfere with the processes that promote economic growth and progress. According to Ștahovschi and Bucuci (2023), the concept of security in the broadest sense includes economic security, military security, energy security, and ecological security. They also indicate that the continuity of economic security begins with the formation of the economic interests of the state and of the population. *Economic interests* represent the main needs of the individual, society and the state that are necessary to create the material basis for ensuring economic security in all areas of the national economy and for the political and social stability of society and of the state's economic situation. However, they often lead to threats. *Economic threats* (danger) presuppose the existence and actions of forces and factors that can destabilize the situation in the economic system, causing both political and economic damage. Ștahovschi and Bucuci (2023) note that *economic security* presupposes the existence of a performing, competitive, stable, and dynamic economy, is a component of national security, and resides in a state of the economy manifested by legality, balance, and development. According to Kunz (2021), economic security is defined as a state in which not only the economic conditions necessary for the survival and smooth functioning of the state's institutions are ensured, but also those required for the development of the society

living on its territory. In the modern world, economic security is not only related to the social and economic progress and the development opportunities of individual countries, but also to security threats coming from the actions of the state, as well as those resulting from the functioning of the economy and the influence of the international environment. Society needs a sense of security, created by the state, that gives it the impression of social belonging, stability, and development. When the state does not provide society with a basic sense of security, its motivation to work, study, and develop is noticeably reduced.

Table 4. Concepts of economic security

Source: compiled by authors

Authors	Concept
Baldwin (1997)	Economic security is seen as a different form of security, aimed at ensuring minimum damage to economic values.
Buzan (1998)	It is appropriate to elaborate on the levels of the idea of economic security – the individual, the organization, the class, the state, and the international system – to create a coherent set of economic policy measures that will lead to the state's economic power in the international system.
Jėčiuvienė (2004)	A sufficient level of national economic security is defined as a stable economic situation, where: a high standard of living is ensured; the state is sufficiently endowed with the resources necessary for national defense policy, the protection of citizens, land, water, atmosphere, and natural resources, and is able to defend them; and where integration in domestic and foreign policy is ensured.
Nesadurai (2004)	Only when we take a holistic approach to economic security through long-term economic micro- and macro-programs can the security of states and their peoples be achieved. From a neoclassical point of view, Nesadurai argues that for individuals, the presence of economic insecurity encourages people to look for work. Meanwhile, individual economic insecurity is a necessary by-product of the "creative destruction" that is at the heart of Schumpeter's capitalist model.
Freeman & Bartels (2004)	Economic security is the protection of the structural integrity and prosperity-generating capacities and interests of a political and economic entity in the face of the various external risks and threats it faces.
Makštutis (2005a)	A certain state of economic and governmental institutions in which the protection of priority national interests is ensured and the sustainable, socially oriented development of the country as a whole is guaranteed. This is allied with reasonable economic and defense potential, despite the positive or negative development of domestic or foreign processes.

Pukelienė & Čepaitienė (2007)	Economic security is the totality of the responses of a country's economic system to the external and internal factors that determine the country's economic performance and development.
Šimašius & Vilpišauskas (2006)	Economic security is the security of a state against threats from other states or other types of threats.
Grebliauskas & Miliauskas (2008)	Economic security is the ability (political will, capacity, ability to pay) of the state and national entities to maintain the balance of economic objects – systems – which is the basic (necessary and sufficient) condition for the extended development of the state and national entities.
Matulionytė (2008)	Defines the economic security of a country as the ability (political will, capacity, ability to pay) of the state and its entities to maintain a balance between economic objects and systems, which is a basic (necessary and sufficient) condition for the development of the state and its entities.
Agnieszka, et al (2018)	Defines security as "a state that gives confidence and guarantees its preservation and a chance for improvement; one of the basic human needs; a situation characterized by the lack of risk of losing something that people particularly value, for example: health, work, respect, feelings, material goods."
Osberg & Sharpe (2009)	Economic security is defined through insecurity. For Osberg and Sharpe, economic insecurity is understood as the anxiety caused by a lack of economic security, i.e., the inability to obtain protection against subjectively large potential economic losses. As an alternative definition, they consider an individual's perception of economic distress.
Ioan-Franc & Diamescu (2010)	Economic security for economic operators provides the right conditions for the stability of economic activity in every cycle of production, exchange, distribution, and consumption.
Hacker, et al (2010)	Economic security can be seen as the readiness of a country's economic situation to ensure adequate living conditions and personal development, socio-economic stability, and the political-military capacity of society and the country to deal with internal and external threats.
Sviderskė (2014)	Economic security can be understood as: an essential factor of national security, i.e., one of the resources that ensure the balance between the other components of this system (national security); one of the components of national, regional, and global security, which is the goal of every individual, community, and country; a priority objective of governments and both regional and international organizations working for global human security; and the state of a country's economy, which is considered as a source and a basis for the alleviation of poverty, hunger, socio-economic disparity, and social and economic disparities between countries and between regions of a country.
Artemenko (2016)	Security in the context of corporate governance is the ability of management to respond appropriately to threats from risk factors, including internal weaknesses, using unused resources to operate efficiently.

Vivchar (2016)	The business of security is the resources and business opportunities of State enterprises, which ensure their most effective use for stable operation and dynamic scientific, technological and social development, and for the prevention of internal and external adverse effects.
Ianioglo & Polaeva (2016)	The economic security of an enterprise is a condition that characterizes the ability of an entity to ensure the efficient use of its resources and entrepreneurial capacity to avoid potential threats and to achieve stable operations and business objectives. Ensuring the economic security of an enterprise is important for the achievement of a continuous reproduction process. Therefore, the authors examine economic security at the level of the firm.
Kunz (2021)	The economic security of the state is defined as a state in which not only economic conditions necessary for the survival and smooth functioning of the state's institutions are ensured, but also those necessary for the development of the society living on its territory.
Ştahovschi & Bucuci (2023)	The concept of security in the broadest sense includes economic security, military security, energy security, and ecological security. The authors indicate that the continuity of economic security begins with the formation of the economic interests of the state and of the population.

In the literature, the concept of economic security is defined very differently. Individual definitions vary in scope and regarding the importance of perceived risks. Generally speaking, it can be assumed that economic security is a state of a country's economic development that ensures high efficiency of functioning and the ability to effectively oppose external pressures that may lead to developmental distortions through the optimal use of internal development factors. An analysis of scholars' conceptions of economic security shows that in all cases economic development and stability are considered. Therefore, this position allows economic security to be defined as a state of the economy and government when the protection of national interests, the development of the country as a whole, and sufficient defense potential are ensured.

According to Šlapkauskas (Simanavičienė, Ž., 2017), the successful development of public security is possible if all partners contribute: state politicians, state and municipal institutions and agencies, research and academic institutions, business and non-governmental organizations, communities, and residents.

It can therefore be argued that several levels of economic security should be

distinguished:

- microeconomic level – the economic level of the individual (family) and the economic agents;
- meso level – national, regional;
- macroeconomic level – international economic security.

The need for international economic security, stability, and the predictability of economic development is particularly acute for underdeveloped countries. However, all countries have an interest in economic security, including the most developed ones. The realization of international economic security is linked to the absence of economic and political coercion. Every nation has the right to choose its own path of development, respecting the legitimacy of the existence of different forms of property and interests, and understanding that peace is possible not only in military strategic relations, but also in economic relations. The implementation of legal guarantees of international economic security, irrespective of the socio-political system, is a recognition of the principles of equality. It also gives freedom to choose the path of economic development and organization. Respect for the sovereignty of states, mutually beneficial cooperation and the free development of economic, financial, scientific, technical, and other peaceful relations between states, international cooperation in the fields of economic development and the social process, and the peaceful settlement of economic disputes are the basis of international economic security.

The United Nations (UN) is one of the world's main international organizations for ensuring international economic security. The UN is of course not a purely economic organization; it also has formal global competence in the field of international economic relations. In Article 1 of the UN Charter (1945), one of the purposes of the organization's establishment is dedicated to the implementation of international cooperation on international relations and economic issues. Another international organization that ensures economic security is the

Organisation for Economic Co-operation and Development (OECD), which unites European countries with the common goal of rebuilding the economies destroyed after World War II. The OECD is a multilateral forum where experts from member countries discuss, share experiences, and develop new economic and social policy guidelines that are then translated into practice. It offers its members and partner countries support, based on the values of the organization, in implementing global best practices and standards in public policy. With Lithuania's accession to the OECD, 36 countries are members. Lithuania became a full member of the OECD on July 5, 2018.

Studies have shown that international economic security is a state of the international economic system in which it can respond adequately and effectively to withstand and counter all threats – i.e., every member of the global community must have:

- freedom to choose their economic development path;
- protection against hostile external influences under international law;
- resilience against global external and domestic economic shocks and crises.

The next level of economic security is the national and regional level. National economic security issues are of particular importance, especially for countries with economies in transition. The transformation of any social system usually takes place in the context of a crisis, which, under certain circumstances, can become a source of danger to the very existence of the system. Economic security is a component of national security, interacting with other components, and is the basis of state security: it is impossible to achieve military stability, to eliminate environmental disasters, and to achieve a high level of scientific and technical potential, or to eliminate social tensions, without a well-developed, stable, and efficient economy. In other words, it can be argued that economic security is an essential basis for national security. Its objects are the state, the regions, individual territories, communities, businesses, the family, and the individual.

The economic security of the state is intrinsically linked to the fact that it is the result of the joint efforts of all people, manifested at all levels (from the center to the regions, etc.), through all levels of government, in actions aimed at protecting citizens. The effectiveness of public administration depends on the combination of the interests of the state and the region, since the region is an integrated socio-economic unit and is also an element of the state's socio-economic system. This makes it possible to assess the level of economic security of the country's regions, and to implement timely state intervention in the economy of the regions (which are facing difficulties or are at risk). In order to ensure secure regional development, it is necessary to identify and take into account the main destabilizing factors and threats that hinder the socio-economic development of the country's regions, and to develop appropriate measures to ensure such security. Security measures are understood as a set of resources, tools, methods, and regional development management measures that interact to ensure the capacity of the regional system to develop sustainably and to withstand destabilizing environmental influences. Regional economic security can be said to be a state of the regional economic system in which it is able to respond adequately and effectively to all external and internal threats.

Today, there is virtually no doubt about the need for economic security systems in every medium-sized or large company. The economic security of an enterprise is a system of legal, industrial, and organizational relations, along with material and intellectual resources, which ensures the stability of its operation, financial, and commercial success, and its progress. Personal security is understood as a state of security of a person at the level of their personal interests and needs. The personal security of citizens includes the protection of the individual against criminal attacks on life, health, liberty, honor, and dignity.

In light of the above discussion on the object of economic security, this monograph considers economic security at the level of the state, i.e., the state as the

object of analysis. Taking into account the above discourse on the concept of economic security and the provision in the Lithuanian National Security Strategy that the security of Lithuania is understood, among other things, as "ensuring the economic security of economic entities and the population," this monograph relies on the provision that economic security is primarily the economic security of the state. Therefore, we will examine in more detail how the state has achieved economic security in shaping business relations in Lithuania.

6.5. Theories of state regulation of the economy

Since the first economic theories, scholars have been studying the role of the state in the economy. As early as the 15th and 17th centuries, the mercantilist school identified the need for an active state economic policy. The mercantilists identified wealth with money and sought to accumulate money within the state. They believed that wealth could only be increased through foreign trade and the exploitation of neighboring lands or colonies. In their view, the more money (gold and silver) a country has, the richer it is. Wealth can also be accumulated by a national government. Early theorists of mercantilism (such as Stafford or Scarufi) suggested that states should take measures to keep money in the country. They proposed prohibiting the export of money abroad, introducing a state monopoly on the currency trade, and creating certain outlets for foreign goods (all the money received from the sale of such goods was to be spent on the purchase of locally produced goods).

In the second half of the 16th century, late mercantilism began to develop, before reaching maturity in the 17th century (Moon, Sierra, Monchretjen). This was the period of the great geographical discoveries, the establishment of absolute monarchy, and the growing economic power of the merchant bourgeoisie. State economic policy shifted to trade, with the creation of the active balance of the trade system becoming the main task.

Late mercantilists (Gide & Rist, 1932) argued that the richer a country is, the greater the difference between the prices of exported and imported goods. They proposed two ways to achieve this difference. Firstly, only finished products were allowed to be exported (selling them could raise more money than selling the raw material), and luxury goods were banned. Secondly, the difference could be made at the expense of intermediation. For this purpose, it was permitted to take money abroad. The principle was as follows: buy for as little as possible in one country, sell for as much as possible in another. The state, in order to build up an active balance of trade, had to regulate the entry of goods by imposing duties on foreign goods and by encouraging the exit of goods in demand. Industrial development was encouraged.

Mercantilist ideas became the theoretical basis of public policy, which was called protectionism. These theories promoted the development of the national economy, protected the economy from foreign competition, and expanded the external market. The main instrument of this theory was the imposition of customs duties, but the forms and methods of protectionism varied from country to country.

The following factors contributed to the emergence of mercantilism:

- The global emergence of the monetary economy in the 14th and 15th centuries and the scarcity of money in Western Europe. As commodity turnover increased, coins became scarce. The money problem was exacerbated by the rise in prices in Western Europe in the 16th century, following the opening of trade routes with America.
- Foreign trade monopolies in England and Holland in the 16th century.
- The rise of absolutism, which led to an interest in money. There was a need for a universal equivalent, which is what money has become.

Economic liberalism. As capital accumulated, mercantilist theories lost their popularity. New times call for new ideas, and commercial and especially productive capital needed to be freed from the protection of the state. In the works of

economists, the theory of mercantilism was increasingly criticized. The founding fathers of classical political economy, Adam Smith (1723–1790) and David Ricardo (1772–1823), provided the basis for new views. The foundations of Smith's doctrine were set out in *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776), closely mirroring the concept of a "natural harmony" (equilibrium) which is established spontaneously in the economy in the absence of state regulation. In his book, Smith tried to prove that the state was fundamentally unsuited to economic functions, arguing that there are no two characters as incompatible as the merchant and the ruler. In his view, rulers are the biggest wasters of money, because they dispose of money earned by others, and it is easier to spend another person's money than one's own. Smith further argued that a ruler's care can only be very general care at best, whereas the owner's concern is to take special and detailed care to organize their business in the best possible way. Moreover, the state is a bad administrator because its officials are often lax, since they are not directly interested in good administration but are paid from public funds (Gide & Rist, 1932). Smith entrusted the state with only three functions: the administration of justice, the defense of the country, and the establishment and maintenance of certain public institutions. However, it must be said that for Smith, non-intervention by the state was a general principle but not an absolute rule. Smith argued that free market trade should be freed from state control, and then, in the pursuit of their own private interests, individual producers will produce the goods that consumers want. In general, Smith (2004) argued, the government should be more cautious about interfering in free market operations, and the best policy is usually "laissez faire," i.e., a policy of leaving the economy alone, not interfering or disturbing, as government intervention can make things worse. "Laissez faire, or the policy of natural liberty, stems from a view of man and society. Assuming that everyone's economic activity promotes the general good and social welfare, it is clear that there is no need to constrain such activity."

Ricardo was also a supporter of the policy of non-intervention by the state. Like Smith, he argued that the economy is governed by objective and natural, but also cognitive economic laws. In the absence of state regulation, the operation of economic laws keeps the economic system in equilibrium. At the same time, however, Ricardo drew attention to the need for public economic policy. Smith and Ricardo are considered to be the founders of free trade theory; they considered this policy to be ideal and beneficial for all states and peoples. Their theory was put into practice in England in the mid-19th century.

Friedrich A. von Hayek (1998), one of the most prominent modern theorists of classical liberalism, argued that "the functioning of competition not only requires the proper organisation of certain institutions, such as money, the market, and channels of information – some of which can never be created by private enterprise – but depends above all on the existence of an adequate legal system, a system designed to maintain competition and to make it as beneficial to society as possible." Hayek proposed a substitute for the self-regulatory mechanisms of the market economy in the form of state regulation of business, calling for a move away from direct regulation where competition could be allowed to flourish.

Scholars have been very divided on the functioning of the market mechanism, its essence and role, its potential, and the forms of state regulation. Three main strands of economic thought can be identified:

- neoclassical;
- Keynesian;
- institutional.

The role of the state in the neoclassical system. Representatives of the neoclassical trend include its founder, Alfred Marshall, along with Edward Chamberlain, Ludwig von Mises, Friedrich Hayek, and Milton Friedman. The concepts of the economic theory of state regulation are always characterized by their methodology and the way in which they treat the nature and role of the market

coordinating mechanism. Fewer neoclassical theorists are interested in questions of social development and the analysis of historical approaches. The neoclassical school is concerned with the study of the "economic man," the firm, and the economy. In the view of neoclassicists, the main stimulus for human activity is self-interest. The economy is seen as a balanced and harmonious system in which the rational egoism of all its participants in free competition promotes the maximum development of the welfare of society as a whole. In this case, any interference by the state in the functioning of the market is highly detrimental to society. It is clear that the market – a system of free prices, profits, and losses – is the god to which (neoclassical) economists are directed. The engine of the market is the capitalist entrepreneur, on whose successful and profitable activity depends the prosperity of all the other population groups and the state as a whole.

Basic principles of state action in a market economy. Direct state intervention in the economy is seen by neoclassical economists as destroying the regulatory capacity of the market system. Possible deviation from this strict theory has been interpreted differently by different representatives of this trend. Under different conditions and at different times, prominent neoclassical economists proposed specific measures for state regulation of the economy. Their agreement in principle was that state action should be appropriate in areas such as:

- protecting law and order;
- protecting property rights;
- maintaining competition;
- maintaining cash flow;
- implementing tax policies that promote entrepreneurship.

Many neoclassical thinkers have stressed that the state must not ignore the laws of the market economy in all its activities. The redistribution of income and wealth has a rational limit, because the principle of equality does not encourage entrepreneurship. Moreover, they consider that proposals for the rescue of

companies in bankruptcy should be treated with great caution. The market must be followed, while bailing out bankrupt companies is a hindrance to a "healthy" economy.

Maintaining and protecting competition. In the 1940s, the work of the German economist Walter Euken made a significant contribution to the development of neoclassical theory in the study of the relationship between the market and the state in economics. Euken developed a particular version of neoclassical theory, which came to be known as neoliberalism, arguing that the most effective use of market advantages was in "full competition." However, the market economy also has a fundamental flaw: free competition allows monopolies and oligopolies to emerge. Euken therefore argued that the development and protection of competition is the main task of public economic policy. He strongly opposed his colleagues' attempts to determine the extent to which state regulation could be imposed on the economy. In his view, the state is fundamentally incapable of directing economic processes.

In the second half of the 20th century, neoclassical theory was developed in a very active way by scholars at the University of Chicago. Here, a school of economists emerged, representing liberal economics and liberal state economic methods. These scholars proposed a distinctive concept of competition and monopoly, substantiating the idea of the "competition effect." They argued that state regulation is only possible if negative, i.e., anticompetitive, activity on the market is accurately identified.

Monetary regulation and anti-inflationary policy. Chicago professor Milton Friedman, who developed his theory of money, proposed a program to overcome inflation. His theory has gone down in the history of economic thought as the theory of "monetarism." Friedman's concept is based on the so-called quantity theory of money popularized by neoclassical economists since the early 20th century. According to this theory, the quantity of money in circulation has a

direct impact on commodity prices. This means that money performs a demand-management function and, through it, regulates economic processes. Friedman defended the idea that the stability of money is of exceptional importance for the normal functioning of the economy. He argued that deviation from this rule implies the disintegration of all the mechanisms that make the market economy whole. A stable increase in the money supply leads, after a certain time, to a stable increase in production. The monetary rule is that the central bank must maintain steady growth in the stock of money resources, regardless of the cyclical movements of the economy.

For governments, Friedman proposed a program to tackle inflation:

- moving away from the cyclical regulation of the amount of money in circulation. This involves the tightest level of control of the quantity of money by the central government and no increase in the quantity of money by more than 3%–5% per year;

– setting high bank interest rates to reduce the rate of inflation;
– stopping wage growth, even reducing wages, which is why it is proposed to keep unemployment high.

Monetarist proposals were well received by governments in the 1970s during the worst global crisis. The first governments to use monetarist proposals were those of the US and UK. However, monetarist theory had its drawbacks and was not popular because it did not stimulate growth in business activity.

The economic theory of supply and public tax policy. In the 1970s and 1980s, another neoclassical theory was put into practice, developed by Laffer and Hilder. They tried to find a way out of the economic stagnation of production in the 1970s. Neoclassical scholars focus on the analysis of supply (since demand, in their view, evolves from supply), and thus on the efficiency of the factors of production, among which entrepreneurship stands out. The main way in which entrepreneurship is stimulated is through government tax policy. This is why the

neoclassicists proposed a fundamental change in tax policy, namely a reduction in the level of taxation for the majority of the wealthy population. It was thought that as production developed and the economy came out of stagnation, the state budget would be more likely to be replenished with lower tax rates (Heilbroner, 1995). The most striking example of the implementation of neoclassical theory can be traced back to the first four years of the presidency of US President Ronald Reagan. The top tax rate was reduced from 70% to 50%, and tax rates became less progressive. During the next presidency, Reagan reduced tax rates to 38%. This allowed the US economy to overcome stagnation in the 1980s and enter a period of economic growth.

The state and the market in a Keynesian system. The Keynesian school was founded by English economist John Maynard Keynes in his book *The General Theory of Employment, Interest and Money* (1936). Like the neoclassicists, this school of economists advocates for a market economy, i.e., an economy that is organized, coordinated, and governed by the market. Keynesians, however, have a different view of the potential of the market. They therefore differ in their understanding of the place, role, and function of the state in the economy. While the neoclassicists base their study of phenomena on microeconomics, the Keynesians take a macroeconomic approach. Keynes was the most prominent representative of 20th century economic thought, developing the concept of the market economy as a system and the principles of macro-analysis, and proposing the foundations of the state's anti-crisis policy. Keynes drew on concepts such as national income, employment, supply, demand, and investment. The aim of his research was to show how the various variables on which a country's economic development depends are determined. This was the macroeconomic approach, which looks at the economy as a whole, as opposed to the microeconomic approach, which looks at individual parts of the economy. Keynes' view was skeptical of Smith's "invisible hand" principle. In his view, the government must intervene in

the economy in order to reduce unemployment. In order to promote a more active role for the government, Smith argued that the government should not play a role in the economy. Keynes drew the ire of many organizations, who feared that his recommendations would increase the role of the government and sideline private companies (Heilbroner, 1995).

Building on Keynes's theory, Keynesians developed the concept of a mixed economic system, regulated by both the market and the state. In the US and in most Western European countries, the practical application of Keynesian theories has led many academics and politicians to believe that they have found a near-ideal model of a mixed economy, in which the levers of the market ensure efficiency, while the state complements, corrects, and fills in the gaps left by entrepreneurs and the market, ensuring economic and social stability. However, at some point in the development of the economy, the whimsical laws of the market economy slipped out of Keynesian control. A striking example is the global economic crisis of the mid-1970s, when it became clear that the tasks set by Keynesians – to eliminate the "harmful" consequences of the capitalist market economy for society while preserving its positive features – were intractable in the long term. Initiative and efficiency are rewarded with instability, rising unemployment, inequality and other undesirable phenomena. However, the neoclassicists believe that this is as it should be, otherwise the impulse of continuous movement, without which capital ceases to be capital, will be lost. For Keynesians, meanwhile, the alternative – economic efficiency or social justice – is decided in favor of the latter. For them, the aim of state economic policy is a high level of employment, stability of economic development, the stimulation of economic growth, social policy, and the provision of social justice and distribution.

State conduct. The sociological school of economics emerged in France after World War II. The concepts formulated by the followers of this school (indicative economic planning) were used in France between 1940 and 1970 in the practice

of state regulation. This sociological school is classified under many headings as one of the main currents of economic science in the twentieth century: institutionalism. The work of French scholars, and in particular that of the school's founder, François Perroux, is characterized by a large number of original ideas regarding economic practice.

French scholars (like all institutionalists) were critical of neoclassical market theory. The main object of their criticism was the theory's abstractness and the discrepancy between it and the real market of the late 20th century. Thus, Perroux argued:

- against treating the economy as a closed system. He argued that the economy is inextricably linked to social relations, as well as to politics and ideology. In his view, the market models developed by neoclassical economists reflect only part of the elements that make up an economy;
- against the idea that neoclassical theory limits itself not just to the market, but to the market of perfect competition, greatly simplifying real-life relationships and motivations. Rejecting this view, Perroux argued that it was necessary to take into account monopolistic competition, state entrepreneurship, and conflicts between employers and employees.

Perroux (Perroux, F., 1974). Paris: Dunod.) also proposed the concept of economic equilibrium, which focuses on firms or states performing the relevant economic functions. The behavior of economic agents is determined by the rules of the market, which are not created by the mechanism of the exchange of goods but by the relationships between economic partners. Perroux looked at economic structures interacting with social and political structures in order to discover the real "conductors" of the economy. In his view, state dirigisme (the management of economic processes) offered an opportunity to restructure the French economy after World War II. One of the key principles of state dirigisme was the government's choice of economic priorities. New industries – heavy industry, chemistry, machine building, refining oil – were the engines of the economy, the

driving forces of progress. They either improve other industries (e.g., electronics) or pave the way for future innovations (e.g., the role of nuclear power). The development of such industries should be the goal of government economic policy. French economists consider that these government actions promote "harmonious growth," but a key condition for this growth is finding a compromise that reduces the tension between various social groups and the economic interests of the state. However, already by the 1960s and 1970s there had been a move away from this theory, as traditional protectionism was abandoned with the creation of the European Economic Community. In addition, the position of big capital, which had no interest in state regulation, was strengthened.

The evolution of government regulation. Unlike other sciences, economics is closely linked to social and political processes and the development of market economies, not only in individual countries but worldwide. As productive forces have evolved, economic understanding has changed and economic theories have developed. The strengthening of state regulation can be explained in three ways:

1. The post-war years saw a significant increase in the economic role of the state, with the consolidation of state ownership and the emergence of a state-owned economic sector. By concentrating vast amounts of property in its own hands, the state was able to manage this property from a single center, while at the same time influencing production outside state ownership.
2. The development, improvement and spread of electronic computing. The use of these techniques has led to the widespread application of effective regulatory tools and techniques.
3. Further development of regulatory approaches.

State regulations have varied in impact and scope from country to country. However, the following objective functions of government regulation can be identified:

– maintaining economic balance;
– guaranteeing a certain level of output growth;

- guaranteeing real employment;
- setting limits on price increases;
- guaranteeing a certain level of exports.

The need for state regulation is driven by economic instability, in particular economic crises. The economic crises of 1974–1975, 1980–1982, 1997–2000, and the prolonged economic depression thereafter have led to claims of a crisis of economic regulation, as regulatory measures have had no impact on economic and social life. The decline in the effectiveness of regulation has led to a significant narrowing of its scope. There is now an increase in the priority of the market instead of the regulatory role of the state.

In Lithuania, the regulatory nature of the state has been reduced and the state has reduced its direct intervention in the economy, but administrative regulation and administrative supervision have increased significantly. This has more to do with the social regulation of business. In Lithuania, as in the US, for example, this regulation has become widespread. For this purpose, special state institutions have been set up to supervise the rules laid down by the state. These include bodies dealing with occupational safety, health, hygiene needs, environmental protection, etc. Social regulation is state intervention in the production process itself, in individual areas. Recently, social regulation of business has been expanding rapidly around the world, while economic regulation has tended to decline.

Society sets goals for its development and activities. To avoid chaos in the realization of its goals, society establishes a certain order to which all of its members must adhere. The modern state usually performs the functions of a "social contract."

The *Glossary of Economic Terms* (1999) defines regulation as "state regulation, i.e. a set of targeted state actions to balance public and private, private and corporate interests and to correct market failures."

In Lithuania, the processes shaping business regulation tend to evolve in line

with global practice. As practice shows, the state has always sought to regulate business. Even in the US, where market relations are the primary rule, the state has continuously had to regulate business conditions with the approval of the public in order to solve specific problems. The success of a company is therefore usually dependent on its ability to understand the law and to regulate its relations with the State. In addition to the Parliament, there is the state apparatus and local authorities, all of which have their own specific, sometimes even conflicting, laws and restrictions. Although it sometimes seems that the state and business are enemies, this is not the case. One of the objectives of the state is to improve business conditions, because the economic prosperity of a country depends on the success of its businesses. When businesses are profitable and create jobs, society as a whole wins.

Through regulation, the state aims to create stable economic and social conditions for the development of the economy, enabling business conditions to be secured, and minimizing the negative impact of production on the environment and society. They can regulate tax collection, protect property, and provide information to economic operators. State regulation can help to provide aid, develop scientific and technical progress, and support the freedom and initiative of economic activity. A schematic outline of the state regulatory mechanism is presented (see Figure 2).

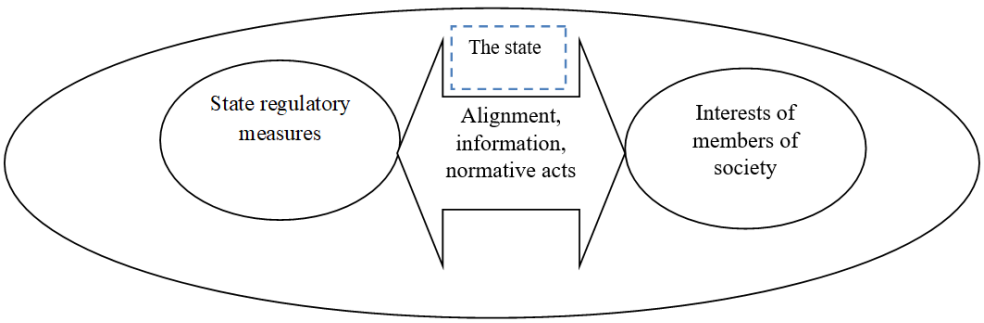


Figure 2. A schematic outline of the State regulatory mechanism

Source: compiled by the authors

Government regulation of the economy must have objectives, which are set out in various regulatory programs.

The state can pursue its objectives through direct and indirect regulatory methods: the direct approach can be implemented through administrative and economic means, while the indirect regulatory approach can be implemented only by economic means. In concrete terms, these regulatory instruments take various forms. Administrative and organizational approaches are usually described as a combination of authorization, non-objection, prohibition, or incentive measures. These methods are most often applied in the context of corporate, tax administration, bankruptcy, or competition laws. Economic regulatory approaches are based on the application of economic impact measures.

Regulation is carried out through laws and regulations, which define the powers of public authorities to set rules and conditions for doing business. Administrative regulation is carried out through government-authorized bodies that enforce compliance with the established conditions and rules, collect information, and impose fines and other sanctions on violators of rules. All approaches to state regulation are based on the concepts of the state-enterprise relationship. Currently, two conceptions of this relationship can be distinguished: one based on the authoritarian state, the other on the idea of cooperation. Either society wants the regulatory system to be as simple and cheap as possible in terms of service, with each individual benefiting from acting in the interests of the state (the cooperative idea), or it wants the system to be complex, expensive, and controlling of the actions of each individual (the authoritarian state idea). The mechanism of state regulation comprises the instruments of state management aimed at maintaining the economic equilibrium and dynamism of the state in the context of cyclical development. The state encourages investment during economic downturns and discourages it during booms. The generally accepted regulatory instruments used for this purpose are credit, taxes, investment, and public procurement. At the

same time, measures are taken to stimulate demand for goods and to promote long-term inflation. State regulation of business affects the whole of socio-economic life.

During the formative years of a business, the main functions of the state are:

- Creating the best possible conditions for entrepreneurs to realize their potential. As civilized entrepreneurship develops, more and more capable, creative entrepreneurs are needed. There are three main groups of entrepreneurs in Lithuania: the ordinary entrepreneur, the casual entrepreneur, and the genuine entrepreneur. The conventional entrepreneur realizes their abilities through traditional methods and makes profits of one kind or another depending on the current market situation. The accidental entrepreneur has entered the business by chance (privatization, acquaintance with the government, lack of moral principles). A true entrepreneur is able and tries to realize their abilities through innovation and risk. A conventional entrepreneur can only function when they are in a favorable environment and have some support. The casual entrepreneur will at some point be pushed out of the business environment. The State must therefore target genuine entrepreneurs and provide them with the most favorable conditions to realize their potential. Entrepreneurship is mostly carried out by young people. Around 70% of entrepreneurs are young people aged between 20 and 40. In regulating the formation of a civilized entrepreneurial environment, it is appropriate not only to assess the potential of existing entrepreneurs, but also to create the conditions for those who are not involved in business to engage in it. The state can effectively shape the business environment by creating a level playing field for economic activity, encouraging entrepreneurship through taxation, credit, insurance, and other systems. It can also create an effective system for the education, training and retraining of professionals.
- Creating a competitive environment. The State can create a competitive environment that fosters genuine economic competition through the introduction of scientific and technical advances, innovative marketing and management. A well-thought-out antitrust policy mechanism and rational

protectionism for science-intensive products would create the right economic conditions for business.

- Creating a consistently evolving environment for the supply of high-quality goods and services. The State must create the conditions for the development of high-quality goods and services based on innovation. Innovation requires an appropriate public innovation policy and business strategy.
- Shaping the social orientation process of business development. In this regulatory function, the State, through a system of economic orientations, must ensure that business structures are also oriented towards social benefits. The social effect is obtained when entrepreneurship contributes to the development of the well-being of society as a whole.

Since the restoration of independence, business has become the biggest force in Lithuania to boost the Lithuanian economy and help the country enter the global market. This is in the interest of both government representatives and entrepreneurs. However, mutual understanding and Lithuania's successful integration into the global market is hampered by the environment in which business is developed. Economic security is also a major factor.

Every company operates in an environment characterized by a set of business conditions. Assessing the conditions under which business develops involves first examining the specific environment of the enterprise, carrying out a detailed analysis of the situation, and consistently examining whether public policy is conducive to business organization and what legislation governs it. The main principles of the public regulation of business are presented in Figure 3.

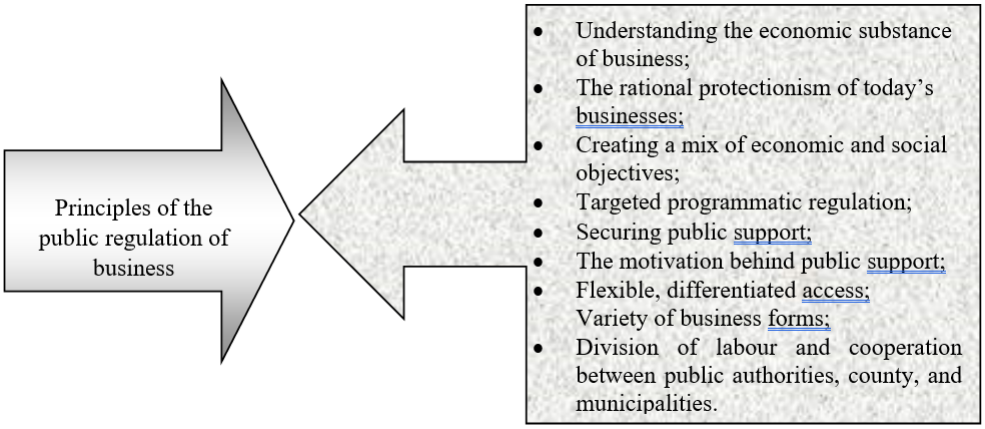


Figure 3. Principles of the public regulation of business

Source: compiled by the authors

6.6. Legal aspects of doing business in Lithuania

The legal business environment is the foundation of all business, influencing the establishment, success, and liquidation of a company. Government legal policy can either hinder or encourage business development. The current aim is to bring the Lithuanian legal system into line with European economic laws and rules. Perhaps that is why amendments to laws have become an almost everyday occurrence. This does not make the daily lives of entrepreneurs any easier, although, according to their representatives, the government are actively trying to create the best possible conditions for business development, remove obstacles to the creation and existence of enterprises, provide opportunities for expansion, and increase market competitiveness. It is clear that the state has a role to play in the development of business – to supplement market relations with elements of state regulation, and, on the other hand, to solve those issues which the market cannot effectively address using non-market methods.

The government must not overstep certain boundaries when setting the legal framework for the functioning of the market economy. The government establishes, through laws and decrees, the rules that guide the way businesses and

the state itself engage in economic activity and the way they relate to each other. All laws that regulate the activities of businesses in one way or another can be divided into three groups. The first group is the regulatory acts governing the establishment of a company. The second group consists of the regulations governing the operation of an undertaking. The third group contains the regulatory acts governing the winding-up of a business. The business legal environment in Lithuania is very complex and confusing, and the same law or decree can be interpreted in different ways. Meanwhile, entrepreneurs suffer from hastily adopted laws and numerous amendments. It is becoming increasingly difficult to keep up with everything, let alone adapt it to one's business. It is therefore not surprising that many irregularities and mistakes are found during inspections of businesses. This is due not only to the abundance of laws, but also to their complexity and contradictory nature. An analysis of the legislation shows that business conditions are not easy, with new and more stringent requirements for entrepreneurs and their activities. The slightest infraction carries inadequate fines. The lack of working capital creates a pessimistic mood among entrepreneurs, which hampers not only the development of local business, but also foreign capital investment in Lithuania. It is therefore time for the government to undertake reforms to create a legal environment conducive to the development of business. Only then will our country's economy reach the level of developed countries and be able to join the international community.

Decisions of the Republic of Lithuania, formalized in legislation, are the instrument through which the government performs its macroeconomic regulatory function. Rational regulation is one of the most important tasks of governments around the world. It determines a country's socio-economic development, its place and role in the global community, as well as its economic security. The process of drafting and approving regulatory documents in Lithuania now needs to be improved – the methodology for drafting and the criteria for evaluation

need to be selected. In Lithuania, the orientation is towards improving the quality of laws and other legal acts.

The need for regulatory reform is a concern for virtually all governments around the world. This activity was particularly intensified in the 1980s, when the proliferation of regulations began to increase at such a rapid pace that the regulatory system itself was threatened. Berman (2022) reported that in the USA, for example, between 1960 and 1990, the number of federal acts increased sevenfold – from 20,000 to 120,000 pages. In Austria, the number of government acts doubled in 8 years between 1982 and 1990. In the UK, company legislation alone grew by 500 to 3,500 pages a year between 1990 and 1991. In Sweden and Portugal, it was concluded that a "curb on the production of regulations" was necessary for the success of the governance system. In Lithuania, meanwhile, this problem has existed since the restoration of independence. Every incoming government forces in its own legislation without taking stock of existing rules, prompting concerns about the appropriateness of such legislation, its constant change, and its inconsistency. In addition, the costs of drafting and implementing regulations increase in proportion to the number of regulations. Some governments have tried to calculate the real cost of regulation and have come up with soaring figures – in the US, for example, it costs €500 billion. This represents 10% of GDP, or ¼ of the national budget in 1992 (Liadze et al., 2023). Economic costs of the Russia-Ukraine war. *The World Economy*, *46*(4), 874-886.. Each regulatory act cost a citizen and a company $55. Studies have shown that some regulations hamper productivity, innovation, and job creation. All of this both directly and indirectly affects the global competitiveness of the national economy.

In Lithuania, as in the rest of the world, three regulatory trends are emerging:

– The direct regulation of economic processes is rejected. Recently, the problem of the deregulation of the economy has become almost a central issue in the politics of developed countries. It has been concluded that regulation

must have a limit, otherwise democratic societies will become overly regulatory. The consequences of over-regulation for the economy, for individuals, and for market relations have been revealed. As a result, governments have started to regulate the conditions of competition rather than intervening directly in the activities of economic actors.

– The reduction in economic regulation has been accompanied by an increase in legislation on safety at work, the living environment, health, consumer rights, etc. Such acts of an administrative nature are expected to increase.
– There has been a proliferation of so-called "process acts" which underpin some government activities, such as collecting taxes from citizens, customs duties, and licenses.

Most countries have adopted programs that include criteria for assessing legislative acts, mandatory stages in their preparation, a procedure for assessing the location of the act to be drafted, methods for assessing the effects of compliance, etc.

SME policy-making. In Lithuania, the formation of SME business policy should be analyzed from a historical point of view, starting from the restoration of independence and accession to the EU. Therefore, SME policy-making can be divided into several periods:

Stage 1: 1990–2004 – Lithuania regains independence and moves towards EU integration.

Stage 2: 2004–2008 – Lithuania's integration into the EU and the onset of the global economic crisis.

Stage 3: Economic steps and preparations for the euro from 2008 to 2015.

Stage 4: 2015–2016 (until 14 November) – Specific features of the consequences of the adoption of the euro.

Stage 5: 2016 (after 14 November) to 2022 – The building blocks for a new economic policy.

Stage 6: 2022 to the present year – Military infrastructure.

Each country's economic policy can be analyzed on the basis of various criteria, but the most important are the legal framework, elasticity, market openness, and stability. The legal framework must guarantee the right to dispose of one's own labor and means of production, and must entail freedom of agreement (freedom to buy and sell). Elasticity of prices, wages, and interest on credit must be achieved. In a free market, barriers to competition within a country must be removed, and the free movement of goods, services, and capital between countries must be allowed. Economic stability is understood in various ways: as a stable currency, both within and outside the country, and as the financial stability of the state.

Lithuania's economic reforms between 1990 and 2004 achieved major successes. This period can again be divided into two components: the establishment of a stable economic system in independent Lithuania, and the measures taken to integrate Lithuania into the EU.

The transformation of Lithuania's legal system partly benefited from historical experience. Economic legislation was not adopted in a logical order, but was based on a historical approach, and took into account the interests of the various regulatory bodies, whose functions were not coherent and were somewhat messy. The transformation process had a major impact on ordinary citizens and businesses, who not only felt the burden of regulation but also had to pay for it. Looking back, it is possible to see some main trends in the development of the legal system:

- the overly broad interpretation of laws that increased the power of controlling entities, eroded companies' rights, and increased their risks and costs;
- the creation of a large number of duplicative regulatory functions that have reduced the responsibility and accountability of government, increased the cost of governance, and created opportunities for corruption;
- the lack of a regulated institutional framework, which has complicated relations between citizens and the state.

Through property reform, Lithuania sought to radically change property relations, gradually reducing the dominance of the state and increasing the size of the private sector. The shaping of property relations in Lithuania took place in three different ways – through restitution, the privatization of state assets, and the creation of new private enterprises. The size of the enterprise determined the method of privatization: large and medium-sized enterprises were privatized by public subscription of shares and by selling enterprises for investment vouchers, while small enterprises were privatized through auctions. Scholars and researchers describe the first period in various ways. According to A. Chmieliauskas (Pocienė & Kiuliulienė, 2015), at the beginning of independence, business was mostly dependent on one person – whatever they came up with, they usually did. Then, Lithuania was a leader in precious metals exports, all the while under a constant balance between "will you survive or not" and "will you succeed or fail." Chmieliauskas argues that Lithuanians have learnt to work and to apply western management and business models in a never-ending state of transformation, where values and the social, political, and economic environment are changing. According to Gadeikis et al. (2010, p. 38), Lithuania has never been able to completely eliminate private business, which operated mostly illegally. The first generation of entrepreneurs grew up in conditions of endless scarcity, and as soon as the screws were loosened a little, many people who had never had anything to do with business rushed into sewing, knitting, or other cottage industries in their garages, storerooms, or apartments. As conditions changed fundamentally, from a planned economy to a market economy, tens of thousands of enterprising compatriots became enthusiastic about working for themselves.

In many cases, companies became collectively owned, with private capital distributed to shareholders. The desire to maximize profits and dividends immediately inhibited investment in companies, and the prospects for expansion were very uncertain. The new owners, who were members of the collectives, put

a brake on redundancies. The low unemployment rate partly reflected this situation (see Figure 4).

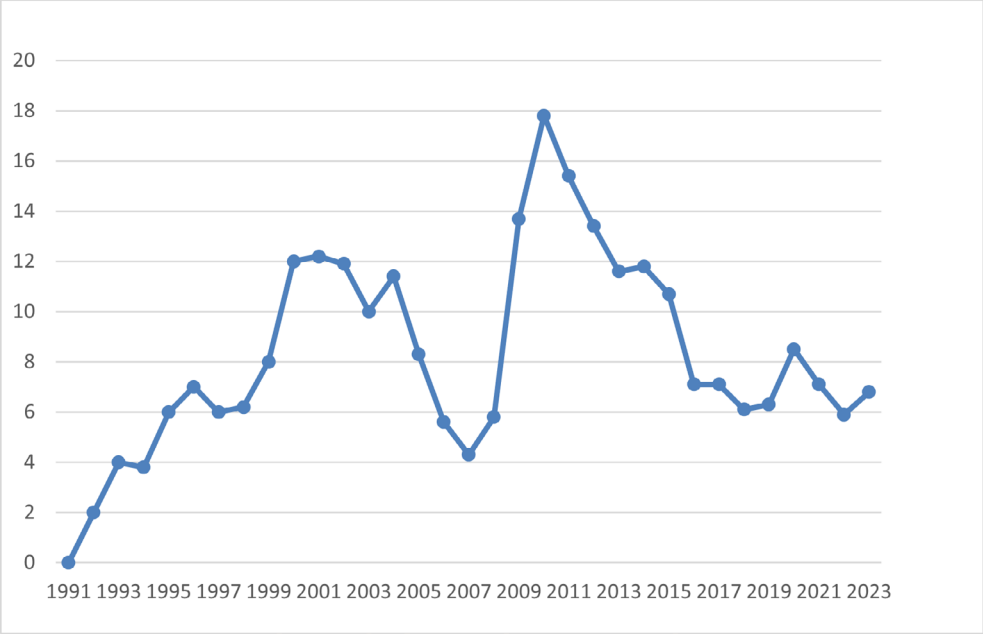


Figure 4. Lithuanian unemployment rate, 1991–2023
Source: Official Statistics Portal (2024)

The unemployment rate is one of the most important indicators in the economy – not only in recessions, but also in booms. The unemployment rate is not only important for individuals who are unemployed, but also has a strong impact on the economy as a whole (Picardo, 2023). The public and investors use the unemployment rate as an indicator of a country's economic health, assessing the effectiveness of a government's policies.

As can be seen in Figure 4, the unemployment rate tended to increase from 1991 to 1997, then fell slightly, and then began to rise again in 1999. The unemployment curve very clearly reflects fluctuations in the economy: the night tax reform of 2008, the introduction of the euro in 2014–2015, and the invasion of Ukraine in 2022. In one case, the unemployment rate went up, in another case it

went down, because it required the concentration of the whole nation (the war in Ukraine).

Market openness. For Lithuania, market openness is not only important domestically, but also in relation to foreign countries. Germany has become the main Western partner, while trade has also been conducted with third countries. However, trade with the EU has dominated and trade with third countries has declined. Structural changes have required significant additional investment, and Lithuania tried to receive help from various international organizations (International Monetary Fund, World Bank). Foreign direct investment (FDI) was another possible route, and these investments provided not only the capital needed to modernize the economy, but also better opportunities for exports (mainly of products produced with the participation of foreign investors). The investment process has been boosted by economic recovery, as FDI in Lithuania increased 9-fold between 1994 and 1999. The largest investments were made in industry – 32.0%, trade – 23.0%, communication services – 18.0%, and financial intermediation – 12% (according to the data of the Lithuanian Statistics Department, 2024).

In assessing FDI, it is important to emphasize that FDI contributes significantly to a country's economic growth, and its arrival is one of the main objectives of the state. The importance of FDI in transforming a country's economy is debated every year, which is why governments and businesses work together to develop new projects. It is also increasingly recognized that strong public institutions can ensure a country's competitiveness in the FDI market. In Lithuania, FDI is calculated using indicators published by the Department of Statistics and the Bank of Lithuania, which show statistics on FDI and balances. In Lithuania, FDI is mainly attracted by the manufacturing, trade, transport, financial intermediation, and information and communication sectors. On average, these sectors account for around 65% of all FDI received in Lithuania. Financial and insurance activities

are the sector with the highest FDI inflows from abroad. In 2019, investments in this sector amounted to €4.8 billion, or as much as 26% of all FDI received by Lithuania. Manufacturing also accounts for a large share of the FDI stock. It can be observed that FDI in this sector has increased particularly sharply since Lithuania's accession to the EU. The opening of EU borders has led to reduced barriers and facilitated trade with other EU countries, and it has become easier to export goods produced in Lithuania. Investors appreciate this opportunity and trust the Lithuanian market. Subsequent research (Ernst & Young, 2021) has shown that Lithuania needs a focused and efficient education system to ensure steady digital and technological progress, and a focus on sustainability and environmental protection. It is predicted that in the future, investors' choices may be heavily influenced by areas of innovation, which will determine their decisions on where to locate high value-added businesses. As Linas Dicpetris, Ernst & Young's head of advisory services in the Baltics, observes, "this can only be achieved through consistent collaboration, both within the business network and with the education, public and non-governmental sectors."

According to an Ernst & Young (2022) study, although FDI has not yet recovered to reach its pre-pandemic level, it has started to grow again. Optimistic investor sentiments for 2022 were considerably dented by the outbreak of the war in Ukraine. The sudden change in the geopolitical situation had a significant influence: 8 out of 10 investors were willing to invest in Europe, but this figure dropped to 4 out of 10 once the war started (Ernst & Young, 2022). Despite the changed geopolitical situation and increased economic challenges, Europe and the Baltics remain an attractive market for investors. However, this requires joint EU and national action. As the aforementioned study shows, Lithuania is ranked 21st on the map of FDI. This is two places lower than in 2020. In 2021, 41 new investment projects came to Lithuania, compared to 53 in 2020. However, according to Ernst & Young, Lithuania ranks 6th among European countries in

terms of jobs created by investment per 1 million inhabitants. The attractiveness of Central and Eastern Europe is expected to decrease in the near future in the context of political conflicts. This will be influenced by the geographic location: the country's proximity to Ukraine and Russia. However, in the long term, the countries in the region will have an advantage and will benefit. Some countries that are also members of the EU and NATO are predicted to benefit as companies look for alternative locations to Russia and other countries that do not meet these two important criteria. The Eastern European region is also considered to be competitive compared to Western Europe, as the area benefits from a skilled workforce, intellectual property protection and, in many cases, EU membership.

Stability. To protect the market, Lithuania's temporary money, the common talonas, was introduced on August 5, 1991.

Lithuania introduced a fixed exchange rate regime to achieve monetary stability. At the time of the introduction of the fixed exchange rate, Lithuania had reached a level where:

- various internal shocks were possible during the transition;
- the import price was 65% of the gross domestic product;
- Lithuania had not been integrated into the global financial market.

In Lithuania, the exchange rate regime has evolved in stages (Bank of Lithuania, 2018):

- October 1992–August 1993 – free float regime;
- September 1993–March 1994 – changes in the administered exchange rate;
- April 1994 to January 2015 – fixed exchange rate for the litas;
- 1 January 2015 – the euro is introduced.

The Lithuanian economy has undergone major changes in all sectors since independence. There are 8 stages in the development of the Lithuanian economy (which has influenced the formulation of SME policy):

- the first – 1991–1994 – was a dramatic economic downturn, typical of all post-communist countries;

- the second, the 1995–1998 revival, saw not only economic stabilization, but also growth;
- the third – 1998–2001 – was an economic downturn caused by the Russian economic crisis and the Lithuanian economy's attachment to the Russian market;
- the fourth – 2001–2008 – saw economic growth as Lithuania prepared to join the EU, and further rapid growth;
- the fifth – 2008–2010 – was an economic downturn due to the global economic crisis, including active support from the Lithuanian government (overnight reforms);
- the sixth – 2011–2020 – saw the country's increasing competitiveness, orienting business towards Western markets;
- the seventh – 2020–2022 – saw mass business insolvency due to the COVID-19 pandemic
- the eighth – 2022–present – involves preparing the country's infrastructure for war.

The specific features of the Lithuanian economy have also shaped the policy on SMEs. The creation of SMEs is of great importance in the economy of each country. It allows market niches to be filled and consumers' needs to be satisfied, and is both one of the most effective antitrust policies and a prerequisite for the formation of a competitive market. It also makes it easier and cheaper for SMEs to reorient themselves, to introduce new technologies, and to combine manual and mechanized work. In addition to economic problems, SMEs address a whole range of social issues. In particular, there are problems of unemployment, and the development of small businesses also creates a middle and small-owning class. Therefore, the Lithuanian Government had to take a whole series of important decisions when formulating its policy on SMEs and, first of all, to create favorable conditions for business development. The first decisions in the formulation of Lithuania's economic policy were taken in 1988 when the Lithuanian Persitvarkymo Sąjūdis (Lithuanian Reform Movement) drafted the Concept of Lithuania's Economic Independence (1988).

Table 4. Characteristics of the formation of SMEs, 1990–2024

Source: compiled by the authors

	Programs, laws, decisions	Program priorities	Situation in the country	Measures adopted for business development
1990–1992 (1–3 governments)	Government program: market, democracy, freedom (1991). Reconstruction program for the Lithuanian economy.	Stabilization measures are envisaged, and the concept of economic reform is being developed. A program for the reconstruction of the Lithuanian economy. Orientation of the economy towards the international market, search for alternatives, freeing it from dependence on the raw material base of the USSR; minimization and rationalization of fuel and energy resources in all spheres of economic activity, greening of the economy, promotion of innovative processes, government support for intellectually and scientifically-intensive production.	Russian blockade	A variety of forms of ownership and shapes property relations are established. The model of privatization of the economy and the use of investment vouchers are approved. Privatization of commercial and service SMEs. The dominance of state ownership of individual industries is consolidated. Price subsidies are abolished. Price regulation is envisaged only for a very limited number of goods and services, but public price regulation remains. The level of corporate income tax and personal income tax is to be maintained at a level that would stimulate business activity and encourage foreign capital investment in Lithuania. Business and intermediation activities are encouraged, in particular in the transport of raw materials and goods to Lithuania. The concept of a small enterprise is defined and the bases for promoting small enterprises are outlined, including tax incentives.

1992–1996	Constitution of the Republic of Lithuania (1992), Memorandum of Economic Policy (1992). The Law on Small Enterprises. (1991).	Overcoming the economic crisis, stabilizing inflation. Economic development strategies envisaged: Lithuania as a transit country; full state support for export development; building modern market institutions; attracting foreign investment and credit; promoting Lithuania's EU integration.	Inefficient structural changes in the economy: a steady decline in the share of industry, and a fall in exports of manufactured goods.	Shaping the competitive structure of market players. Improving the legal framework to promote and protect private enterprises. Encouraging the establishment of business incubators. Providing a framework for the promotion of small enterprises. In 1995, following the adoption of the Law on Amendments to the Law on Small Enterprises of the Republic of Lithuania, the concept of a small enterprise was defined on the basis of two criteria – the total number of employees and the size of gross annual income (receipts).
1996–2000	Economic integration program. Implementation of a long-term export promotion program. Law on SMEs (1998). Poverty Reduction Strategy for Lithuania.	Promoting SMEs and job creation. Liberalizing the business environment. Defining SMEs	The Russian crisis. Inadequate fight against corruption. Deteriorating demographics.	A new form of business development – concessions. Reducing administrative constraints on the market. Guaranteeing business development – protecting shareholders' and depositors' personal property, stopping deliberate bankruptcies. SMEs defined in the Law on the Development of SMEs.

2000–2004	Strategic directions for the development of SMEs until 2003. Program for innovation in business. Long-term strategy for the development of the Lithuanian economy (economy) until 2015. Long-term development of the State Strategy. National sustainable development Strategy. Concept for the development of science and technology parks and model statutes for science and technology parks. Concept of e-government.	Improving the legal and economic environment for business; improving financial opportunities for SMEs; ensuring the provision of business information, training and advisory services; strengthening the innovation potential of SMEs; promoting cooperation between large enterprises and SMEs; improving the institutional infrastructure for business; developing businesses' self-management; promoting regional development of SMEs. The measures for the implementation of the SME Development Program shall be continuously updated.	Decrease in the share of active SMEs in the total number of enterprises. There are large disparities in the GDP generated in different regions of the country.	Creating a favorable economic environment for new and existing institutional investors to set up and operate by liberalizing investment conditions for commercial banks, insurance companies and investment pension funds. No retroactive application of laws on business and business conditions. Restructuring of bankrupt companies is encouraged. Legalization of gambling houses. Promotion of alternative businesses in agriculture. Establishment of an electronic gateway (portal) for the provision of government services to businesses. Support for e-business. Reforming the SME promotion funds by changing their use and administration, redirecting funds to support business development programs, and reducing them for administration. Developing a micro-credit scheme for start-ups. Use of electronic signatures in business. Establishment of an infrastructure of preferential services for business

2004–2008	Lithuania 2004–2006 General Programming Document. A national strategy to cope with the consequences of ageing. of the Government Program 2004–2008. National plan for the adoption of the euro.	Legalizing the equal participation of associated business structures in the drafting of laws and regulations. Introducing new forms of business support, including financial forms (venture capital, micro-credit). Promoting and encouraging corporate social responsibility. Enhancing entrepreneurship education for young people.	Inadequate fight against corruption, worsening demographics, lack of modernized infrastructure for trans-European networks.	Developing e-business and cleaner production technologies. Development of innovation centers, business incubators, and business support centers. Enhancing entrepreneurship among older people, especially women. Establishment of a common information base for integrated research: "Research on economic growth and competitiveness." Individual (personal) enterprises become legal entities, dropping the word "personal." Establishment of a register of legal persons. The classification of SMEs is changed.
2008–2012	Global Sustainable Summit on development issues. Measures for the implementation of the 2008–2012 program. Report on the activities of the LRG in 2009.	In the area of business incentives, corporate tax breaks are further detailed, and a tax credit system is introduced for the first time for small family business start-ups.	Plan to tackle the economic crisis. The night reform. Tax increases.	Measures to implement the crisis management plan are adopted. Supervisory functions of the authorities are optimized. The procedure for issuing business licenses is amended, and activities that cannot be carried out are included. Reduced the number, time, and cost of administrative procedures needed to start a business. The two-date rule. Memorandum on minor labelling discrepancies.

2009	Restructuring of business supervisory authorities		The Ministry of Economy and Innovation develops the Supervisory Inspection Survey Tool (PIPA), which allows an operator to anonymously assess a recent inspection of its activities by a supervisory authority.	Since 2009, Lithuania has been implementing initiatives to improve the performance of business supervisory authorities, with the aim of optimizing the supervisory functions performed by the authorities, i.e., to ensure that the supervisory functions in the country are carried out in an efficient, coordinated manner, at the lowest possible cost and with the least disruption to the activities of the entities supervised. Intelligent business supervision measures change the concept of the mission of supervisors by promoting methodological assistance instead of sanctions and reducing the burden of supervision on business. The role of the business supervisor is to help the operator to ensure that its customers are not harmed, not to punish for infringements found during an inspection.

2011	Business Plan Financial Calculator. Business Value Calculator. Declaration on the first year of business. Business questionnaires.	The Business Plan Financial Calculator helps individuals to assess the prospects and potential outcomes of their planned business. **Business Value Calculator** – a tool that calculates the value of a business and provides scenarios of how the value of a business might change.		"Eksportuojančioji Lietuva" Public Institution together with Ernst & Young consulting company, develops a Business Plan Financial Calculator. A predecessor to the current Innovation Agency is established. **In 2011, the vast majority of business supervisors signed the Declaration on the First Year of Business. In this document, supervisors committed themselves to proactively providing advice and assistance in the first year of business, helping to comply with the law rather than rushing to impose fines.** Business supervisors use control questionnaires to inspect businesses. These are a single list of aspects to be checked, for both the inspector and the inspected. The checklist enables the business to prepare properly for the inspection. The control questionnaires are composed of control questions that reflect the main requirements of the legislation for economic operators and are formulated in a clear, understandable way. The use of control questionnaires benefits both businesses and the supervisory authorities themselves. Questionnaires give businesses an insight into what exactly the inspector will be checking and how. Supervisory authorities can know exactly what their inspectors are checking and what they are required to check. The aim is to bring more clarity, transparency, and efficiency to the inspection process.

2012	The two-date rule			In order to ensure that economic operators have sufficient time to familiarize themselves with the new legal framework and to prepare for the implementation of the obligations imposed on businesses by the legislation, all legislation (including laws, government decrees, orders of ministers, heads of government agencies and bodies attached to ministries, and legislation of municipal authorities and bodies) changing the conditions for doing business must enter into force on May 1 or November 1, in line with the "two-date" rule. The legislation must be adopted at least 3 months before its entry into force, i.e., by February 1 or August 1.
2012–2016	Priority measures for the implementation of the 2012–2016 Government Program. The concept of social business.	Facilitating SME participation in public procurement. Developing new and improving existing instruments for the provision of public services to business. Improving access to financial resources for business start-up and expansion. Establishing an information system for institutions supervising economic operators.	Code of good business practice (goodwill) for businesses during the period of compulsory price indications in litas and euros.	Social Business Guide. Business Supervision Guide. Business questionnaires. Declaration for the first year of business. Uniform and quality counselling of individuals. Consolidation of supervisory authorities. Simplified procedures for the liquidation of dormant legal entities. Simplification of tax procedures for economic operators.
2021	**Business Accelerator** Program			This is a program that takes place in the 13 "Swarm" co-working centers. Participants have the opportunity to learn about financial planning tools, how to test the financial viability of business ideas, cost management, sales forecasts, and budgeting.

2021	Business e-Guide			The Ministry of Economy and Innovation, through the Innovation Agency, is implementing measures to improve the financial literacy skills of SMEs through the Innovation Agency.
1998–2024	Law on the Development of SMEs			The concept of SMEs, the forms of state support applicable to SMEs, and the status and functions of the Lithuanian Council for SMEs are defined. The prerequisites for the development of SMEs and the promotion of entrepreneurship are established.

The concept envisaged that Lithuania would set its own taxes in accordance with the principle of a full economy, providing for an economically autonomous enterprise that could only be regulated by economic norms and eliminating the monopoly of the market and production. Price and anti-trust policies were given an important place in ensuring the development of business.

The data presented in Table 4 show that various measures, Lithuanian government programs, and EU recommendations have been adopted at different times in relation to the formation of SMEs. Depending on the decisions taken, the perception of SMEs has changed. This is amply illustrated by the Law on the Development of SMEs of the Republic of Lithuania, which was adopted in 1998 and has undergone as many as 13 amendments up to the present day, with the last amendment concerning the social business entity coming into force on June 1, 2024. In particular, Recommendation 2003/361/EC on the definition of micro, small and medium-sized enterprises of 6 May 2003 (European Commission, 2015, p. 10) has had an impact on the sustainable functioning of the law. It should be noted that the current understanding of business is not only reflected in the laws and economic decisions taken by the state, but also in the policies that implement them. It is possible to successfully pass whatever laws and regulations the state desires, copying them from the most advanced countries, but the bureaucratic apparatus can be successful in frustrating their implementation. The Law on the Development of SMEs (1998) described the following SME entities:

- natural persons who have acquired a patent during the term of that patent;
- micro-enterprise – a sole proprietorship (personal enterprise) employing only the owner and members of their family (spouses, parents, stepparents, children, adoptive children);
- small enterprise – an enterprise with an average annual headcount of no more than 9 employees;
- medium-sized enterprise – an enterprise with an average annual headcount of no more than 49 employees.

In October 2002, the Law on the Amendments to the Law on the Development of SMEs of the Republic of Lithuania was adopted, which provided for a new classification of business entities in line with EU requirements. The new amendment to the Law on the Development of SMEs contains a new definition of SME entities. The criteria for defining SMEs were aligned with the EU criteria for SMEs, and included not only the number of employees, but also the maximum annual revenue or assets of the enterprise and its autonomy.

EU countries each have their own definition of an SME. One of the most popular criteria for defining SMEs is the number of people employed by the enterprise, but the most objective criteria for defining SMEs are annual turnover and capital size. In some cases, industry affiliation or other characteristics are taken into account. A small enterprise is defined as having a relatively small market share, being owner-managed rather than formally structured, and not being part of a large corporation. Since 1997, the European Commission (EC) has recommended that all EU Member States should follow the same standards in defining SMEs. Before then, there was no single standard to define precisely and clearly what constitutes a large, medium, or small enterprise. The definition proposed by the EC is based on a number of criteria: number of employees, independence, turnover, and balance sheet value. In Lithuania, another category has been identified: natural persons who have acquired a patent during the validity period of the patent (since January 1, 2003, this has included business licenses and persons entitled to engage in an independent commercial, industrial, or professional activity, and other activities of a similar nature). The definition of SMEs in Lithuania according to the criteria of the number of employees and the autonomy of the enterprise (the maximum value of the capital belonging to one or more jointly owned enterprises in Lithuania is 50%, while in the EU it is 25%) was not in line with the EC recommendations, and did not take into account the criteria of gross income and value of assets. These criteria have been assessed and amendments

to the Law on the Development of SMEs have been drafted accordingly. Since the beginning of 1997, the situation in the EU has changed, with an increase in the financial performance of enterprises and an increase in the volume of activity, and it is therefore proposed to increase the thresholds for gross revenue and value of assets, while keeping the number of employees the same as before. With the changing situation in both the EU and Lithuania, the problem of defining SMEs has been partly solved by the adoption of the Law on Amendments to the Law on the Development of SMEs, where the definition of SME entities coincides with the EC recommendations according to the criterion of the number of employees. Until November 6, 2002, the Law on Small Enterprises of the Republic of Lithuania (1991) was in force, according to which small enterprises were classified as enterprises whose total number of employees did not exceed 100 people. This law did not apply to state-owned and joint-stock companies or to non-incentivized activities by SMEs included in the list approved by the Government of the Republic of Lithuania (1999). An updated list of activities not to be supported by the State was adopted by a Resolution of the Government on January 9, 2003 (in force until 16 January 2003), and included:

1. Hunting, trapping, and trapping experience and related service activities (01.50*).
2. The manufacture of beverages (from 15.91 to 15.95).
3. The manufacture of tobacco products (16.00).
4. The sale of motor vehicles and motorcycles; retail trade services of motor fuels (50.10, 50.30 to 50.50).
5. Wholesale trade and commission trade, except for motor vehicles and motorcycles (51.11 to 51.70).
6. Retail trade, except for motor vehicles and motorcycles (52.11 to 52.63).
7. Financial intermediation, except for insurance and pension funding (65.11 to 65.23).
8. The accumulation of insurance and pension funds other than compulsory social insurance (66.01 to 66.03).

9. Activities auxiliary to financial intermediation (67.11 to 67.20).
10. Real estate operations (70.11 to 70.32).
11. Legal activities (74.11).
12. Gambling and betting activities (92.71).

(*These numbers represent the classification of economic activities. All activities classified in the indicated class are considered non-state-sponsored.)

With the adoption of the Law on the Development of SMEs (, a different understanding of a small enterprise was provided (see Table 5).

Lithuanian researchers have extensively and consistently studied the formation and development of SMEs, the impact of policy on the formation of SME policy, the impact of SMEs on the country's competitiveness, etc. As Simanaviciene (2018) argue, global experience has shown that without SMEs, the market economy can neither function nor develop.

Despite the EU's understanding of SMEs, Lithuanian researchers (Revienė et al, 1998; Sūdžius, 2001; Martinkus, Žilinskas 2001; Vainienė, 2005; Banys et al., 2006; Jakutis & Bandza, 2006; Dikčius et al., 2007; Garuckas et al., 2007; Stripeikis, 2007; Štreimikienė et al, 2007; Misiūnas, 2008; Smagurauskienė, 2009; Bartkus, 2010; Šivickas et al, 2010; Vijeikis & Baležentis, 2010; Grublienė & Lengvinienė, 2011; Jasinskas et al., 2013; Grėblikaitė & Puškoriūtė, 2014; Davulis, 2015) point to different perceptions of their understanding. According to the Lithuanian Confederation of Business Employers (2008), it is necessary to classify natural persons engaged in business activities with business licenses as SMEs. In the opinion of Mažylis (2006, p. 37), the lack of a systematic basis has determined the choice of SME policy. Lithuanian researchers (Gronskas, 1995; Stačiokas, 1995; Lydeka, 1998; Markevičius, 2001; Sūdžius, 2001; Zakarevičius, 2003; Žukauskas & Stripeikis, 2004; Gineitienė, 2005; Strazdienė, Garalis, 2006; Garuckas et al., 2007; Kriščiūnas, Grieblikaitė, 2007) have also argued that the unexamined entrepreneurial process is becoming an urgent scientific problem.

The policy of SME formation has been investigated in the works of Lithuanian scientists from various perspectives. The development of SME skills in rural areas has been studied by Atkočiūnienė,et al, 2011; students' attitudes towards business have been investigated by Jelagaitė (2008); and lecturers' attitudes towards business have been studied by Dudaitė, Žibėnienė (2012). In the works of other researchers (Neverauskas & Stankevičius, 2001; Adamonienė & Trifonova, 2007), SMEs have been assessed as the most dynamic, constantly changing group of enterprises – the middle link of the economic structure, which has a decisive impact on economic growth and the stability of social relations. The creation of new jobs, additional added value, and investment attracted by SMEs have also been the focus of other researchers (Misiūnas, 2008; Bartkus, 2010; Šivickas, et al, 2010). The uncomplicated SME decision-making process and easier contacts due to informal relationships are the subject of yet more research from Lithuanian scholars (Žukauskas, 2002; Krisčiūnas & Grėblikaitė, 2007). Finally, the absorption possibilities and intensity of support for SMEs have been assessed (Beržinskienė, et al, 2012; Liustrovaitė & Martinkutė-Kaulienė, 2015).

According to the Lithuanian Business Confederation, the main reason for labor migration in Lithuania's districts is the lack of decent-paying jobs. On the one hand, this reflects the ineffectiveness of regional development policy; on the other hand, the business community, which creates jobs, is systematically excluded from regional development decision-making.

The implementation of SME policy. The best indicator of the implementation of entrepreneurship policy is the number of active enterprises and the growth of key entrepreneurship indicators. Since 2004, Lithuania has had a Register of Legal Entities, which lists all companies established in Lithuania. The data from the Register show how responsive companies are to decisions taken by the Government. In particular, these decisions have an impact on the establishment and operation of a company. Data from Eurostat on registered and active businesses

show uneven trends (see Figure 5). A more detailed picture can be obtained by looking at relative rather than absolute figures. It is therefore more appropriate to analyze data on economic operators in terms of population, number of employees, income, and other indicators.

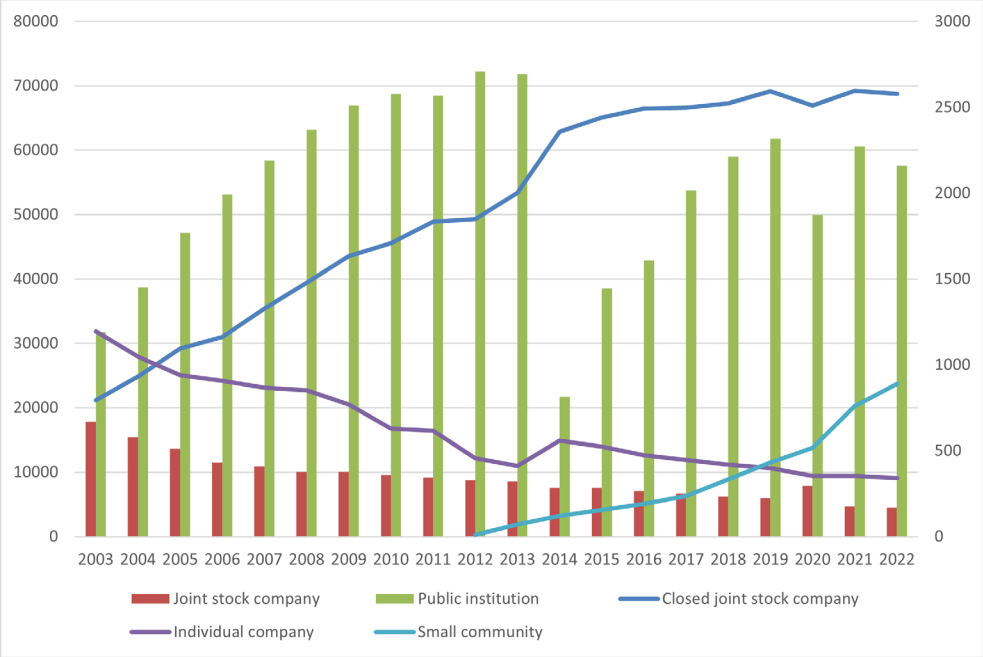


Figure 5. Number of registered and active enterprises in Lithuania, 2003–2024

Source: Official Statistics Portal (2024)

The structure of enterprises has changed considerably over the 2003–2024 period, influenced by the changes in business entities specified in the Law on SMEs (see Table 5). As can be seen from the data in Table 5, the definition of SMEs has changed from micro to micro-enterprises, from micro to micro-enterprises, from micro to micro, from micro to micro, from micro to micro, from micro to micro.

Table 5. Changes to the formation of business entities in the Law on SMEs

Source: compiled by the authors on the basis of legislation

Business entities	Number of employees	Annual revenue of the company	Annual value of assets
From 2003–01–01 to 2007–12–31			
Medium-sized enterprise	< 250	< 138 million LTL	< 93 million LTL
Small enterprise	<50	< 24 million LTL	< 17 million LTL
Microenterprise	<10	< 7 million LTL	< 5 million LTL
From 2008–01–01 to 2014–12–31			
Medium-sized enterprise	< 250	< 138 million LTL	< 93 million LTL
Small enterprise	<50	< 24 million LTL	< 17 million LTL
Very small enterprise	<10	< 7 million LTL	< 5 million LTL
From 2015–01–01 to 2017– 04–30			
Medium-sized enterprise	< 250	< €40 million	< €27 million
Small enterprise	<50	< €7 million	< €5 million
Very small enterprise	<10	< €2 million	< €1.5 million
From 2017–04–30			
Medium-sized enterprise	< 250	< €50 million	< €43 million
Small enterprise	<50	< €10 million	< €10 million
Very small enterprise	<10	< €2 million	< €2 million

Since 2008, only one criterion remains mandatory when defining SMEs, while the other can be chosen: either the company's annual revenue or the annual value of its assets. The size of business entities has also changed several times, both in terms of the size of the annual income of the enterprise and the value of its assets. The most recent change was made in 2017, when the size of all the criteria for SMEs changed. This was due to an increase in the turnover and asset values of all businesses, so very small regulations could even hinder business development. Statistics show that the number of registered enterprises has been growing steadily since 2003, and no economic crisis (neither the Russian, the night

reform, nor the financial crisis) has had any impact on the decline in the number of registered enterprises. The number of enterprises operating is much lower than the number of registered enterprises, and ranges from 41.8% (2003), to 47.5% (2017), to 60.3% (2024) of the number of registered enterprises. On the other hand, data from Eurostat show a steady increase in wages, stimulating household consumption, while at the same time increasing demand for the output of enterprises. However, there is a shortage of skilled labor on the labor market. Growing domestic demand and accelerating export growth will continue to be the main drivers of economic growth. Micro, small, and medium-sized enterprises have a key role to play in innovation, partnership, competitiveness, and employment development in Lithuania.

In terms of policy implementation, the best example is the establishment of small communities. In 2012, a new legal entity, the small partnership, was created, which allowed the creation of new business enterprises under simplified conditions. The creation of the small partnership was conditioned as a counterbalance to the legal entity with limited civil liability: the private limited company. The decision to create a new form of business enterprise was aimed at creating an attractive legal entity with low start-up costs and simplified accounting. The small company had to be attractive to people who already had some kind of economic activity and who were looking to establish a business as an additional activity. The tax advantages foreseen for a small partnership would allow the business to survive even if it did not generate any income (which is very important in the early stages of a company, when costs usually exceed income). Data from the Department of Statistics show that more than 3,500 small partnerships have been registered in the country since September 2012. This shows that setting up small partnerships has been a relatively attractive solution for entrepreneurs (see Figure 6).

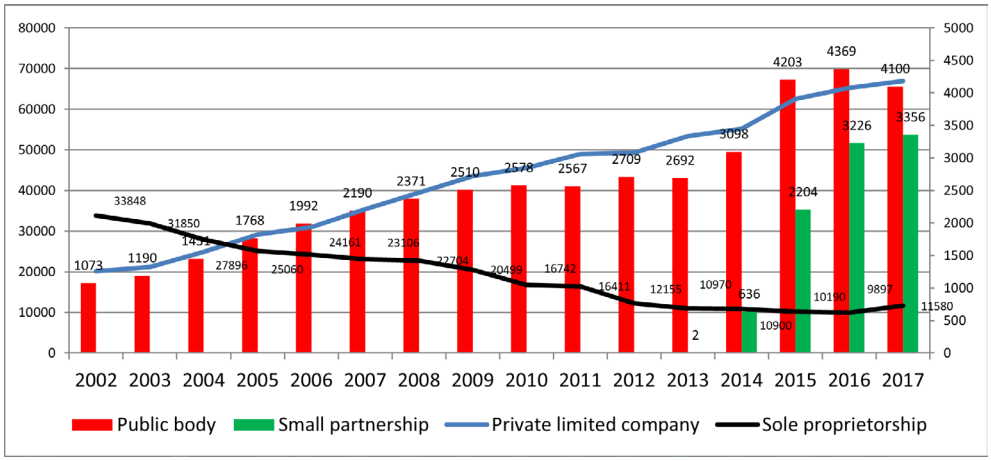


Figure 6. Number of companies operating in Lithuania in 2002–2024

Source: Official Statistics Portal (2024)

However, the abolition of tax incentives on January 1, 2014, led to a decline in the establishment of small partnerships and the growth of young entrepreneurs. Now, only medium-sized businesses can benefit from setting up such a company, and only when the number of owners is not large (for example, only one owner). The resulting compulsory taxes paid to Sodra will simply be a relatively small part of the costs, and will be less burdensome for the company. Another negative impact on the establishment of small partnerships is that a member of a small partnership cannot have an employment relationship with the small partnership or enter into a civil contract with the small partnership for the provision of services. Only the manager of the small partnership may be subject to a civil (service) contract agreeing to the provision of services to the management of the small partnership. All other service contracts with the manager of the small partnership are thus prohibited. The owners of a small partnership are prohibited from receiving remuneration for any work, whereas the owners of a private limited company are allowed to do so in accordance with the rules of August 19, 2015. On 19 August 2015, on the basis of a written clarification from the State Tax Inspectorate (No. 32.41-GPM RM-18120), the income of the members of a small

partnership should have been subject to more than 3 times the tax that would have been payable by the members of the small partnership if it had been paid by a limited liability company in 2015.

Another negative business trend observed is the decline in the number of sole traders. Comparing 2003 with 2022, only 28% of businesses are still in operation (see Figure 7). It can be predicted that there will be no more sole traders in the near future. The government itself is "working hard" to ensure that there are no more sole traders. On the one hand, it could be argued that the sole proprietorship is an obsolete form of business, as the owner of the company is not only liable for the company's assets, but also for their own personal assets. On the other hand, the owner of a sole proprietorship is subject to several taxes, including corporate income tax, owner's tax, personal income tax, and social security contributions. The problem in Lithuania is that there are no simple forms of setting up a company that are attractive for small businesses. The idea of the small partnership was a progressive, very welcome, and encouraging idea, but it has been put under the government's control, and the sole proprietorship is also unpopular.

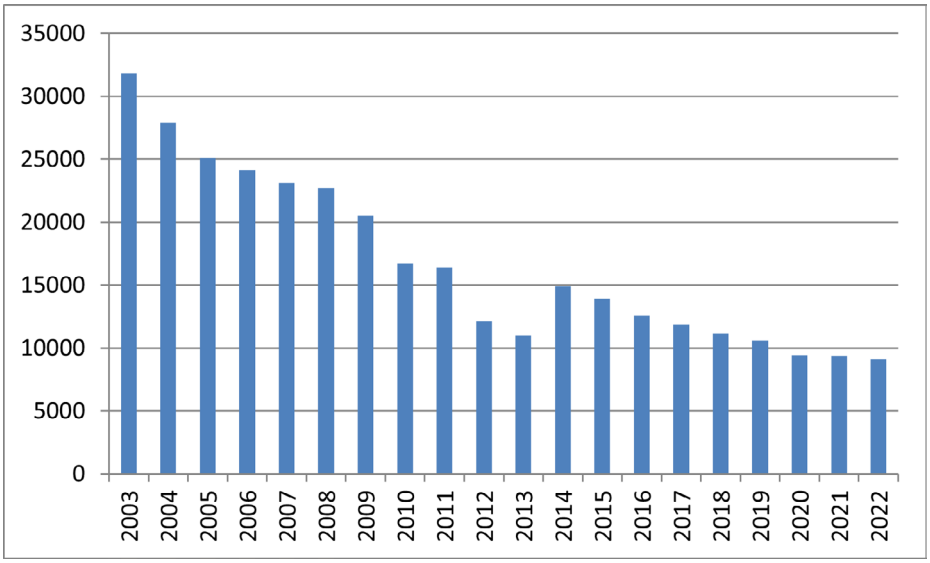


Figure 7. Number of active sole traders in Lithuania, 2003–2022

Source: Official Statistics Portal (2024)

In this environment, businesses are looking for niches. One niche is the establishment of public bodies and associations, i.e., non-profit enterprises that can engage in commercial activities thanks to more flexible taxation policies and additional incentives (see Figure 8).

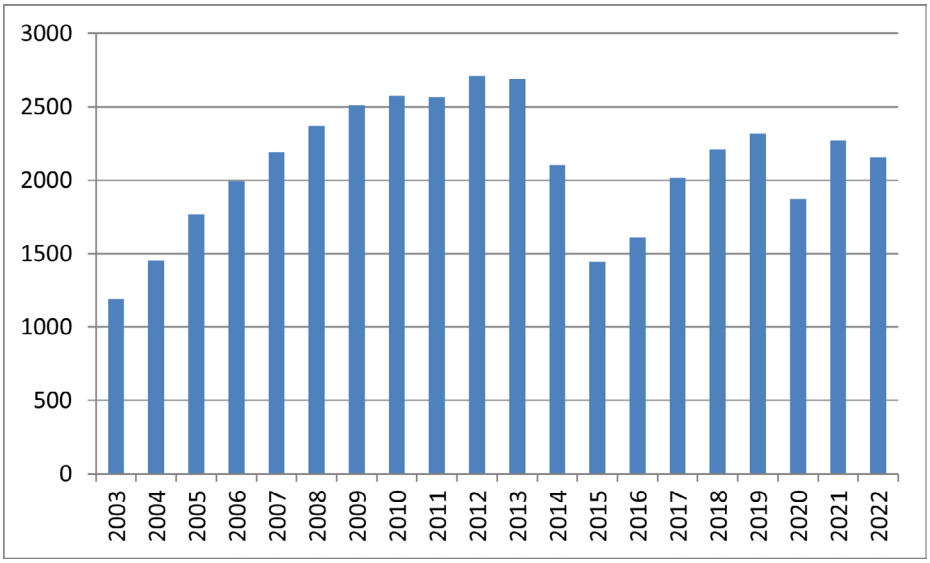


Figure 8. Number of public bodies in Lithuania, 2003–2022

Source: Official Statistics Portal (2024)

This can create uncertainty for the customer: a clinic and a university are public institutions, but it can transpire that a garage or a café is a public institution too. However, the niche left by the government for businesses allows them to successfully turn around unfavorable business situations. This makes it very difficult for the statistics department to show the number of businesses in operation and registered, because the data show a negative trend, so it is not always possible to identify the correct figures.

Evaluation of SME policy. Analysis of the development of SMEs shows that the business environment is not easy for entrepreneurs, who are subject to new and more stringent requirements. Successful business development can only be achieved with adequate knowledge and continuous learning to make independent

and appropriate decisions. The understanding of business that has developed in our society today is one of pseudo-business. First of all, in Western developed countries, manufacturing was at the forefront in the early stages of economic development. All innovations came about as manufacturing developed. In Lithuania, by contrast, the intermediary spheres – trade, insurance, banking, consulting – are more developed. The state is also shaping its economic, social, and legal environment more towards the development of intermediation areas. Secondly, economic growth requires an abundance of skilled entrepreneurs with relevant skills, knowledge, and experience. At present, talented people are not needed, so to speak: they are not provided with the conditions for education or employment. As a result, many skilled workers leave Lithuania to seek their fortune in other countries. In order to survive in the current conditions, entrepreneurs are sometimes forced to hide taxes from the state and adapt to a bureaucratic and corrupt environment. However, such an environment does not encourage entrepreneurs to take initiative and innovate. Lithuanian entrepreneurs are thus not competitive in the global market. Thirdly, excessive state regulation of business is a hindrance: all activities are regulated in great detail, with unrealistic guidelines and instructions, which allows the bureaucracy to flourish. High taxation of labor is also detrimental to business development.

6.7. Direct and indirect threats to the security environment

The global pandemic, Russia's illegal and unprovoked war in Ukraine, hostile economic actions, cyber and infrastructure attacks, foreign interference and disinformation, and a global increase in geopolitical tensions have exposed risks and vulnerabilities in our societies, economies, and companies that did not exist only a few shorts year ago.

The latest EU Security Union Strategy covers the period from 2020 to 2025

(European Commission, 2020b). It brings together the range of security needs that were absolutely relevant in 2020, before the Russian invasion of Ukraine. It focuses on the most critical areas to EU security in that time, with the view towards the years to come. It also acknowledges that security threats do not respect geographical borders, as well as the increasing interconnection between internal and external security (European Commission 2020a, p. 26). The strategy focuses on priority areas where the EU can help Member States in fostering security for all those living in Europe, while respecting our European values and principles (European Commission, 2022).

The experience available in the EU has revealed that "Europe was in some cases insufficiently prepared for new and emerging risks that have arisen in the more challenging geopolitical context that we find ourselves in. The COVID-19 pandemic exposed the risks that highly concentrated supply chains can pose to the functioning of the European economy. Russia's war of aggression against Ukraine showed how an overreliance on a single country, especially one with systemically divergent values, models and interests, reduces Europe's strategic options and puts our economies and citizens at risk. Member States and businesses have also had to shoulder the cost of economic coercion, including bans of European exports and boycotts of European brands, designed to force them to comply and conform with the political priorities of another country. All these trends pose a direct risk to the functioning of our societies, economies and of global trade – as well as a direct challenge to the EU's strategic interests and ability to act" (European Commission 2023, p. 1).

"This strategy lays out 4 strategic priorities for action at the EU level:

A future-proof security environment. Individuals rely on **key infrastructures,** online and offline, to travel, work or benefit from essential public services; and attacks on such infrastructures can cause huge disruptions. Preparedness and

resilience are key for quick recovery. The Commission will put forward **new EU rules on the protection and resilience of critical infrastructure,** physical and digital.

Recent terrorist attacks have focused on **public spaces**, including places of worship and transport hubs, exploiting their open and accessible nature. The Commission will promote **stepped up public-private cooperation** in this area, to ensure stronger physical protection of public places and adequate detection systems.

Cyberattacks have become more frequent and sophisticated. By the end of the year, the Commission should complete the review of the **Network and Information Systems Directive** (the main European cybersecurity legislation) and outline strategic cybersecurity priorities to ensure the EU can anticipate and respond to evolving threats.

In addition, the Commission has also identified the need for a **Joint Cyber Unit** as a platform for structured and coordinated cooperation.

Lastly, the EU should continue building and maintaining **robust international partnerships** to further prevent, deter and respond to cyberattacks, as well as promote EU standards to increase the cybersecurity of partner countries.

Tackling evolving threats. Criminals increasingly exploit technological developments to their ends, with malware and data theft on the rise. The Commission will make sure that **existing EU rules against cybercrime** are fit for purpose and correctly implemented, and will explore **measures against identity theft**.

The Commission will look into measures to **enhance law enforcement capacity in digital investigations,** making sure they have adequate tools, techniques and skills. These would include artificial intelligence, big data and high performance computing into security policy.

Concrete action is needed to tackle core threats to citizens, such as terrorism, extremism or child sexual abuse, under a framework ensuring the respect of

fundamental rights. The Commission is putting forward today **a strategy for a more effective fight against child sexual abuse online**.

Countering **hybrid threats** that aim to weaken social cohesion and undermine trust in institutions, as well as enhancing EU resilience are an important element of the Security Union Strategy. Key measures include **an EU approach** on countering hybrid threats, from early detection, analysis, awareness, building resilience and prevention to crisis response and consequence management - mainstreaming hybrid considerations into broader policy-making. The Commission and the High Representative will continue to jointly take forward this work, in close cooperation with **strategic partners**, notably **NATO** and **G7.**

Protecting Europeans from terrorism and organized crime. Fighting terrorism starts with addressing the polarization of society, discrimination and other factors that can reinforce people's vulnerability to radical discourse. The work on **anti-radicalization** will focus on early detection, resilience building and disengagement, as well as rehabilitation and reintegration in society. In addition to fighting root causes, effective prosecution of terrorists, including foreign terrorist fighters, will be essential – to achieve this, steps are under way to strengthen border security legislation and better use of existing databases. **Cooperation with non-EU countries** and international organizations will also be key in the fight against terrorism, for instance to cut off all sources of terrorism financing.

Organized crime comes at huge costs for victims, as well as for the economy, with €218 to €282 billion estimated to be lost every year. Key **measures** include an **Agenda for tackling organized crime**, including **trafficking in human beings** for next year. More than a third of organized crime groups active in the EU are involved in trafficking illicit drugs. The Commission is today putting forward a **new EU Agenda on Drugs** to strengthen efforts on drug demand and supply reduction, and reinforce cooperation with external partners.

Organized crime groups and terrorists are also key players in the trade of illegal

firearms. The Commission is presenting today **a new EU Action Plan against firearms trafficking**. To ensure that crime does not pay, the Commission will review the current framework on **seizing criminals' assets**.

Criminal organizations treat migrants and people in need of international protection as a commodity. The Commission will soon put forward a new **EU Action Plan against migrant smuggling** focusing on combatting criminal networks, boosting cooperation and support the work of law enforcement.

A strong European security ecosystem. Governments, law enforcement authorities, businesses, social organizations, and those living in Europe all have a common responsibility in fostering security.

The EU will help promote cooperation and information sharing, with the aim to combat crime and pursue justice. Key measures include **strengthening Europol's mandate** and further developing **Eurojust** to **better link judicial and law enforcement authorities**. Working with partners outside of the EU is also crucial to secure information and evidence. **Cooperation with Interpol** will also be reinforced.

Research and innovation are powerful tools to counter threats and to anticipate risks and opportunities. As part of the review of Europol's mandate, the Commission will look into the creation of a **European Innovation hub for internal security** Skills and increased awareness can benefit both law enforcement and citizens alike. Even a **basic knowledge of security threats** and how to combat them can have a real impact on society's resilience. Consciousness of the risks of cybercrime and basic skills to protect oneself from it can work together with protection from service providers to counter cyber-attacks. The **European Skills Agenda**, adopted on 1 July 2020, supports skills-building throughout life, including in the area of security" (European Commission, 2020b, pp.1–2).

The strategy lays out the tools and measures to be developed over the next five

years to ensure security in our physical and digital environments. It is composed of four strategic priorities for action at EU level and will draw heavily on the work of the EU agencies. Each of the strategy's 4 pillars includes several key action areas (Figure 9; European Commission 2022, p. 2).

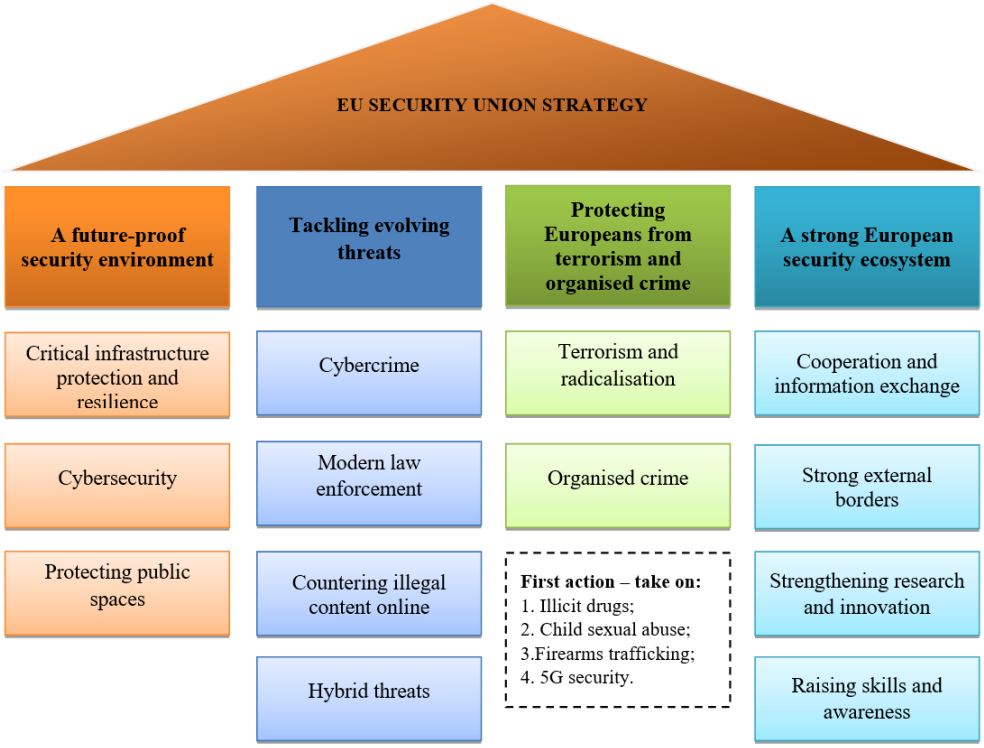


Figure 9. EU Security Union Strategy

Source: European Commission (2020b, pp. 1–2).

The threat analysis points to four inter-dependent direct threats to citizens and our European way of life: terrorism, organized crime, the drugs trade, and human trafficking. "Cyber-attacks and cybercrime continue to rise. Security threats are also becoming more complex: they feed on the ability to work cross-border and on inter-connectivity; they exploit the blurring of the boundaries between the physical and digital world; they exploit vulnerable groups, social and economic divergences. Attacks can come at a moment's notice and may leave little or no

trace; both state and non-state actors can deploy a variety of hybrid threats; and what happens outside the EU can have a critical impact on security inside the EU" (European Commission, 2020a, p. 2).

A Strategy to enhance European Economic Security. "The European Commission and the High Representative today published a Joint Communication on a European Economic Security Strategy. This Joint Communication focuses on minimizing risks arising from certain economic flows in the context of increased geopolitical tensions and accelerated technological shifts, while preserving maximum levels of economic openness and dynamism. The Strategy proposes to carry out a thorough assessment of risks to economic security in four areas:

- risks to the resilience of supply chains, including energy security;
- risks to physical and cyber security of critical infrastructure;
- risks related to technology security and technology leakage;
- risks of weaponization of economic dependencies or economic coercion" (European Commission, 2023 pp. 5–6).

The Strategy proposes a methodology for this risk assessment. It should be carried out by the Commission and Member States in cooperation with the High Representative, where appropriate, and with input from the private sector. It should be a dynamic and continuous process.

The Strategy also sets out how to mitigate identified risks through a three-pronged approach, namely by:

- promoting the EU's competitiveness, by strengthening the Single Market, supporting a strong and resilient economy, investing in skills and fostering the EU's research, technological and industrial base;
- protecting the EU's economic security through a range of existing policies and tools, and consideration of new ones to address possible gaps. This would be done in a proportionate and precise way that limits any negative unintended spill-over effects on the European and global economy;

- partnering with the broadest possible range of partners to strengthen economic security, including through furthering and finalizing trade agreements, reinforcing other partnerships, strengthening the international rules-based economic order and multilateral institutions, such as the World Trade Organization, and investing in sustainable development through Global Gateway" (European Commission, 2023, pp. 2–3).

In the opinion of the European Commission, "it is important to bear in mind that certain risks listed above could also go so far as to threaten national security in certain circumstances. This could be the case, most notably, with dual use technology leakage, foreign direct investment threatening security and public order; dual use exports or outbound investment in a narrow set of advanced technologies that could enhance military and intelligence capacities of actors who may use these capabilities to threaten international peace and security; and the secure treatment of sensitive information" (European Commission, 2023, p. 5).

Direct and indirect threats. The typology of threat assessment shows that threats can be divided in various ways: state, society, region, enterprises, direct, indirect, internal, external, hybrid, and so on (Alassaf & Alkhalifah, 2021; Kryshtanovych et al., 2021; Melnikas, et al, 2020). Government documents, the academic literature, and survey data (Alcaraz et al., 2017; Kirchner & Sperling, 2002) "identified twelve conceivable security threats to the European security space: a biological/chemical attack; a nuclear attack; the criminalization of economies; narcotics trafficking; ethnic conflict; macro-economic destabilization; general environmental threats; specific environmental threats; cyberwarfare or cybervandalism against commercial structures; cyberwarfare against defense structures; terrorism against state structures; and migratory pressures" (Kirchner, 2001, p. 9).

Of these twelve threats, only two in the current security environment fall into the traditional category of threat where the state is both the agent and target:

cyberwarfare against state structures, and a nuclear attack. Neither of these state-to-state threats are expected to materialize in the European security space. Those threats where agency is ascribed to non-state actors and society is the target of the threat constitute the largest threat category. These threats to European security include biological and chemical attacks, the criminalization of economies, narcotics trafficking, general threats to the environment, cyberwarfare or cybervandalism against commercial structures, and migratory pressures. The second largest category of threat are those threats where agency is ascribed to non-state actors and the state is the target of the threat. These threats include nuclear attack, ethnic conflict, cyberwarfare against defense structures, and terrorism against state structures. The final threat category, where the state is the agent of threat and society is the target, includes specific environmental threats and the consequences of macroeconomic destabilization.

Target of Threat

Agency of Threat	State	Society
State	Cyberwarfare against State Nuclear attack	Macroeconomic instability Environmental (specific)
Non-state	Ethnic factionalism Cyberwarfare against State Cyberterrorism/vandalism against Society Terrorism against State structures	Nuclear attack Migratory pressure Bio/chem Criminalization of economies Narcotics Environmental (general) Cyberterrorism/vandalism against commercial structures

Figure 10. Typology of threats to the European security space.
Source: adapted from Kirchner & Sperling (2002, p. 434).

In the opinion Kopencova and Rak (2019), in terms of their action directness, threats may be divided into direct and indirect (distant). If two objects interact directly, one object threatens the other, thus presenting a direct threat. If there is a mediator transferring a threat during its action, then it is an indirect threat.

Direct threats are those that imminently and directly threaten an asset (life, health, property – movable, real, or intellectual). Indirect threats initially do not immediately concern security interests; however, they may eventually. **Indirect** threats may arise in response to security measures, etc. Depending on how easily threats may be identified over time, we may divide them into obvious and hidden. As a rule, obvious threats may be identified based on available information, knowledge, and practical experiences with their actual occurrence in the past. According to Brunova and Rak (2019), hidden threats occur when we do not have information, theoretical knowledge, or practical experiences available to actually identify them. In other words – science, technology, social processes, etc., are not sufficient to identify this kind of threat. Hidden threats are usually encountered in activities that we have not yet performed or that various organizational or social groups have no experience with (new technologies, medical treatments, processes, SW, artificial intelligence, etc.); therefore, they have not been tested in any real environment.

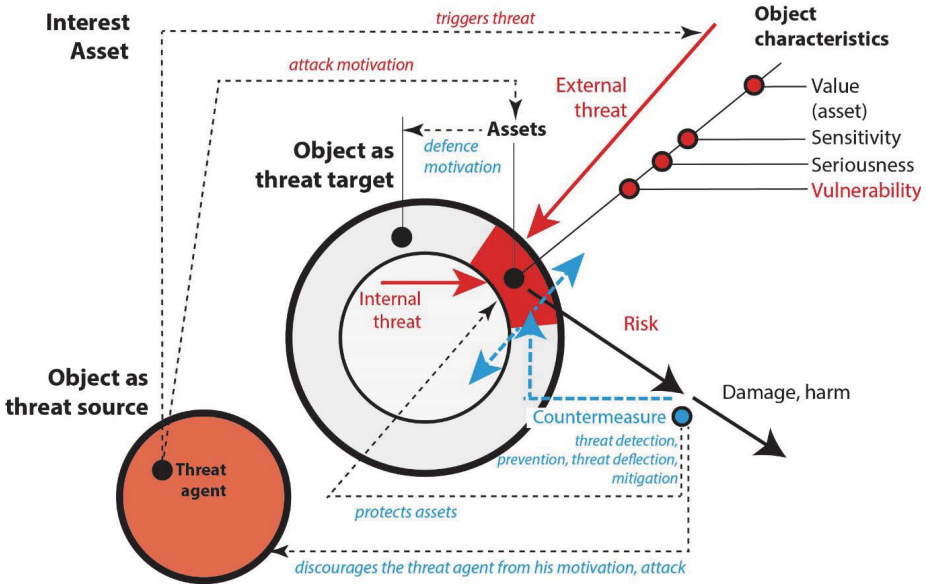


Figure 11. Threats and related terms: a demonstration of the mechanism of threat acting between the source and target objects

Adapted from Kopencova & Rak (2019, p. 112).

Hidden threats may also be encountered in the case of intentional threats, where the threat agent (originator, initiator) is a so-called hidden, ideological agent. This threat agent carefully hides and conceals their interests and activities, which may be completely unexpected and unpredictable. In terms of criminalistics, we may speak, for example, of an offender who prepares a large-scale crime and purposefully conceals their traces of preparation, so that no hint of the future threat's nature remains. In terms of the speed of handling threats, we may divide them into acute (urgent) and chronic. An acute threat is a threat requiring an immediate response, as it may be triggered in a very short period of time (e.g., a house fire and the threat of propagation to adjacent houses). Chronic threats are threats we live with for a very long time, where we are aware of them and their time of activation is unclear, and nothing may happen for a long time. We do not have to respond to them immediately since there is no immediate danger, but we are aware of them, and based on the analysis of risks arising from the threat and its agents, we may prepare corresponding measures that are usually focused on ensuring the increased resistance of protected objects (e.g., design requirements for facilities capable of resisting some degree of seismic activities in geologically unstable areas). Symmetrical (conventional) threats include the typical example of a war between two states that threaten each other with identical symmetrical threats. Asymmetrical threats (unconventional or imbalanced) are typical seen in modern conflicts, when one party uses unusual, non-standard threats, meaning that they often operate outside any regular norms, relations, international conventions etc. Asymmetrical threats include, for example, terrorist attacks. Individual threats only threaten individual, specific objects, at a specific location and at a specific time. Global threats are those that threaten humanity in general, everywhere and constantly. **Systemic threats** derive from the intrinsic nature of objects (systems), i.e., the internal structure and the system's state, quality, and behaviour. The system itself generates threats that threaten it and

may threaten its immediate surroundings as well. **Non-systemic threats** occur outside of the system while still being part of it, or occur inside the system but as nonsystemic, random elements, processes, or relationships. **Stable threats** have a repeatable character and exist constantly (crime, hate, disease, poverty, etc.). **Unstable threats** occur sporadically, varyingly, at various times, and with different intensities or directions of action (climate changes, accidents, epidemics, various crises, and terrorist attacks). The aforementioned breakdown of various types of threats (Blazek et al., 2016) may be supplemented by other pairs of threats, such as natural/human threats, military/non-military threats, etc. However, some hidden threats that have never occurred in practice and are unlikely to occur may still be anticipated and expected. Such threats are hypothetical threats. This type of threat usually entails a situation where we must decide on whether to implement countermeasures or not, since implementation may be very costly and the probability of threat occurrence is low. In terms of the wider field of threats, we may divide them into political, military, economic, and environmental. A threat is (consciously or unconsciously) targeted at a vulnerable spot on the targeted object of interest. This creates the risk of a threat turning into an adverse event, and the subsequent risk that it will cause damage or harm to the targeted object. A threat always precedes the risk, which then causes damage or harm. To prevent this, countermeasures are proposed based on risk analysis and their potential negative impacts. Their objective is two-fold: to protect vulnerable assets through various countermeasures against various threats, while at the same time discouraging all threat agents from any further attacks.

Vlach (2018) discusses direct threats as only existing when our state is exposed to them, while indirect threats concern our allies or regional or even global stability. Direct threats are those that imminently, directly threaten an asset (life, health, property – movable, real, intellectual). Indirect threats initially do not concern our security interests; however, they eventually may. Indirect threats may

arise in response to our security measures, etc. Depending on how easily threats may be identified over time, we may divide them into obvious and hidden threats.

CONCLUSIONS

The prosperity of each country is primarily correlated with per capita income, with employment prospects being another important factor. An even broader assessment includes social and ecological objectives and other non-economic objectives such as security, stability, and life expectancy.

A country's economic policy has a significant indirect impact on economic security. It should be noted that threats to economic security can come from a variety of sources, both external and internal.

A country's economic security has a hierarchical (individual, state, society), multi-component structure. Economic security is an important component of national security. This perception increases the importance of security at all levels, especially in the economy, due to the growing role of risk factors, uncertainty, randomness, and interdependence.

A historical analysis of SME policymaking has shown that each country's economic policy can be analyzed on the basis of a number of different criteria, but that the most important are the legal framework, elasticity, market openness, and stability. The historical perspective has revealed the main trends in the design of the legal system: the overly broad interpretation of laws, which have increased the power of controlling entities, eroded the rights of companies, and increased their risks and costs; the creation of a large number of overlapping regulatory functions, which have reduced the responsibility and accountability of government, increased the costs of governance, and created the potential for corruption; and the lack of a regulated institutional framework, which has complicated the relationship between the citizen and the state.

The specific features of the Lithuanian economy have also shaped SME policy.

The analysis shows that various measures, Lithuanian government programs, and EU recommendations have been adopted. The main policy-making tool has been the Law on the Development of SMEs of the Republic of Lithuania, which was adopted in 1998 and has undergone as many as 13 amendments up to the present day. EU recommendations have also had an impact on the formation of SMEs, which has even resulted in a change in the size of business entities in Lithuania.

Research on SME policymaking has shown that the best indicator of the implementation of entrepreneurship policy is the number of active enterprises and the growth of key entrepreneurship indicators. This analysis has revealed errors in policy design and implementation: inadequate tax policy has led to the disappearance of individual enterprises. The Law on Small Partnerships has not been effective enough to solve economic problems and increase entrepreneurship rates, as the promises made by the state to provide incentives for small partnerships have not been fulfilled. The analysis shows that the number of registered companies in Lithuania is declining due to unstable public policies, changing laws, and a lack of transferability of decisions in the face of changing governments.

Studies have shown that the main problems in the design and implementation of SME policy are the complexity of the business environment and the lack of simple forms of business that are attractive to small businesses. The idea of a small partnership was a progressive, very welcome, and encouraging one, but it remains under the government's control, and sole proprietorship is also unpopular because of high taxes.

The analysis of statistical data shows that the number of enterprises in Lithuania has been growing steadily. The statistics show that micro-enterprises dominate in Lithuania, making up the majority of the structure of enterprises. This segment of enterprises is particularly sensitive to changes in the tax environment. Studies have shown that the best reflection of the implementation of SME policy is found in small partnerships and sole traders. The volatility of the legal

regulation of small partnerships has not gone without consequences and has had a negative impact on their establishment. At present, small partnerships continue to be set up, but users increasingly weigh up the advantages and disadvantages of a private limited company and a small partnership. Often, founders opt for the more tax-stable form of operation: the private limited company. On the other hand, the founders of small partnerships are becoming more diverse. Whereas in the past the founders of small partnerships were dominated by young people, now it is increasingly the case that other persons who run a private limited company are becoming founders and are seeking to benefit from the advantages of a small partnership. The increase in the number of public bodies and associations also shows that businesses are looking for new niches for their commercial activities and are taking advantage of the benefits offered by these forms of companies.

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CHAPTER VII. FEATURES OF RISK PERCEPTION IN THE TOURISM SECTOR

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Abstract. *Numerous studies confirm the importance and growing role of tourism – especially in EU countries, where tourism is considered a strategic priority. This is due to the growing demand for tourism services and the potential for the relatively rapid accumulation of tourism potential, which has a multiplier effect on many economic sectors. For these reasons, tourism is particularly important for the less prosperous EU Member States, especially in the context of recession. Risk and the perception of risk play a major role in the development of tourism. This paper aims to disclose how tourism risk is perceived, which scholars analyze tourism risk, and how tourism risk can be classified.*

Keywords: *risks; tourism; tourism risk perception; tourism risk characteristics.*

Introduction

Tourism is one of the great success stories of our time. The industry only began to grow significantly in the 1960s, and in the last 50 years tourism has seen an unparalleled increase in revenue and outbound tourism. International tourist

arrivals reached 25 million in 1950, 698 million in 2000, and 935 million in 2010. In 2023, according to the World Tourism Organisation (Chakraborty, 2024) 1.3 billion tourists will travel abroad – 44% more than in 2022, and 88% of the 2019 number. International tourism levels in 2024 are also projected to be slightly higher than pre-pandemic levels, thanks to recovery in Asia. Numerous studies confirm the importance and growing role of tourism, especially in EU countries. As one of the largest and fastest-growing economic sectors, tourism makes a significant contribution to GDP, jobs, export promotion, and prosperity, which is part of the EU's objectives and is naturally linked to its policies in various areas. Tourism is considered a strategic priority in most EU countries. This is due to the growing demand for tourism services and the potential for the relatively rapid accumulation of tourism potential, which has a multiplier effect on many economic sectors. It is also well-known that tourism can be described as the industry with the highest growth rate and the most significant potential for job creation worldwide. For these reasons, tourism is particularly important for the less prosperous EU Member States, especially in the context of recession. Risk and the perception of risk also play a major role in the development of tourism. In tourism, like in business, it is impossible to predict everything in advance, so there is inevitably an element of risk. This paper thus aims to analyze tourism risk as it is perceived in different research studies. **The object** of the study is the perception of tourism risk, leading to the following **study objectives**:

1. to analyze risk concepts;
2. to reveal the perception of tourism risk;
3. to analyze the specific features of tourism risk.

7.1. Risk classification and specific features of the tourism sector

Risk analysis is a major focus of international research. There have been a number of theoretical, methodological, and practical studies on risk analysis, but

tourism risk has not received significant attention from economists in practice. According to Moutinho (1993), risk can be defined as "a function of uncertainty and consequence." Schiffman and Kanuk (1991) highlighted two important characteristics of perceived risk: uncertainty and consequences. Further, they suggested that perceived risk is the uncertainty faced by consumers while buying, when unable to anticipate the results of their buying decision.

Gegužis (2003) and Banevičius (2020) pointed out that risk can take many forms, which can have disastrous consequences for tourism businesses. When it comes to knowing and exploring risk and uncertainty, it is necessary to choose which form of risk to explore. There are many forms of risk (economic, social, physical, etc.) and many more sub-forms. The concept of economic risk is strongly influenced by the extent to which the institutionalized sector is recognized, the actions of which are designed to reduce uncertainty and risk in the creation of public goods such as laws, regulations, research, and regulatory bodies. Depending on the prevailing ideology, the pendulum of the concept of economics swings from the identification of the market with the economy, while ignoring the role of the state, to the complete absolutization of the state and disregard for the power of the market.

An analysis of the literature shows that people tend to perceive risk differently (Bhati et al., 2021; Sönmez & Graefe, 1998a). Some scholars (Raval & Fichadia, 2007) argue that risk can be viewed as the subject of potential loss or damage, where the subject can be an individual, group, organization, system or resource, the theft of data, or the unauthorized use of information.

Kerzner (2013) argues that risk arises from a lack of knowledge about future events, especially those events that have a negative impact on businesses – so-called adverse events. Perceived risk is defined by some scholars (Mowen & Minor, 1998) as "a consumer's perception of the occurrence of adverse actions and the assessment of the likelihood that these actions will occur."

While scholars cannot agree on a universal definition of risk, two strands of risk concepts can be identified. Some scholars associate risk with uncertainty, while others categorically separate uncertainty from risk and associate risk itself with the probability of an event. Most authors (Lisauskas, 1996; Martinkus & Beržinskienė, 2005) describe risk as the probability of potential losses. Meanwhile, other researchers (Campbell et al., 1988; Kancerevyčius, 2006) refer to risk as a lost or missed opportunity. Perceived risks are diverse and can be categorized according to different characteristics.

In business, risk is inevitable, because the problem of risk exists even when opportunities are known or can be identified. The possibility of a risky situation requires targeted assessment, management, and loss minimization. All businesses are exposed to risk in one way or another, and the assessment and effective management of these risks determines their performance. As the political events in Egypt and Syria, the Icelandic volcanic eruption, and the economic events in Cyprus have shown, risk is particularly important in the tourism sector. It is therefore important to identify which risks are prevalent in a particular business or company. Mačerinskienė and Sakhanova (2011) pointed out that risk is a permanent part of any human activity, including economic and financial. It is possible to take decisions in advance to reduce risk, but it is not possible to avoid it altogether. Moreover, risk drives economic and financial activity, and companies tend to take more risks at certain times and take more risks at others.

Gronskas et al. (2006) describe risk as an economic danger that threatens damage to the participants of industrial commercial activities.

When defining business risk, we need to distinguish between two meanings:

1. The risks and uncertainties inherent in the market economy itself, which can lead to losses for businesses. This is the objective meaning of business risk – that there is a probability of winning or losing in the market.
2. The subjective meaning of business risk, which gives an indication of how market participants react to business risk – i.e., whether they are risk-takers

or are risk-averse – thus describing different attitudes towards business risk. The subjective meaning of business risk is revealed by individuals' different reactions to the probability of winning or losing (Gronskas et al., 2006), and entails one of two options:

1) risk aversion – accepting lower incomes with less risk.
2) a tendency to take risks in order to generate higher income with a higher probability of losing.
3) indifference or neutrality to economic risk.

Entrepreneurs have to choose between a low probability of high revenues and a high probability of low revenues. Without risk, business would not be efficient, but the pursuit of maximum results leads to risky business actions. Active participants do not shy away from reasonable risk, while passive participants fear uncertainty.

According to Pridotkienė (2009), country risk can be classified into three groups:

- political risk;
- financial risk;
- economic risk.

In her view, scholars are right to distinguish between political events and political decisions enshrined in law when analyzing political risk. Political events are particularly relevant for tourism development because they can be sudden and unforeseen, whereas political decisions that change the business environment can be gradual. This makes it easier to adapt to a country's political decisions. A country's financial risk also has an impact on the tourism sector, as the ability of a national economy to generate sufficient foreign currency to pay its largest foreign debts and sustain its interest rates indicates the likelihood of default on a country's financial obligations due to fluctuations in its economic performance. A country's economic risk is related to the volatility of macroeconomic activity, which is often expressed in terms of real GNP or GDP. An unstable macroeconomic

environment can lead to instability in the earnings of the companies and financial institutions located there, thereby increasing their risk exposure.

Gegužis (2003) points out that among the most important problems faced by economic agents are predicting how the economy will develop tomorrow, where to invest money, whether to invest at all, which industry will decline, which will expand, whether prices will rise and so on, to the extent that the answers are determined. For the institutionalized sector, the question is what measures to take to reduce uncertainty. To this end, it is important to know economic uncertainty and the risks that arise from it. In this case, we turn to science.

Vasarevičienė (2009) argues that the concept of risk is usually perceived in a negative sense. Risk used to be referred to as uncertainty, but now it is defined as measurable uncertainty. Others argue that risk occurs when the probabilities of various possible outcomes are known, and uncertainty occurs when the probabilities of the various possible outcomes are unknown. Risk is further defined as the likelihood and frequency of an event or loss due to a range of threats, including danger to people and damage to resources.

Before examining the specificities of the risks associated with tourism activities, it is important to derive a precise definition of risk. As we can see, risk can have different meanings in different contexts. Therefore, we will narrow the focus to the analysis of risk in relation to the tourism sector.

Overall, however, there is currently a lack of comprehensive research on the economic analysis of tourism risk issues.

Tourism has become a very dynamic and at the same time risky sector in both national and global economies. The essence of tourism is that it requires many economic and personal relationships between actors, which can be damaged for objective or subjective reasons. A situation involving risk can arise from a combination of factors, at any time and in any place.

In the 20th century, tourism began to influence the economies of successive

countries. Today, the tourism industry is a highly efficient and highly profitable sector of the global economy. The tourism industry includes the industries that will determine the overall development of the global economy in this century. Tourism is one of the top five industries in the global ranking system for exports of goods and services. This extraordinary growth in the tourism industry is accompanied by a high level of risk, which is unsurprising as, according to the general rules of economics, the growth of a sector is always accompanied by an increase in economic risks.

According to many studies, the term "risk" refers to the potential for losses in various areas of activity (loss of material and financial resources, loss of income and unforeseen additional costs, etc.). In other words, the basic premise for examining risk in any economic system is its identification with a quantitative or price risk. In this context, the content of tourism risk covers all threats to entities and objects in tourism sectors. These risks concern infrastructures, the tourism industry, and tourists themselves. Tourism risk threats can regulate the level of tourist activity very strongly. Tourism risk is quantified as the potential magnitude of material and financial losses resulting from the interaction of tourism enterprises with tourists. However, losses and risks can only be incurred by the tourist themselves (separately from other actors in the tourism sector) during the preparation of, during, or after their trip. In this sense, risks are manifested as consumer risks, but they are all directly or indirectly linked to tourism. For example, the risk of buying a low-quality product becomes a tourism risk if the product is a targeted tourism product and is involved in tourism consumption.

In the applied area of tourism risk research, the concept of perceived risk has been defined in many different ways. Priest (1990) defined it as the potential to lose something of value. Fuchs and Reichel (2011) described risk as the "consumer's perception of the overall negativity of a course of action based upon an assessment of the possible negative outcomes and the likelihood that those outcomes

will occur." Reisinger and Mavondo (2006) described risk as "a possibility of danger, harm or loss; and a chance or hazard." Tsaur and Wang (2007) defined risk as "the possibility of various misfortunes which might befall a group package tourist in the process of traveling or at its destination." Finally, Le and Arcodia (2018) even proposed that risk should be defined as the sum of negative outcomes and the probability of their occurrence.

The perceived risks of tourism have received particular attention in the academic literature. Roehl and Fesenmaier (1992) identified seven groups of perceived risks that tourists face when travelling: financial (the trip will cost more and/or will not be worth the money paid), psychological (unmet expectations), social (negative impact on social status or lack of positive impact), satisfaction, time (wasted time, wasted holidays), physical (epidemics, accidents, etc.), and equipment (inadequate preparation for the trip, breakdown of cars and other equipment). Simpson and Siguaw (2008) identified health risks (infection, poisoning, or accidents), crime, transport (malfunctioning), quality of service, travel environment, fear, financial concerns, damage to property, and concern for others. Thus, perceived tourism risks include a wider range of environmental factors and travel-specific accident risks, and are therefore even broader than the generic perceived risk classifications and require separate attention from researchers.

In the context of scientific analysis, the identification of tourism risks and losses is limited. Tourism risk can be seen as a phenomenon that relates not only to the likelihood of failure, loss, and damage, but also to the likelihood of success and the possibility of achieving a positive impact. In other words, risk can, in some cases, be a favorable factor in tourism development. This can be expressed in two ways. Firstly, increased risk can be used by tourism businesses to increase their profits. In the current climate, forms of tourism such as extreme adventure are growing in popularity. Despite their individuality and complexity, such tours bring significant benefits to organizers. In other cases, tourism companies can

act as venture capitalists. When examining the academic literature on perceived risk, it can be observed that a large part of the classifications of perceived risk are similar and cover the main categories, such as physical/health, psychological, performance, and financial (Roehl & Fesenmaier, 1992; Simpson & Siguaw, 2008). There is no single, universally accepted classification of perceived risk in the tourism literature (Fuchs & Reichel, 2006). However, the tourism sector is characterized by a wider variety of perceived risks, as in addition to the usual consumer perceived risks associated with purchasing, additional risks related to the destination and tourism activities also emerge. While risks such as financial risk and performance risk are fairly universal in general consumer behavior, they also appear in tourism and the sector-specific classifications of the majority of authors.

Researchers studying tourism consumer behavior (Assael, 1995; Engel et al., 1995; Mowen & Minor, 1998; Schiffman & Kanuk, 1991; Fuchs & Reichel, 2006) assume that consumers perceive risks when purchasing a tourism service and take measures to reduce them. Perceived risk is defined as the consumer's general perception of negativity based on an assessment of possible negative outcomes and the likelihood that these outcomes will occur. Researchers point out that tourism products are particularly exposed to factors such as bad weather, unfriendly locals, the possibility of a strike by airport staff, inadaptability to local food, terrorism, crime, political unrest, disease, and natural disasters. These factors increase the level of perceived tourism risk.

Therefore, researchers agree that if risks are not controlled and managed, the development of the industry and job creation will not be achieved. This is evident from the work of various researchers who have identified risks in the tourism industry. Shaw (2010) proposes to classify risks into natural risks, crime risks, health and safety risks, political risks, socio-demographic risks, technological risks, and economic risks.

Previous studies by other researchers have identified only four main tourism risk factors: terrorism (Aziz, 1995; Bar-On, 1996; Leslie, 1999; Richter & Waugh 1986; Enders et al., 1992; Sönmez, 1998; Sönmez & Graefe 1998a, 1998b; Sönmez et al., 1999;); war and political instability (Gartner & Shen 1992; Hollier 1991; Ioannides & Apostolopoulos 1999; Pizam et al., 2002; Richter 1992, 1999; Seddighi et al., 2001; Teye, 1986; Wall, 1996); health problems (Carter, 1998; Cossens & Gin, 1994; Lawton & Page 1997); and crime (Brunt et al., 2000; Dimanche & Leptic, 1999; Ellis, 1995; Garcia & Nicholls, 1995; Hall et al., 2004; Moore & Berno, 1995; Pizam et al., 1997).

Table 1. Risks related to tourism activities

Source: based on Shaw (2010); Wolff et al. (2019)

Risk category	Examples
Natural	Natural disasters (floods, etc.)
	Weather and climate conditions
	Climate change
	Environmental factors
Crime	Fraud
	Hijacking
	Acts of terrorism
Health and safety	Infectious diseases
Political factors	War
	Political instability
	Strikes
Economic	Funding gaps
	Currency exchange rates
	Rising oil and fuel prices
	Economic downturn (local and global)
	Financial crises
	Transport
	Transport development
Technological	Information technology
	Reservation systems
	Computer programs

Socio-demographic	Age and gender
	Family life
	New/old markets
	New routes

Roehl and Fesenmaier (1992) were among the first researchers to study tourism risk. They asked respondents about the types of holiday risks and what risks they had experienced on their last holiday. The types of risks they identified were equipment risk (the likelihood of mechanical failure during the trip), financial risk, physical risk, psychological risk, social risk, satisfaction risk, and time risk. Using factor analysis, the researchers identified three main risks: physical equipment risk, holiday risk, and route risk. Although the survey instrument developed by Roehl and Fesenmeir (1992) includes numerous risk parameters, each parameter is measured by only one question, which often covers more than one concept. For example, equipment risk, defined as "the risk of mechanical equipment or organizational problems during a holiday," has within it two seemingly separate issues to be considered: mechanical failures and organizational problems. Their study covered two main types of risk: physical risk, which refers to the possibility of injury and illness, i.e., the impact on a person's health; and equipment risk, which refers to the risk arising from the malfunctioning of equipment, such as inadequate telecommunication facilities or unsafe vehicles.

However, the researchers only looked at two dimensions and did not include the studies by Roehl and Fesenmeir (1992) mentioned above. Mitchell (1998) focused on risk perception at the time of purchasing a holiday package, identifying 43 risk samples. Maser and Weiermair (1998) investigated risk from a variety of perspectives through empirical analysis. In their research, the risks assumed included travel-related illnesses, crime, natural disasters, accidents, hygiene, hazards arising from various means of transportation, culture/language barriers, and the uncertainty of destination-specific regulations and laws. Sönmez and Graefe

(1998b) examined the risks associated with international travel and the general level of safety.

The relationship between tourism and terrorism gained international prominence at the 1972 Munich Olympics, when a Palestinian Black September attack on Israeli athletes killed eleven people and was shown on world television to an audience of almost 800 million (Sönmez & Graefe, 1998a). Since then, international tourists have been aware of the connection. One of the most infamous terrorist attacks against tourists occurred in Egypt in 1997, when 71 tourists were killed near Luxor. Indeed, tourists are often special targets for terrorist organizations. In Egypt, as Aziz (1995) explains, tourism represents capitalism, and it is noticeable that attacks on tourists are marked by ideological opposition to Western values. It is therefore important to consider the specificity of perceived risks in local tourism when studying tourism risk. Perceived risks in both domestic and international tourism can be influenced by circumstances. For example, the terrorist attack in 2001 severely affected the US tourism sector in terms of tourists' perceived risks, and domestic tourism suffered even greater losses than outbound tourism. Similarly, the COVID-19 pandemic highlighted the influence of perceived risk on travel decisions (Karsokienė & Dromantienė, 2021). Travel has declined sharply, and tourism destinations have come to be expected to take measures to ensure the safety and hygiene of tourists (Bhati et al., 2021; Jęczmyk et al., 2023; Zenker & Kock, 2020) and to maintain social distancing (Seong & Hong, 2021; World Tourism Organization, 2021).

In other areas of the world, where tourism is state sponsored, an attack on tourists may symbolize action against the government (Richter & Waugh,1986; Sönmez, 1998). As a result of the terrorist attack in the United States on 11 September 2001, the flow of foreign tourists wishing to visit North America reduced by 6.8%. Due to terrorism, political instability, and war, tourism destinations can also be affected – for example, after Tiananmen Square in China erupted in

conflict in 1989, some 11,500 tourists cancelled their visits to Beijing (Gartner & Shen 1992). Similarly, the Gulf War in 1990 caused a massive diversion of tourists away from the Middle East (Hollier, 1991). War and political instability can also affect neighboring countries that are not directly involved in the conflict. For example, Zambia's thriving tourism industry was completely isolated following the US State Department's communiqué on Zimbabwe, Zambia's neighbor (Teye, 1986).

The COVID-19 pandemic has particularly impacted the future of tourism across the globe in the form of risk perceptions associated with travel (Yadav et al., 2024; Matiza, 2020). According to Yang et al. (2020), tourism demand is inversely proportional to the spread of COVID-19. The uniqueness of the global pandemic is that it affected the tourism businesses of diverse countries such as China, Germany, Iran, Italy, France, Spain, the USA, and the UK (WTTC, 2020). However, Europe is generally seen as reasonably safe in terms of health-related risks (Banevičius, 2020). Cossens and Gin (1994) found that perceived health risks from food and water quality are higher in Africa and Asia than in Europe and Australia. A common perception among tourists is that they are easy targets for criminals. Some of the reasons for this phenomenon may be that tourists: tend to have large sums of money; often engage in risky behavior (frequenting nightclubs, consuming alcohol, going to strange places, etc.); do not know the local language or understand signs; and lack local help (Pizam et al., 1997).

Researchers have a wide range of perspectives on tourism risks. Based on consumer behavior, some (Assael, 1995; Engel et al., 1995; Mowen & Minor, 1998; Schiffman & Kanuk, 1991) point out that consumer perceived risk can come in several forms: physical (physical damage to the consumer due to the functioning of the product), financial (risk of losing the money invested in a product), performance (the product will not work as expected), social (the purchase will not meet the standard of the selected group), psychological (the product will not be

in line with consumers' image), and time (the consumption of the product will take too long, and the consumer will have to make a choice about what to spend their time on). Other researchers observe that once a consumer has experienced a certain degree of risk, consumer behavior changes from postponing the purchase to deciding to minimize the degree of risk (Assael, 1995; Mowen & Minor, 1998; Roselius, 1971; Schiffman & Kanuk, 1991) – for example, developing brand loyalty, seeking information, buying a popular brand, or buying expensive or inexpensive brands. These strategies can increase confidence in the outcome of the purchase and, in the event of failure, reduce risk exposure. It should be noted that perceived risk has an impact on the consumer even if it does not actually exist. Conversely, an overlooked risk will not influence consumer behavior even if it is real and tangible.

The place of risk in society is identified by Beck (1992), who considers that risk is very important in tourism practice. As Giddens (1991) argues, in today's society the risk factor is becoming increasingly important. This is not to say that in many areas of life risks are increasing, as, especially in the developed world, risks are gradually decreasing over time. There is a further view that the concept of risk includes almost everything we do.

There is a very common assumption that risk is accepted in the organization of leisure activities, because no one believes that all recreational activities can be done without risk. In fact, the degree of risk in many types of recreational activities is clearly higher, and people are prepared to accept a much higher level of risk than they would at work, or as a result of the operation of an industrial facility (Plog, 1991). This definition suggests that risk can be portrayed as the attraction of certain activities, resulting in leisure entertainment and tourism.

In the context of the scientific debate, the identification of tourism with risks and losses is limited. The analysis of the scientific literature allows for a more precise understanding of tourism risk. Tourism risk can be studied as a phenomenon

that is related not only to the likelihood of failure, loss, or damage, but also to the possibility of success in obtaining a positive outcome. In other words, a risk situation can in some cases be a favorable factor for tourism development.

Researchers (Seddighi et al., 2001) have shown that perceptions of the risks associated with international tourism vary according to nationality, finding that the level of risk perception varies when assessing travel in six Western European countries. This discussion suggests that in order to better assess risk perception among international tourists, it is necessary to take into account tourists' experience, age, gender, and nationality.

The International Classification of Tourism Risk Factors (WTO, 2021) includes four main areas in relation to the safety of tourists:

- The social environment outside the tourism sector.
- The tourism sector and its infrastructure.
- Personal risk factors of tourists.
- Natural and environmental risks.

According to the researchers, tourism risk can be expressed in two ways. The first is where tourism companies use increased risk to maximize profits. It can then be argued that forms of tourism such as adventure and extreme tourism are becoming more popular. Despite their individuality and complexity, these forms of tourism bring significant profits to tourism enterprises. Alternatively, a tourism company can act as a venture capitalist. Traditional venture capital funding is linked to high-production technologies that allow science-intensive products to be brought to market. However, the main objective of venture capital funds is to increase the capitalization of a company that has managed to implement an innovative idea, thereby securing for itself a significant market advantage over potential competitors. The tourism sector can do without the help of venture capital funds. Raising capital without specialized venture capital firms can be done in the traditional way, i.e., through credit. In this case, the main driver of venture

capital remains unchanged: it is innovative and has a high correlation between potential profit and risk. Therefore, any tourism enterprise providing a new service to the market, be it a travel agency, a hotel, or a carrier, can be the subject of venture capital financing. The situation in which the tourism company itself acts as an investor in projects with increased risk is no exception to this model. On the other hand, the use of risk is linked to the deliberate choice of individual tourist destinations and types of tourism which are dangerous to life, health, and financial well-being. The most common are caving, mountaineering, and skiing trips, as well as trips to regions involved in military, social, and religious conflicts. The risks here are not determined by economic factors, but by the social and psychological attitudes and dispositions of individuals. In other words, alongside reasonable risk there is also selfless risk, i.e., risk for risk's sake. Extreme tourism is a form of risk-taking, or a form of self-realization.

Many economic studies on risk show that it is now an important condition for generating income. Risk is an integral part of economic processes, existing independently of the perception of existence. The abandonment or neglect of risk analysis at the micro level will at best reduce the profitability of any business entity, and at worst lead to its insolvency.

Risk acts as a constraint on a business, focusing the entrepreneur's attention on actions that ensure the maximum exploitation of opportunities. If a company's guiding principle is to avoid risk, it will end up taking the biggest and least effective risk of all: the risk of doing nothing. This description can be fully applied to the tourism sector. The activities of any tourism company include finding new partners and investors, accessing new markets, and developing innovative tours and itineraries. All of this leads to a higher level of individual risk.

Damulienė (2011) points out that the processes of globalization and integration and the resulting consequences have not bypassed the tourism industry. In the 21st century, the sector increasingly faces problems that not only affect the

decisions of entrepreneurs within a given nation state, but also change the agendas of the governments of these countries. Damulienė therefore identifies the following as potential risks and consequences:

- Changes in the Earth's climate. The world is witnessing an upward trend in the number and severity of storms, floods, earthquakes, volcanic eruptions, and other calamities. Many experts believe that, unless far-reaching measures are taken in the near future, changes in the world's terrestrial climate and their impact on weather and nature will lead to serious risks. Tourism is one of the economic sectors most keenly affected by climate change and natural disasters. As scientific evidence of imminent global warming grows, tourist attractions could change dramatically.
- Terrorism and violence. The events of 9/11 in the US, the events in Russia (Moscow and Beslan), the Breivik massacre in Norway, etc., have not only changed the national defense doctrines of the world's most powerful countries, but have also changed the tourism business. Terrorist actions sow fear. As a result, more and more tourists are choosing countries with a lower risk of terrorist incidents. In addition, more and more people are choosing to travel by bus, car, or even bicycle instead of flying.
- Global diseases. The increase in international travel to countries with different climates and hygiene requirements increases the risk of contracting various diseases. In many of the developing countries frequented by tourists, 50% of all mortality is caused by infectious diseases.

The greater the mobility of people (e.g., during tourist trips), the faster a virus can spread worldwide. SARS, AIDS, the new generation of the H1N1 influenza virus, and other epidemics are not only fueling the emergence of a new health paradigm, but are also having a real impact on the entire tourism industry.

Therefore, Damulienė concludes that such global challenges affect the tourism sector of many countries, including Lithuania: in regions where there is a threat of terrorism or global diseases, tourist flows are significantly reduced, and even the development of tourism infrastructure may be halted. Conversely, the supply

of tourists increases in safer, more tourist-friendly and attractive countries. This can lead to a change in the centers of attraction for tourists. Tourist attraction centers may also shift due to climate change.

According to the experts of the World Tourism Organisation (WTO, 2021), inbound tourism risks can arise in four areas. These are:

1. Human-environment interactions in the non-tourism sector.
2. Tourism and related trade sectors.
3. Individual traveler (personal risk).
4. Physical or environmental risks (natural, climatic, epidemics).

Human-environment interactions risk making tourists victims of:

- crime (theft, pickpocketing, assault, fraud, deception);
- indiscriminate and targeted violence (e.g., rape, harassment);
- organized crime (extortion, human trafficking, rape);
- terrorism and unlawful interference (attacks on state institutions and vital interests), hijacking, and hostage-taking;
- wars, social conflicts, and political and religious unrest;
- lack of public and institutional protection services.

Various operations in the tourism sector and tourism-related sectors such as transport, sports, and retail can put visitor flows, their safety, and their economic interests at risk.

In this case, risks may arise from:

- inadequate security of facilities (fire, construction errors, lack of anti-seismic protection);
- poor sanitation and disrespect for the environment;
- protection against unauthorized interference, crime, and a lack of tourism infrastructure;
- fraud in commercial transactions;
- non-compliance with contracts;
- strikes by workers.

Individual travelers can pose a safety and security risk, according to experts

from the World Tourism Organisation, because of:

- dangerous sports and leisure activities, dangerous driving;
- travel for sick people;
- causing conflicts with local residents, misbehaving with local communities, or breaking local laws;
- illegal or criminal activities (e.g., drug trafficking);
- visiting dangerous places;
- loss of personal belongings, documents, and money due to negligence.

Finally, physical or environmental damage can occur if travelers:

- do not know the physical characteristics of flora and fauna;
- are not medically prepared for travel (vaccinations, prophylaxis);
- fail to take the necessary precautions or hygiene measures when consuming food.

As pointed out by some researchers (Wilks & Moore, 2003), physical and environmental risks are mainly related to personal risks, but are not intentional – i.e., arising from travelers' lack of knowledge, or from ignoring potential risks due to their ignorance of the results. Indeed, it is now emerging that overseas visitors could be most vulnerable in unfamiliar environments because of their participation in unfamiliar activities.

Ruževičius (2008) points out that the impact of tourism on animals should also be highlighted, as holiday resorts are usually located in areas that are particularly attractive to nature or adjacent to unique protected areas, such as coastal regions. Intensive and widespread tourism is a threat to sensitive ecosystems and may be one of the causes of the extinction of plants, animals, or micro-organisms.

Other experts (PATA, 2003) have argued that tourism risks should be considered in terms of natural and man-made events. Research shows that this approach is acceptable and very timely, as many natural phenomena often occur on a large scale and can quickly escalate from a crisis to a disaster. Researchers from the Asia Pacific Travel Association provide various comparisons of why tourism

risks need to be considered from a natural and human perspective (see Table 2).

Table 2. Tourism risks by type of cause

Source: based on PATA (2003); Yadav et al. (2024).

Natural phenomena	Avalanche	Earthquake	Fire
	Flood	Hurricane	Mudslides
	Epidemic	Audra	
Man-made events	Acts of terrorism	Fire	Personal harassment
	Adventure sports	Hijacking	Political action
	Air crash	Industrial actions	Riot
	Attack	Kidnapping	Surface transport accidents
	Fire/building collapse	Murder	War
	Civil/political unrest	Hostage-taking	
	Cruise ship/ferry accident	Mechanical/ system failures	

Wilks and Moore (2003) suggest that tourism risk should be analyzed in terms of potential shocks, categorized as direct or indirect events with short, medium, or long-term consequences for individuals, communities, regions, and countries. This approach is used in Australia. The authors point out that certain risks may arise or be exacerbated by others involved – e.g., public liability insurance as a result of the 9/11 terrorist attacks. However, they consider that a common factor in this categorization is that tourism risks have a direct or indirect impact on the industry. Moreover, the researchers consider that in describing potential risks to the tourism industry, it is important to demonstrate in practice the difference between risk, crisis, and disaster management. Risk, according to Wilks and Moore, is the probability that something that happens will affect an objective. All risks have a tendency to become unmanageable and, if uncontrolled, can lead to a crisis, but if tourism risks are analyzed within a certain framework, a crisis can be prevented (see Figure 1).



Figure 1. Probability of events

Source: Wilks & Moore (2003)

Experts from the Asia Pacific Travel Association and the WTO acknowledge that it is impossible to draw up a comprehensive list of all the risks that could escalate into crises, but it is possible to identify the most likely areas of risk. Indeed, many traditional risk classification systems have proved controversial, and researchers and experts have therefore recommended the use of the risk management model developed in Australia (Wilks & Moore, 2003). Saayman and Snyman (2005) explain that tourism risks can be divided into internal and external (i.e., domestic and international). Domestic risks relate to crime and various transport risks depending on the destination. External risks relate to natural disasters, diseases, hijacking, terrorism, the national economy, and politics taking place outside the destination but affecting travel to the destination.

Studies have shown that it is appropriate to divide risks into two groups, domestic (national) and external (international). Domestic risks are manifested through the host country, in this case Lithuania, and are generally of a negative nature, which may negatively affect tourism flows to the country. External or international risks are risks that occur outside the host country and can have a negative impact on tourism flows to the chosen country. Therefore, it can be argued that when risks are not controlled and managed, economic growth will not be achieved.

This view is based on the work of various authors who have identified the risks associated with tourism and the tourism industry (see Table 3).

Researchers have identified the following specific features of tourism risk:

- Tourism risk refers to the damage caused not only to tour operators and travel agents, but also to other businesses and tourists themselves, as well as to flora and fauna and historical and cultural heritage.
- The economic damage caused by adverse events can occur not only in the present, but also in the future, and this should be taken into account when planning the activities of a tourism enterprise and when drawing up tourism development concepts and programs at the national and regional levels.

- In some cases, tourism risks include risks to the life and health of tourists, which is why recreational businesses need to be subject to particularly stringent requirements.
- Tourism risks are shaped by various sources of risk – not only financial and economic and linked to the activities of businesses, but also those that are natural, beyond the control of humans and tourism operators. These risks may be interlinked.
- Tourism risk assessment and management must be based on the use of knowledge in specific fields, drawing on the results of research in related sciences (law, ecology, health, information technology, etc.).

The specificity of Lithuania's tourism sector is, on the one hand, manifested in the fact that Lithuania has large natural tourism potential. On the other hand, despite state support for the tourism sector, the Lithuanian tourism industry remains low-competition and high-risk, and opportunities and emerging areas to attract growing tourism flows are under-exploited. The risk of remaining on the periphery of international markets for tourism goods and services remains, and the impact of the global financial crisis requires the tourism sector to adapt to new economic conditions and to find ways to neutralize macro- and micro-economic risks in tourism development.

Thus, the classification of tourism risks brings together different risk groups derived for different reasons and with different degrees of detail. The risk identification steps presented show the multiplicative effect of risks associated with the identification of different tourism risks in relation to each other.

Table 3. Risks related to tourism

Source: compiled by the authors

Tourism risks	Authors
Natural phenomena	
Natural: • natural disasters; • weather and climate conditions; • environmental factors.	Holden, 2008; Page, S. J., & Duignan, M., 2023; George, 2023; PATA, 2003; Seddighi, et al., 2001; WTO, 2021, Wilks, 2003; Wilks & Moore, 2003. Ruževičius, 2008.
Man-made events	
Crime: • fraud; • terrorism; • hijacking; • hostage-taking; • kidnapping.	Brunt et al., 2000; Dimanche & Leptic, 1999; Ellis, 1995; Garcia & Nicholls, 1995; Hall et al., 2004; Moore & Berno, 1995; Pizam et al., 1997; Pizam et al., 2002; Maser & Weiermair, 1998; Gartner & Shen, 1992; Teye, 1986; Sönmez et al., 1999; Aziz, 1995; Bar-On, 1996; Leslie, 1999; Richter & Waugh, 1986; Enders et al., 1992; Sönmez & Graefe 1998a, 1998b; Sönmez, 1998; Damulienė, 2011.
Political: • war; • political instability; • strikes; • riots.	Gartner & Shen, 1992; Hollier, 1991; Ioannides & Apostolopoulos, 1999; Pizam et al., 2002; Richter, 1992, 1999; Seddighi et al., 2001; Teye, 1986; Wall, 1996.
Economic: • lack of funding; • exchange rates; • rising oil and fuel prices; • economic and financial crisis; • transport development (transport accidents).	Assael, 1995; Engel et al., 1995; Mowen & Minor, 1998; Schiffman & Kanuk, 1991; George, 2008; Cooper, 2023; Raval & Fichada, 2007.
Technological: • information technology and computer applications; • reservation systems.	Raval & Fichada, 2007; Shaw, 2010; Wilks & Moore, 2003.
Physical: • breakdowns in plant and equipment; • infrastructure.	Assael, 1995; Engel et al., 1995; Mowen & Minor, 1998; Schiffman & Kanuk, 1991; WTO, 2003; Wilks & Moore, 2003; Roehl & Fesenmaier, 1992.

Socio-demographic: • age and gender. • racial discrimination. • family life; • psychological.	Assael, 1995; Engel et al., 1995; Mowen & Minor, 1998; Schiffman & Kanuk, 1991; Žilinskas, 2011.
Health and wellness: • infectious diseases; • adventure sports; • inadequate food and water.	Cossens & Gin, 1994; Carter, 1998; Lawton & Page, 1997; Brunt et al., 2000; Dimanche & Leptic, 1999; Ellis, 1995; Garcia & Nicholls, 1995; Hall et al., 2004; Moore & Berno, 1995; Pizam et al., 1997; Pizam, 1999.

The concepts of business risk that have been analyzed and summarized show that it is appropriate to divide risk into two groups: domestic (domestic) and external (international). However, if risks are not controlled and managed, economic growth cannot be achieved. Various studies have shown that there is a lack of comprehensive research on the economic analysis of tourism risk issues.

7.2. Models for the economic evaluation of tourism risk

Most scholars refer to tourism risk assessment as part of tourism risk management. Therefore, further tourism risk assessment will be carried out in the context of risk management. It is useful to manage and know how to assess risks. Effective risk management and assessment helps to minimize the negative and maximize the positive consequences of risks, and to make appropriate decisions. In economic terms, good decision-making has the greatest economic impact.

7.2.1. Models for assessing business risk

Businesses use a variety of risk management and assessment models, which can be more general in nature as they are applied in a variety of circumstances. These models are not business-specific, and can therefore be more easily adapted and modified to suit the risk assessment of the inbound tourism sector. Risk assessment models typically use a variety of factors: some may rely solely on

statistical data, while others rely on more subjective elements. In general, however, most of the factors used in models are quantitative. However, financial institutions often combine quantitative and qualitative components, which may include judgements and subjective assessments. Factors used in business risk assessment models typically take into account the condition of the borrower, industry characteristics, and conditions and macroeconomic factors. Other factors may include the subjective assessments of a firm's competitive advantages, management credibility, political risk, and environmental risk. These factors often require caution in determining the risks involved as they are difficult, if not impossible, to quantify or objectively categorize.

Risk management starts with the identification of a company's operational characteristics. It is important to determine not only the nature of the activity, but also the scale, seasonality, complexity, and problematic nature of business operations. "Risk management is the identification of potential risks and the development of plans to minimize the impact of a risk event on a project" (Mačiulytė-Šniukienė et al., 2022). Kancerevyčius (2006) refers to risk management as the process of identifying, monitoring, assessing, and controlling all of the risks faced. Older literature refers to risk management as a continuous process that allows companies to balance the operational and economic costs of safeguards and to increase capacity (Stoneburner et al., 2002).

Risk management covers all areas of a company's activities in order to detect adverse events. Modern risk management has changed somewhat due to a number of factors, including:

- the shift from hazardous physical work to knowledge-intensive work;
- a broader view of the organization in the context of its various stakeholders;
- the growing importance of projects as a framework for planning and delivering work in organizations;
- the central role of technology and its inherent uncertainty;
- with ever-increasing competitive pressures to reduce delivery times,

organizations are starting to plan and execute their activities with incomplete information;
- growing unrest in the business environment;
- rapid increases in business and project complexity;
- the continuing trend towards globalization and the resulting emphasis on virtual businesses and teams;
- increasing regulatory burdens on companies (Raz & Hillson, 2005).

All of these and other factors have led to a growing number of scientific papers on the analysis of operational risk management. This field is growing steadily, but the fundamentals of risk management remain the same.

In everyday practice, companies are exposed to many types of risks, but the purpose of all of them is the same: to provide a sound basis for decisions in assessing the acceptability and necessity of risks. Although the objective of risk management is clear, it can be achieved in a variety of ways. Risk management models have been developed to standardize this process and facilitate the implementation of risk management processes in organizations.

An analysis of the different models will show that they are not too dissimilar from one another, but some have drawbacks in that they cannot be applied to inbound tourism.

Valsamakis et al.'s risk assessment model

Valsamakis et al. (2004) argue that risk assessment is an ongoing process and cannot be viewed in isolation as a single event (see Figure 2). In the authors' view, the process must start with risk identification, because in the implementation of risk controls (both business and event risk), risk assessment is a key feature before the financial consequences of the risk can be assessed. In order to manage risks, they must first be identified before risk management programs can be developed.

The model presented by Valsamakis et al. (2004) is more suitable for managing the risks arising from financial losses. This model can be used to assess inbound tourism risk, but this would not be the best use case because not all events are

assessed.

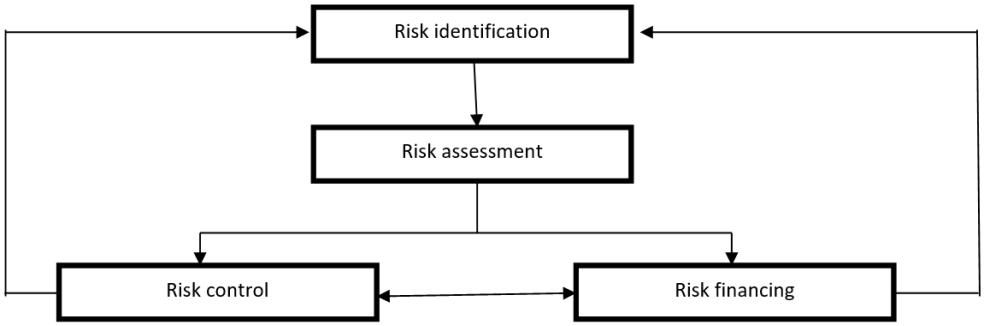


Figure 2. Risk assessment model according to Valsamakis

Source: Valsamakis et al. (2004)

Burke's risk assessment model

The risk assessment model proposed by Burke (2000; Figure 3) clearly shows the logical sequence of integrating each element and connecting the whole. The objectives defined in this model are seen as the risk tolerance of the business, and indicate whether the business is prepared to accept the impact of business risk.

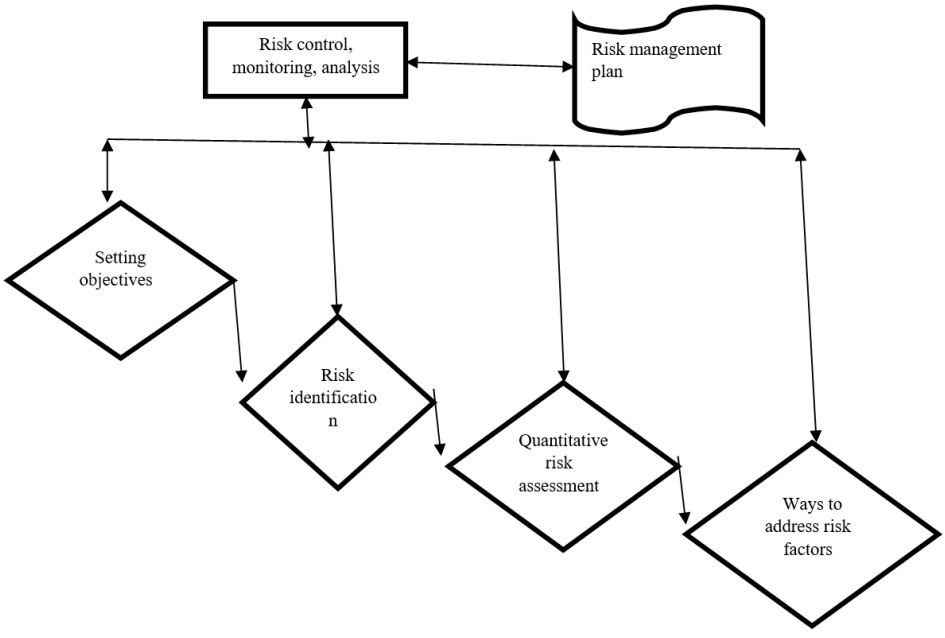


Figure 3. Risk assessment model according to Burke

Source: Burke (2000)

Risk identification, quantitative risk assessment, and risk responses, together with control and monitoring (surveillance), form the risk management plan, which becomes a formal document detailing how the business will manage and respond to the risks identified. In this model, the focus on risk assessment is already greater, with a quantitative risk assessment as a separate step.

Gray and Larson's risk assessment model

The risk assessment model proposed by Gray and Larson (2006; Figure 4) is similar to that of Burke, although some steps are different.

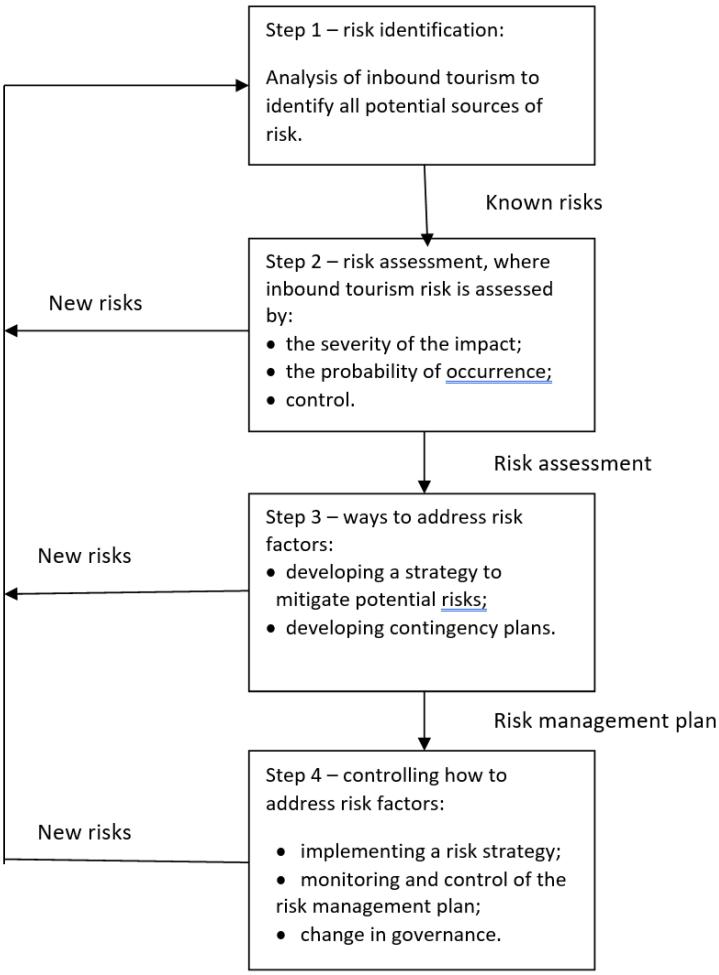


Figure 4. The risk assessment model of Gray and Larson

Source: Gray & Larson (2006)

The difference between the Gray and Larson model and the Burke model is that Burke sets objectives, because it is not always clear what the objective is. Another key difference between the two models is that Burke begins with risk control, whereas in Gray and Larson's model this is the last step. Gray and Larson's model also explains what should happen at each stage of the process.

Osborne's risk assessment model

The risk assessment model proposed by Osborne (2012; Figure 5) is simple but effective, involving 5 steps that could be applied to businesses of all sizes, including inbound tourism risk assessment.

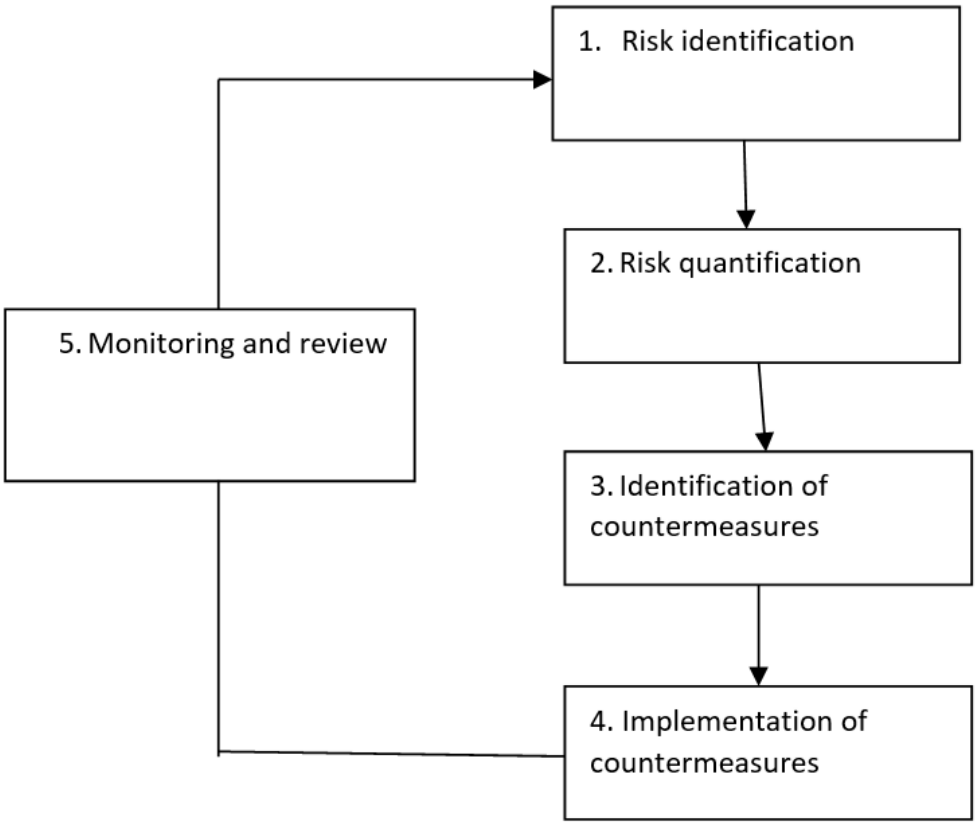


Figure 5. Osborne's risk assessment model

Source: Osborne (2012)

Osborne believes that before any useful action can be taken to address a risk,

it is necessary to identify the risks that are being faced (step 1). The second step is to quantify the risk by defining the likelihood and impact of the risk occurring. Next, the researcher proposes the identification and implementation of countermeasures to reduce, control, or eliminate the risk. To complete the risk assessment process, effectiveness needs to be monitored and evaluated. Osborne's proposed five-step risk management process is simple but effective, and has been shown to work regardless of the type or size of the business enterprise.

Osborne (2012) considers that risks can vary depending on the type of business, but identifies the most important as follows:

- strategic risks:
  - business planning and future directions;
  - strategic goal setting;
  - business growth;
  - new markets/products/services;
  - mergers/takeovers/alliances.
- operational risks:
  - supply of components or raw materials;
  - production;
  - distribution;
  - service delivery;
  - operator errors;
  - pollution/contamination/environmental impact.
- financial/commercial risks:
  - cash movements;
  - sales;
  - customer retention;
  - contracts.
- regulatory/statutory risks:
  - violation of regulation;
  - non-compliance with laws/contractual requirements;
  - forfeiture of operating license;

  - legal actions.
- health and safety risks:
  - accidents in the workplace;
  - serious injury or death;
  - disappearance.
- personnel risks:
  - disability or temporary incapacity of top-level staff;
  - inadequate skills;
  - employment and employability;
  - violence in the workplace.
- technological risks:
  - collapse of IT;
  - viruses, attempted data leaks;
  - factory/equipment failures;
  - data loss.
- project risk:
  - failure to meet agreed deadlines;
  - increased cost/resource requirements;
  - business non-compliance;
  - project failure.

Table 4. Risk impact assessment

Source: Osborne (2012)

Impact assessment	Possible definitions of impacts	Examples of impacts
1 Low Slight Minimum	Inconvenience, but no noticeable impact on business.	Short-term loss of staff, minor customer dissatisfaction, minor financial impact.
2 Medium Small Unsustainable	The complexity of the activity, requiring a lot of resources and time to manage it.	Minor damage, few customer complaints, significant loss of staff, minor financial impact.

3 Significant High Primary	Highly visible, relevant, and/or sustainable business issues.	Significant damage, high customer dissatisfaction, reputational damage, significant loss of staff.
4 Heavy Catastrophic	A threat to a business segment or to the viability and survival of a business.	Death, severe reputational damage, brand damage, revocation of operating license, significant financial impact.

The risk impact assessment presented by Osborne can also be used for the risk assessment of inbound tourism (see Table 4), using a scale from 1 to 4.

A scale of 1 to 4 is also proposed to assess the probability of an event occurring (Table 5). There are certain risks that have a particularly low probability and should therefore be considered more in terms of impact than probability. This approach is supported by the fact that many recent catastrophic events have never happened before, and their occurrence was therefore unthinkable to many. However, this did not stop them from happening.

Table 5. Examples of probability estimates and definitions

Source: Osborne (2012)

Probability estimation	Possible definitions of probability
1 Small Unbelievable	It should not happen, or has not happened in the last 20 years. It is almost inconceivable, but it cannot be completely ruled out. A probability of 1%.
2 Medium Possible	Should occur or has occurred once in the last 10 years. Possible, but more likely not to happen. Less than 50:50 chance.
3 High Likely	Should happen or has happened several times in the last 10 years. More likely to happen than not. More than 50:50 chance.
4 Almost certain Inevitable	Likely to occur or has occurred once per year. It is hard to imagine it not happening. High (above 80%) probability.

By using a scale, in this case from 1 to 4, it is possible to start assessing the risk of inbound tourism. This is simply a matter of reviewing each of the risks identified and deciding whether it is possible to assess the impact of each. Once the probability assessment has been carried out, a risk matrix can be constructed. In the risk matrix, we can assign a risk assessment to each risk based on a combination of probability and impact. When a numbering system is used, it is straightforward to multiply the 2 variables (e.g., multiplying probability risk by 3 and exposure risk by 2 would give a risk assessment score of 6). However, it should be appreciated that these numbers are for convenience only, and that a probability level of 4 is not necessarily 4 times more likely than a probability level of 1, or twice that of a probability level of 2. At the same time, a probability level of 4 is not 4 times worse than a probability level of 1. In fact, the increase in likelihood or effect between level 1 and level 4 could be 20, 50, or even 100 times. The key idea is to see where the risk decreases in the risk matrix. The risk matrix helps to assess the significance of an identified risk based on the likelihood and impact of the actual risk. Depending on the scale of assessment chosen, risk matrices of different types and sizes can be created. The simplest form uses a 3x3 grid, but a 4x4, 5x5, or even 6x6 grid can also be used, depending on how complex or simple the assessment warrants. When carrying out a risk assessment of the inbound tourism sector, it is important to identify the most significant risks – in other words, those that are most likely to happen and those that will have the most serious consequences. The important point is that the risks that are of interest and that need to be acted upon are those that fall in the top right corner, and those that are of least concern fall in the bottom left corner. Osborne used a 4 x 4 matrix (Table 6), with a simple numbering system from 1 to 4 and probability and impact axes.

Table 6. Example risk matrix

Source: Osborne (2012)

Probability					
	4 (complex)	4	8	12	16
	3 (high)	3	6	9	12
	2(medium)	2	4	6	8
	1 (low)	1	2	3	4
		1 (low)	**2 (medium)**	**3 (high)**	**4 (complex)**
			Impact		

Using a risk matrix (or in this case, simply multiplying the probability and impact values), it is possible to assign risk values to each identified risk. A summary of the risk assessment for the risks under consideration is given in Table 7.

Table 7. Identified risks with assessments

Source: Osborne (2012)

No.	Risks	Probability	Impact	Rating
Commercial				
1	1 risks	1	2	2
2	2 risks	3	3	9
3	3 risks	4	1	4
Activities				
4	4 risks	3	3	12
5	5 risks	3	1	3
6	6 risks	4	2	8
Financial				
7	7 risks	1	1	1
8	8 risks	2	3	6
	And so on.			

Risk assessment (a combination of likelihood and impact) is the effective evaluation of each significant, identified risk. As presented earlier, the most significant risks are those that fall in the top right corner of the risk matrix, which is where we focus our attention the most (see Table 7).

Once tourism risks have been assessed, it is possible to decide how to deal with them by prioritizing them according to risk values. The first focus is on the significant risks, which fall in the top right corner of the risk matrix. Less significant risks can be considered and addressed if they are sufficiently straightforward and cost-effective. Moving towards the bottom-left corner, risks that can be accepted are encountered.

Osborne proposes that risks should be divided into 4 categories, depending on the likelihood of the risk and their impact (if any). Which category a particular risk falls into depends on the choice and implementation of measures to reduce the likelihood or impact (or both) to a level that is acceptable. Figure 6 shows risk management depending on the significance of the risk.

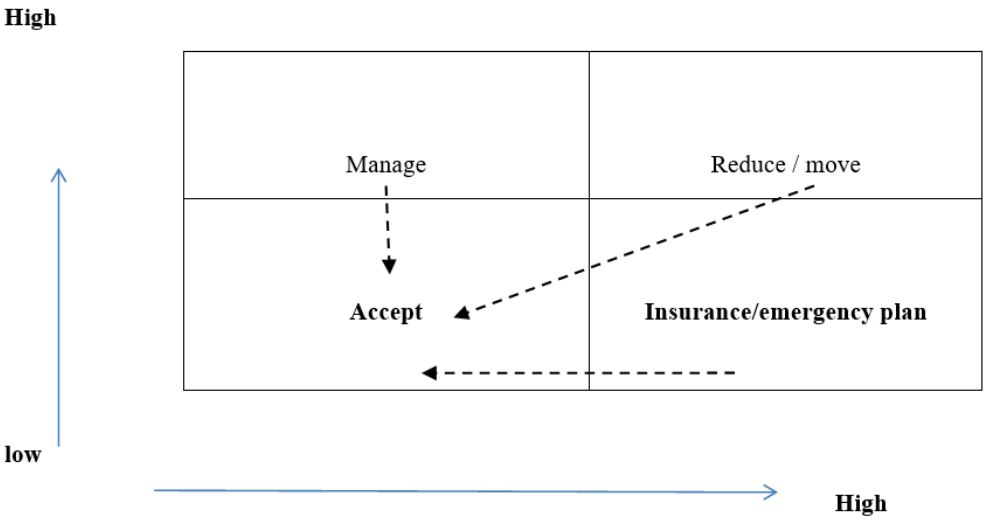


Figure 6. Risk management

Source: Osborne (2012)

If the likelihood of a risk is low and its impact is small, it may be a sensible decision to do nothing and accept it. There may be cases where, although the likelihood or impact is high, it is not cost-effective or even feasible to implement countermeasures, e.g., where the cost of resolving the risk is higher than the potential loss. In this case, the only viable option is to accept the risk. The fact that

many risks cannot be completely eliminated means that there is always some level of residual risk, even after mitigation measures have been implemented. The ultimate goal of an effective risk management program is to reduce all risks to a level that is acceptable. Risks with a higher probability but low impact can be managed through improved processes, documentation, training, and monitoring. If the probability is low but the impact is high, actions must be developed to avoid it. The final process in the risk management phase is to monitor and evaluate the results of risk reduction measures.

However, the risk assessment model presented by Osborne is also flawed in that it is not specifically tailored to assessing inbound tourism risks, but is more general in nature. On a more positive note, it is possible to use experts to assess risks and to give different weights to the risks selected.

Passenheim's risk assessment model

According to Passenheim (2010), risk assessment has so far focused on avoiding the repetition of mistakes made in the past. Standard conditions can change quickly, such as the competitive environment or the price of raw materials. In the researcher's view, risk assessment requires an understanding of the company's objectives, but also of its strategy and culture. The risk assessment of a company or sector is a procedure that minimizes the adverse effect of potential financial losses when:

- identifying potential sources of loss;
- assessing the financial consequences of losses;
- controls are used to minimize actual losses or their financial consequences.

The aim of all risk monitoring is to maximize the value of each individual activity within a company or branch. The potential benefits and risks of all factors associated with these activities must be neatly documented. If all employees are aware of the importance of risk assessment processes, the possibility of success will increase, while at the same time failure will become unlikely. Passenheim

(2010) breaks down the risk assessment process into 4 stages:

1. risk identification;
2. risk analysis;
3. responding to risk;
4. risk control.

Risk identification is the first and most important step, as it sets the stage for subsequent actions. Passenheim proposes using the income/cost approach for risk identification (see Figure 7), as he considers that the starting point is the cost, the middle point is the tools and techniques used, and the end point is the result (income).

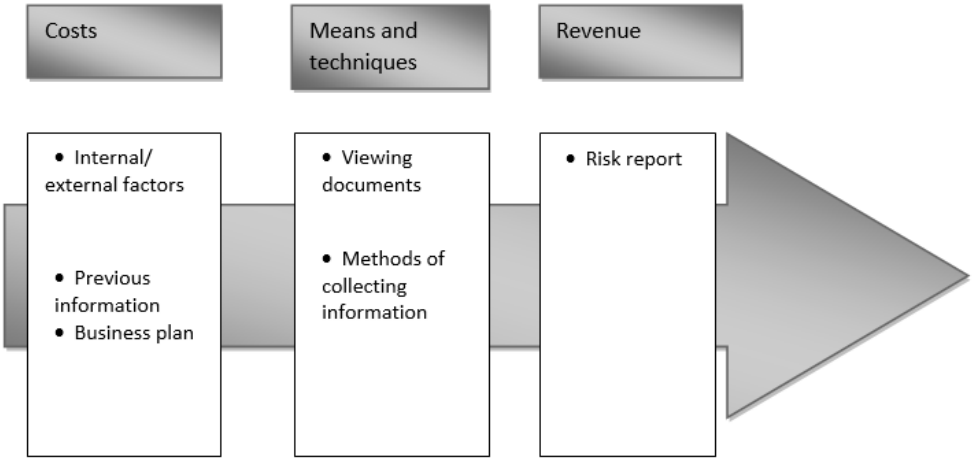


Figure 7. Risk identification

Source: Passenheim (2010)

Passenheim further proposes that external factors should be considered as a description of the environment, while internal factors should be attributed to the company. As typical external factors, he presents:

- economic conditions;
- social, legal trends;
- political climate;
- competition – international and domestic;
- demand volatility;

– criminal or terrorist activities.

Typical internal factors include:
– internal culture;
– personnel capacity/number;
– capacity;
– systems and technology;
– procedures and processes;
– communication efficiency;
– leadership effectiveness;
– degree of risk.

Previous information could relate to company or industry assessment projects, existing experience, development, failures, and risks experienced, which are useful for identifying risks. The structure of the risk analysis shows a description of the risks already known, arranged by category and their characteristics in vertical branches. This shows all risks and their possible consequences.

Passenheim believes that it is appropriate to carry out a SWOT (strengths, weaknesses, opportunities, threats) analysis, which can be used to identify potential risks. The advantage of SWOT is that it is simple and relatively inexpensive, except for the time required to process it. In research, SWOT helps to generate new ideas.

Passenheim identifies the requirements that a risk assessment must meet:
– **Objectivity**: information about a given market must be considered and objective. In particular, risks related to the price of a product on the market or stocks can be found very easily.
– **Comparison**: risk assessment must lead to comparability of results. Therefore, companies must use consistent and standardized data collection methods.
– **Quantification**: it must allow the company to detect deviations from its objectives.
– **Interdependencies**: in practice, this is the hardest part of risk management.

Passenheim's risk assessment methodology suggests filling in an assessment form (Figure 8).

Project objective	1	2	3	4	5
	Very low	Low	Medium	High	Very high
Price	Slight price increase	< 10% price increase	10%–20% price increase	20%–40% price increase	>40% price increase
Time	Slight increase in time	< 5% time increase	5%–10% increase in time	10%–20% increase in time	>20% time increase
Scope of the project	Barely noticeable reduction in volume	Small areas affected	Main volume locations affected	Reduction in volume is unacceptable to the buyer	The project is worthless
Quality	Barely noticeable deterioration in quality	Only a very demanding application has an impact	Quality reductions require approval	Reduction in quality is unacceptable to the buyer	The project is worthless

Figure 8. Passenheim's risk assessment form

Source: Passenheim (2010)

To make risk analysis more convincing and to show the importance of certain risks, a company or experts can use a matrix. The matrix shows two aspects of the risk: the impact that will occur and the probability of an event. A commonly used matrix has five areas, each with a different probability and impact. Thanks to the management of this matrix, it is possible to priorities risks in order to establish which need special attention. Prioritization also helps to adopt or anticipate reasonable measures.

The fuzzy sets risk assessment model

Sun et al. (2008) proposed a risk assessment model for fuzzy sets. The main advantage of this approach is that it allows experts and engineers to express their views on risk. Their study shows that this method is both objective and accurate. The model consists of an objective level, risk sources, risk drivers, and alternatives.

At the objective level, the purpose of the risk assessment is explained, the risk factors are grouped depending on their source, and each source of risk is given several factors. Once the model has been developed, the following principles must be followed:

- The systemic principle. The system is designed with the reality of the project in mind, so that the reliability of the assessment is guaranteed.
- Quantitative and qualitative factors – both of which are taken into account so that objectivity and agility can be ensured during the evaluation.
- The principle of independence. Overlapping factors must be avoided in the identification of factors.
- The principle of simplicity. Detailed factors must be chosen because it is convenient for the experts.

The risk management standard of Australia and New Zealand

Australia and New Zealand have adopted a risk management standard (Standards Australia and Standards New Zealand, 1999) that specifies how risks should be controlled and applies to risks associated with the tourism industry. This standard places a strong emphasis on risk assessment (see Figure 8).

The AS/NZS 4360: 1999 standard specifies that the five basic steps of risk management (Figure 9) must be implemented in a consistent manner, and risks must then be continuously assessed through monitoring and analysis and through information dissemination and consultation. This standard is applicable to tourism risk assessment. The first step of the risk management process focuses on the environment in which any tourism organization or destination operates. Key elements include internal and external stakeholders. As stated in the standard, without the support of the government, the next steps are not possible, and therefore various government structures need to be involved in the risk management process and the responsibilities of the various stakeholders must be identified. The final element of the first step is the development of risk assessment criteria. Decisions have to be made on what risks are considered acceptable and will be

tolerated, and what risks are unacceptable and will be addressed. In the second step, a comprehensive list of risks to be managed is developed. This list is used to make decisions at various levels. A good example is the risk map in London, which is a business guide in a world of uncertainty. Countries are ranked according to two types of risk – political and security. For potential investors and global companies involved in tourism-related activities, these risk assessments can have far-reaching consequences.

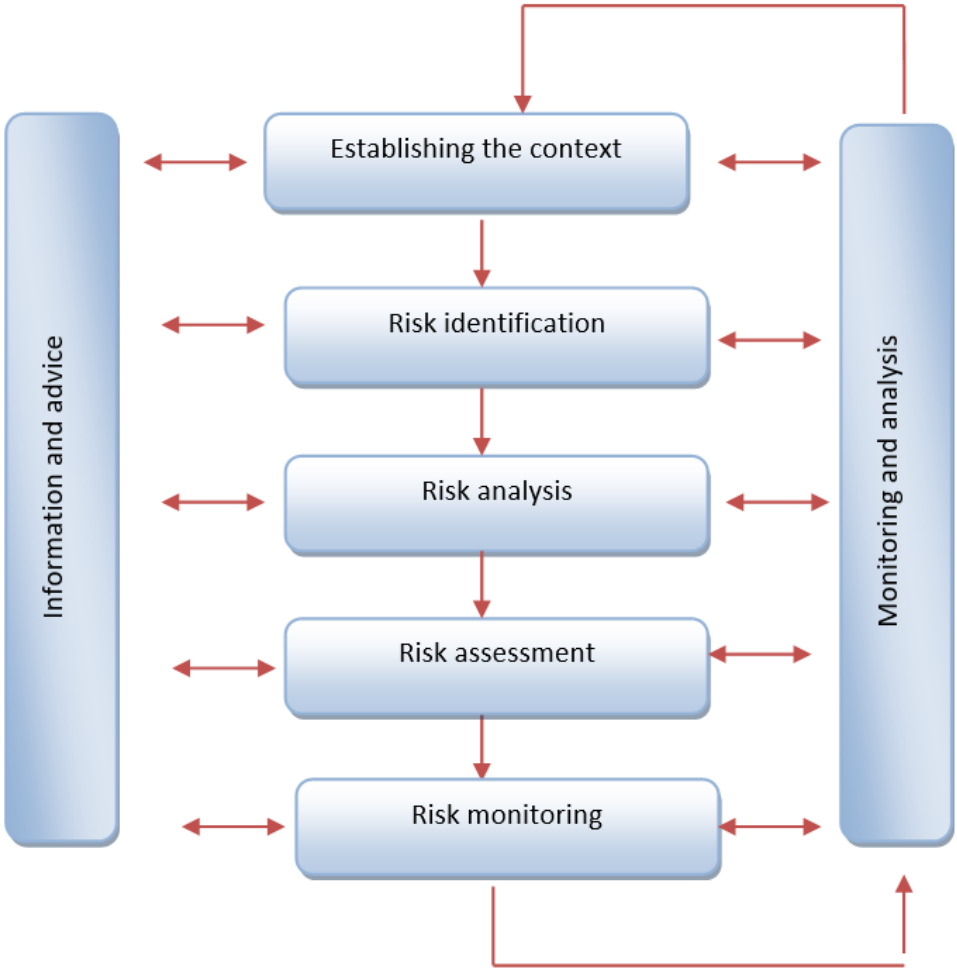


Figure 9. Risk management

Source: Australian/New Zealand Standard for Risk Management

The risk management analysis stage involves assessing the risks identified and their impact on businesses or tourists. Minor and acceptable risks are distinguished from major risks that need to be managed. The standard way to carry out such assessments is to determine the likelihood, frequency, or probability of a risk occurring, along with its consequences and impact. There are many ways to classify risks for analytical purposes. Any decision involves a risk, whether it is the risk of environmental damage, the risk of financially unfavorable investments, the risk that a competitor will make a better decision, etc. By taking risks, a business may suffer financial losses or other disadvantages. The degree of risk can be calculated using a simple formula:

$$Risk = Probability \times Consequences \quad (1)$$

Risk is therefore a function of the probability that a risk element will occur and the consequences that will follow if that risk element occurs. Consequences can be measured in monetary terms, but are usually expressed as an index. For example, the management of a tourism service company or a tourist has to choose between five different strategies, from A to E. Each has its own defined risk element. For each risk element, the following factors can be assessed:

- the probability that a risk element will happen;
- the consequence if such a risk element were to occur.

Table 8 provides a method for estimating the losses associated with the realization of the risk element.

Table 8. The assessment of harm or risk-related impacts

Source: Australian/New Zealand Standard for Risk Management

Level	Rating	Detailed description
1	Irrelevant	No injuries, small financial loss
2	Small	First aid, immediate announcements in the local press, moderate financial losses
3	Medium	Requires medical treatment, information in the local press and externally, significant financial losses

4	Large	Capital damage, loss of productive capacity, off-site press, major financial losses
5	Catastrophic	Deaths, toxic substances with harmful effects, huge financial losses

The assessment of the likelihood of damage is shown in Table 9.

Table 9. Likelihood of damage

Source: Australian/New Zealand Standard for Risk Management

Level	Rating	Detailed description
1	Almost guaranteed	Expected to occur in many cases
2	Likely	Probably occurs in many cases
3	Possible	May occur over a period of time
4	Unlikely	May occur at certain times
5	Rare	May occur only in exceptional circumstances

Assessments can be used to create a risk matrix. An example is given in Tables 10. The letters indicate the values of a particular risk as follows: E – extreme risk, urgent action is required; H – high risk, senior management attention is required; M – medium risk, management responsibility must be stated; and L – low risk, routine management procedures.

Table 10. Risk analysis matrix

Source: Australian/New Zealand Standard for Risk Management

		Scores	Implications				
	Scores		Irrelevant damage	Minor damage	Average damage	Large damage	Catastrophic damage
		1	**1**	**2**	**3**	**4**	**5**
Probability	Almost guaranteed, probability >80%		1	2	3	4	5
	Likely, probability 60%–79%	**2**	2	4	6	8	10
	Possible, probability 40%–59%	**3**	3	6	9	12	15
	Unlikely, probability 10%–39%	4	4	8	12	16	20
	Rare, probability <10%	**5**	5	10	15	20	25

Table 11. Risk analysis matrix in alphabetical form

Source: Australian/New Zealand Standard for Risk Management

Probability	Implications				
	Irrelevant damage	Minor damage	Average damage	Large damage	Catastrophic damage
Almost guaranteed, probability >80%	H	H	E	E	E
Likely, probability 60%–79%	M	H	H	E	E
Possible, probability 40%–59%	L	M	H	E	E
Unlikely, probability 10%–39%	L	L	M	H	E
Rare, probability <10%	L	L	M	H	H

The risk assessment determines the level of risk, i.e., what can be accepted and what needs to be addressed, based on the risk criteria defined above. For each tourism destination and for each national government, decisions about whether or not a risk is acceptable are set against a background of social, economic, and political priorities. In some cases, a tourism destination may be exposed to a risk but may not have the resources to avoid the risk. In cases where a country is a member of certain organizations, it may seek assistance from them. This could include the WTO or associations such as the Pacific Asia Travel Association (PATA). For example, the WTO organizes tourist safety and security seminars and conferences in Africa, Warsaw, Russia, Central America and the Middle East. PATA has provided support to the Asia-Pacific countries in the taskforce program.

Risk processing is concerned with the likely choice of operator and tourist destination. The best way to visualize this process is through a risk assessment matrix. Depending on the potential risks and their severity and frequency of exposure, the risk management strategies of tourism operators and destinations are generally divided into four categories (see Figure 10).

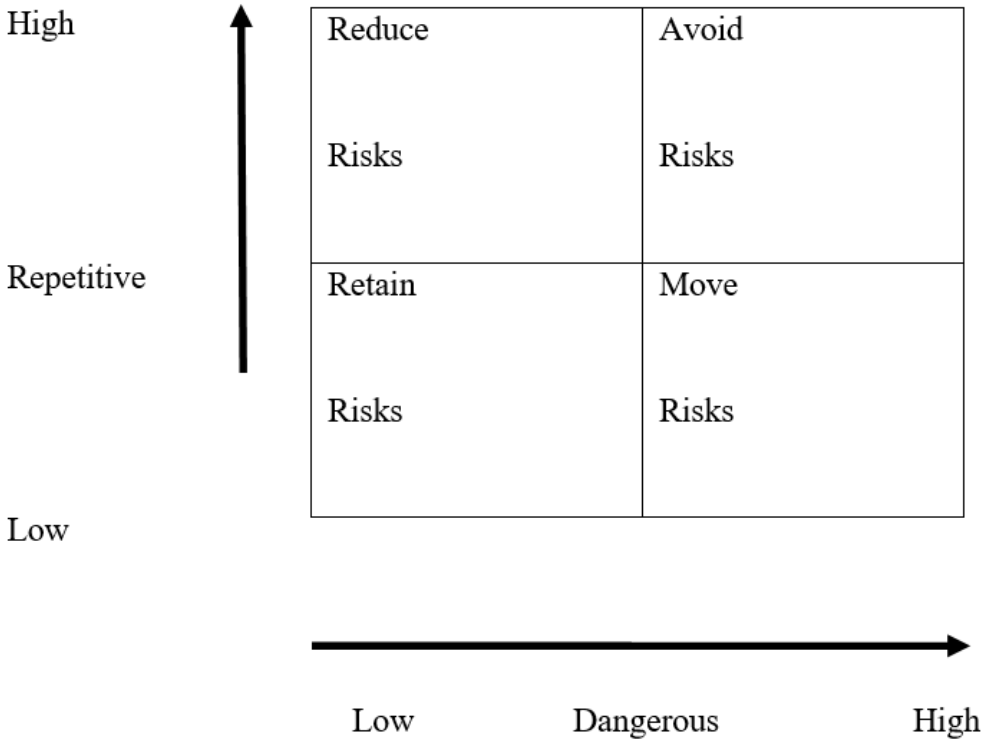


Figure 10. Risk assessment matrix

Source: Wilks & Moore (2003)

If the frequency of problems/risks is low and their intensity is also low, many organizations and destinations maintain or accept a certain level of risk. At the other extreme, where the frequency and intensity of risk is potentially high, the most responsible solution to avoid risk is to withdraw the service or exit the market. Where the magnitude or consequences of the risk are high (e.g., customer injury or death, loss of property, or storms or cyclones) but such events do not occur very frequently, tour operators have traditionally relied on insurance to transfer their risk to a third party. Figure 11 shows, in order of risk severity and frequency, some of the potential risks faced by destinations.

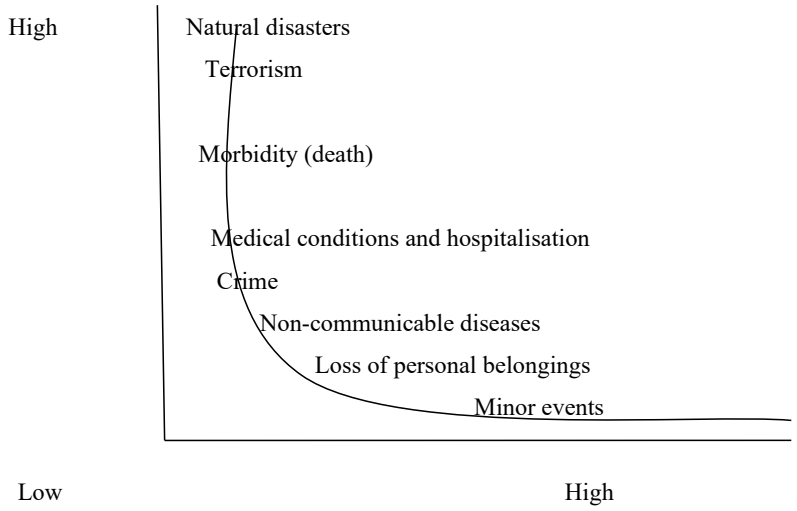


Figure 11. Continuity of tourist health and safety: severity and frequency of events

Source: Walker & Page (2013)

In most cases, crises do not occur. The Australian/New Zealand Standard notes that risk aversion can lead to:

- decisions to avoid or ignore risks, regardless of the information available and the cost of the risk;
- leaving critical decisions to other parties.

The Corporate Finance Institute offers a range of models for assessing tourism risk. According to the Corporate Finance Institute (Spendelow, 2024), risk rating models are tools used to assess the probability of default. The concept of a risk rating model is deeply interconnected with the concept of default risk and is a key tool in areas such as risk management, underwriting, capital allocation, and portfolio management. Risk rating models use several factors and implement a set of rules to assess the default probability of borrower or debt security. The models generally use these factors and rules to generate a numerical or symbol-based rating that summarizes the level of default risk of the borrower or debt security involved. Risk rating models generally use a variety of factors as inputs. Some risk

rating models may be purely based on statistical evidence, while others may rely on more subjective elements. Generally, most of the factors used in the models are quantitative. However, financial institutions often combine quantitative factors and qualitative components that may involve judgment and subjective assessments. The methodology used to develop the risk rating model can give more weight to judgment or statistics. Risk rating models also use additional categories of risk factors:

- political risks, which consider aspects such as the risks of war, the rule of law, and the reliability of institutions, to name a few;
- environmental risks related to the potential consequences of pollution or destruction of the natural environment due to the company's activity. They can cause financial consequences and even adverse regulations that can limit or disrupt a company's operations.

An example of a scorecard-based risk rating model is shown in Figure 12.

Example of a simple scorecard		
Risk component	Factor	Weighting
Borrower's Financial health	Current Ratio FCF Margin	30%
Industry Characteristics	Barriers to Entry	10%
Macroeconomic factors	State of Business Cycle	10%
Competitive Strength	Customer Retention	20%
Management's Reliability	Skill and tenure	20%
Political Risks	Country Risk	10%

Figure 12. Risk assessment model

Source: Spendelow (2024)

A risk rating model should only be used if it is accurate enough. Validating the model means assessing whether the risk rating generated by the model is consistent enough with the actual outcomes. A good risk rating model should not underestimate the risks, as this would generate unexpected losses and costs of recovery. Nor should it overestimate the risks, as this would lead to noncompetitive bidding and loss of potential profits.

7.2.2 Tourism risk assessment models

The tourism sector is highly vulnerable to shocks due to wars, financial market turmoil, pandemics, geopolitical crises, and terrorist attacks, which can lead to the poor performance of stock returns in the tourism sector (Kim & Marcouiller, 2015; Seraphin, 2017). Kumar (2023) analyzed the influence of economic policy uncertainty, geopolitical risk, uncertainty in the financial market, and crude oil prices on the travel and leisure sector in Europe. The author also considered the significance of the transmission of risk from these uncertainties to the travel and leisure sector in Europe. The tourism industry is highly vulnerable to uncertainties and macroeconomic shocks, and the impact of these can also be observed in the returns of travel and leisure firms (Kim & Marcouiller, 2015; Seraphin, 2017). Uncertainties in the market also impact the behavior of asset prices (Avery & Zemsky, 1998). Long-term investors and portfolio managers consider the fair price of a stock based on the discounted cash flow approach (Kaplan & Ruback, 1995). In an environment of high geopolitical and economic policy uncertainty, tourists may be hesitant to travel abroad because of wellbeing and safety reasons (Demir & Gozgor, 2020). According to Kumar (2023), higher uncertainty associated with the financial market, geopolitical scenarios, and economic policies results in increasing systematic risk in the market, and thus increases the cost of equity which may lead to a downward fall in the fair value of stocks. This may impact investors and portfolio managers in postponing their investment

decisions related to including travel and leisure stocks in their portfolios. Baker et al. (2016) proposed the measurement of economic policy uncertainty, which is estimated using the frequency of newspaper articles related to wars, financial market crashes, political events, terrorist acts, recessions, etc., to cover near-term and longer-term concerns. Caldara and Iacoviello (2018) proposed the measurement of geopolitical risk based on newspaper articles, defining it as "the risk associated with wars, terrorist acts, and tensions between states that affect the normal and peaceful course of international relations." The measure of geopolitical risk incorporates news related to geopolitical threats, war threats, nuclear threats, terrorist threats, war acts, and terrorist acts.

The analysis of different processes, strategies, and models shows that there are several that can be applied to the tourism industry (see Figure 13).

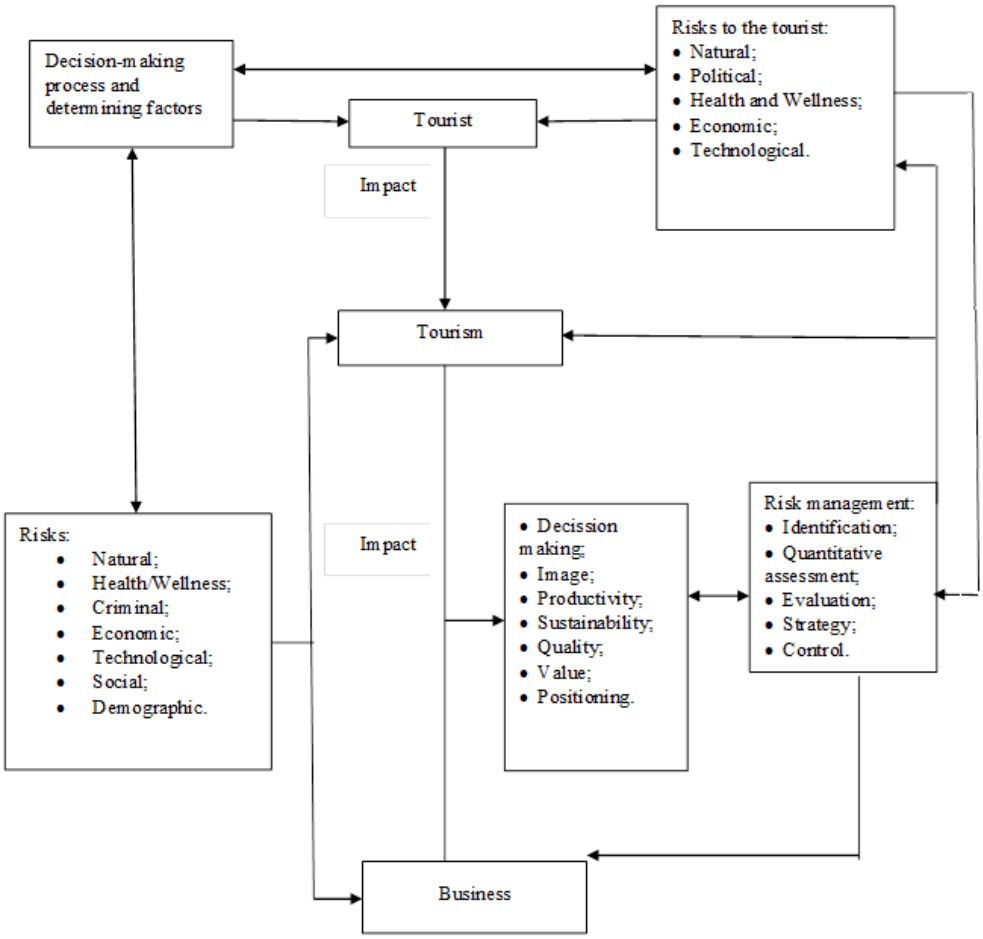


Figure 13. Risk and risk management in the tourism industry

Source: Shaw (2010)

Research shows that risks affect not only businesses in the tourism industry, but the industry as a whole. Their impact can be positive or negative, and they must be harnessed. Thus, the best strategy needs to be chosen through the effective use of risk assessment.

As a socio-economic phenomenon involving the movement of people and financial resources, tourism is clearly exposed to a range of risks. The impact of different risks varies, and it is therefore difficult to assess the consequences of risks for the tourism industry. For example, it is easy to identify the conditions of

a financial crisis, but it is very difficult to predict the consequences and the exact content of events. Tourism-specific risks are identified by specific attributes, one of which may be the tourism product.

According to a number of academic studies, the term risk refers to the risk of potential losses in different areas of activity (loss of material and financial resources, loss of income and unforeseen additional costs, etc.). In other words, in any economic system, the main reason for analyzing risk relates to the quantification or evaluation of risks. In this context, tourism sector risk covers all potential threats to tourism operators and facilities. These threats include infrastructure, the business and tourism industry, and tourists themselves.

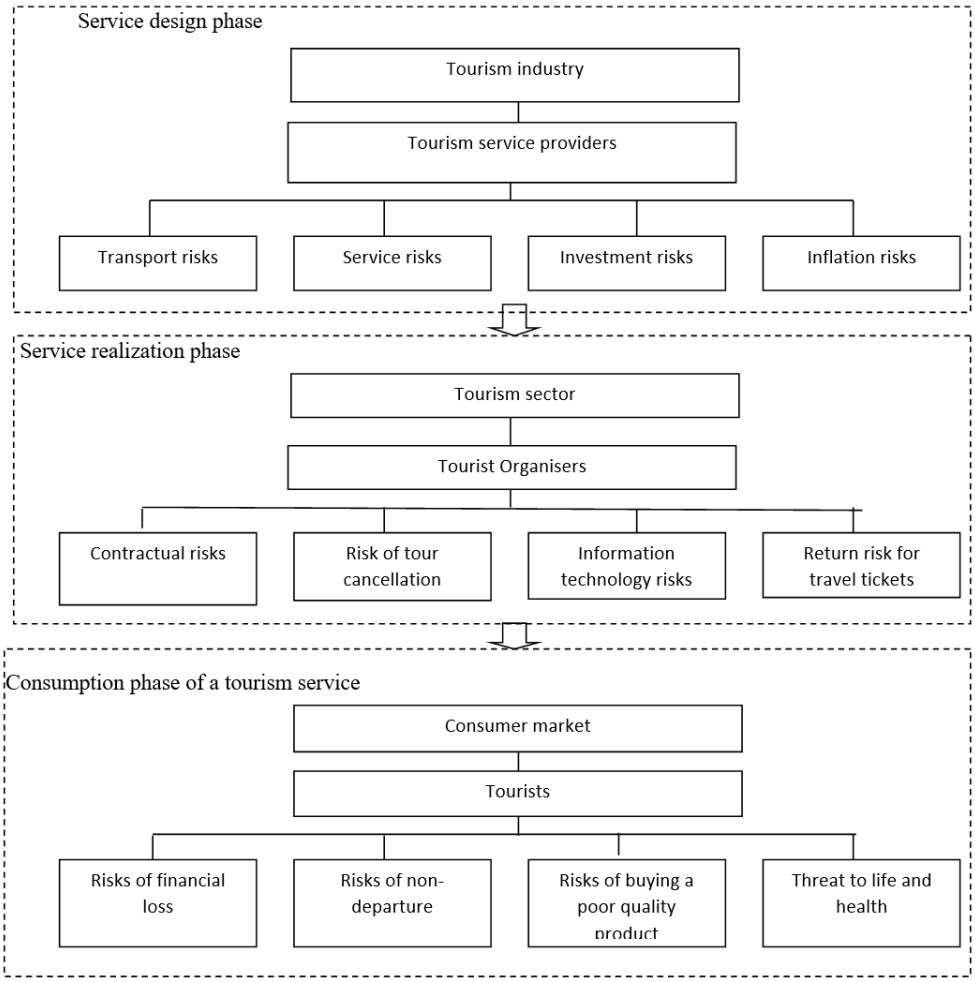


Figure 14. Identification of risks according to the organizational phases of a tourism service

Risks can be highly regulated by the level of tourist activity. In quantitative terms, tourism risk is defined as the potential magnitude of material and financial losses incurred by tourism enterprises and their relationships with tourists. This is the description given by most scholars.

The analysis of tourism risk assessment models shows that it is appropriate to use a process approach to classify tourism risks, which is linked to the stages of tourism product identification. It would be logical to link risk identification to

the stages of tourism service provision (see Figure 14). Each stage is dominated by specific risk groups. For example, in the service design phase, the risks in the infrastructure of the tourism industry are dominated by the risks associated with the disruption of the various actors involved in tourism service provision. A characteristic feature of such risks is their uncertainty in the tourism sector – i.e., they can emerge and develop independently of the tourism object and the consumer. For example, transport risk is an element of tourism risk only if the transport undertaking is a unit of the tourism industry. Organizational risk, i.e., the risk of non-performance of contractual relations, plays a significant role in the design and marketing phase of a tourism service.

7.2.3. Methodological principles for risk assessment in the tourism sector

As several studies have shown (PATA, 2003; Wilks & Moore, 2003; Reichel et al., 2007; Hotia et al., 2007; Sun et al., 2008; Navickas & Malakauskaitė, 2009; Šakienė & Zovytė, 2009; Shaw, 2010; Labanauskaitė 2011; Žilinskas, 2011; Oroian, 2011; Fotiou, 2012), tourism risks and threats can be analyzed from several perspectives: from the perspective of the tourist, from the perspective of the destination (inbound tourism), and from the perspective of regulators. Depending on the chosen dimension, risks are analyzed differently. Similarly, the development of a risk assessment methodology can be carried out from several perspectives: the consumer, tour operators, and regulators. The difference in positions is due to the fact that the holidaymaker is only interested in the risks affecting their holiday area, in a given season, at fixed dates and with limited choice of services. Tour operators have to take into account the risks of various tourism programs involving the diverse interests of large groups of people. If the assessment of tourism risk by the consumer (tourist) is limited by the interactions between the tourist and the tourism complex, then the tour operator needs to assess the socio-economic risks of tourism and economic activity, including those which are not addressed by the

tourist. For example, the natural risks-technical systems risks or investment risks-inflationary risks interactions are a matter for the tour operator or the investor, but not for the tourist themselves. The tourist assesses the presence and intensity of risks in direct contact with the tourism complex and the tourism company, considering the spatio-temporal localization of socio-economic risks.

Tourism risk assessment requires detailed investigation. Therefore, the previous chapters have offered a detailed examination of different methodologies for tourism risk assessment, summarized the most important ones, highlighted the processes of risk identification, analyzed forms of risk assessment, and provided examples of risk matrices.

Based on the approaches synthesized by economic theories, a methodology for the economic assessment of tourism risk can be presented, which will be used to identify and assess tourism risks in the Lithuanian inbound tourism sector, both from the perspective of the service provider and the consumer.

The research methodology for the economic evaluation of tourism risk consists of several steps:

1. developing a principled research framework showing the main factors influencing tourism risk;
2. analyzing the macroeconomic environment of inbound tourism in Lithuania and identifying the impact of the macroeconomic environment on tourism risk;
3. identifying tourism risk factors, drivers, and interactions between them;
4. conducting tourism risk assessments on the part of the tourism supplier and the consumer;
5. conducting a risk assessment of an integrated inbound tourism complex using an index system;
6. developing recommendations for tourism risk management services from the perspectives of both the supplier and consumer.

The risk management methodology places a strong emphasis on risk assessment. As already mentioned, risk management consists of several steps, one of

the main ones being risk assessment. The stages of risk management cannot be ignored when developing a risk assessment methodology, and each stage of risk management is linked to an assessment. To further differentiate risk assessment, the phases can be broken down into: formulating the objectives of the study, defining the indicators for risk assessment, identifying common and personal risks, and interpreting the results.

Various scientists (Luobikienė, 2005; Rudzkienė, 2010; Tidikis, 2003) point out that the elements of scientific research are object, tasks, tools, procedures, and product. When considering tourism risk assessment from this point of view, it can be said that the research task is to determine the degree of vulnerability of tourism systems due to the action of negative risk factors, as well as the possibility of confrontation with possible internal and external risks. The object of the assessment is risks and their interaction in the tourism complex. The tools and procedures are the risk assessment techniques obtained and summarized, while the product is the assessment process itself, presented as the implementation of the methodology in different dimensions of tourism programs.

The risk assessment methodology places a strong emphasis on the entity. Each assessment shows the relationship of the subject to the selected object. The outcome and content of the assessment depends on the chosen position of the subject in the assessment. Thus, the assessment of one or another indicator may be subject to different interpretations, although the meaning of the indicator is always unambiguous at the time of identification. As an example, a charter flight is delayed by 3 hours. In this case, there can be no other meaning. However, this event is perceived differently by different actors: for tour operators, it is a current problem that does not pose a significant threat to the development and marketing of the tourism product. For the tourist, however, such a delay can be a source of financial and moral risk if the charter flight is timed to coincide with other activities (connecting to another flight, meeting relatives, visiting transit sites, etc.).

Therefore, it can be argued that each economic assessment of tourism risk is specific to a given entity, and subjectivity cannot be avoided in this case. On the other hand, the subject-object relationships in the subject-object system, which relate to the risks to tourists, infrastructural facilities, and tourism businesses, are objective and regular. If an assessment is made on the basis of such links, it is objective. However, the risk assessment has a subjective-objective character: in relation to a particular tourist, tourist enterprise, or tourism complex as a whole, it is subjective. Tourism risk affects a wide range of actors and the assessment may depend on who the actor is in the first place, since the relationship between object and actor will always be different. However, revealing existing patterns and relationships in the evaluation makes it independent of the researcher. Therefore, the subject in a tourism risk economic assessment can be either the tourism system or its individual parts or elements. However, the subject of the study in a tourism risk assessment is not the objects or entities, but their relationships. From a practical point of view, this situation is not principled, since the assessment procedure is directed towards the final result of identifying the overall risk. From a methodological point of view, this is important because the assessment is a reflection of the relationship between people and their environment. If a person is not outside the system being assessed, but rather becomes part of it, the final result is an incomplete assessment. This is because, in such a case, only the interests of the subject in question are taken into account, and objective regularities remain in the background.

Tourism risk assessment must take particular account of the links between sites and actors. This can be explained by the fact that tourism is an inter-sectoral system comprising natural, cultural, technical, and economic systems. Therefore, this work will focus on the tourism complex.

Due to the economic links between tourism enterprises, the specialized literature treats tourism enterprises as tourism complexes. In Latin, *complexus* means

a combination, and is defined in the most general sense as a collection of objects forming a single whole. In scientific terms, the introduction of the term tourism complex allows the tourism industry to be studied in a complex way, taking into account the interrelationships and interdependence of all elements and processes.

The tourism complex is understood as a system consisting of four subsystems: tourists, tourism resource infrastructure, technical systems, and tourism enterprises. Each subsystem has its own functions and characteristics. Tourist risk refers to the political, social, economic, and personal risks related to age, health, medical, and other risks that arise in preparation for, during, and after the trip. The main characteristics of these risks are the level and nature of the impact on the individual tourist, as well as the potential consequences for the tourist's health and economic well-being. These risks may be economic or of a different nature (psychological, emotional, aesthetic), and may arise from objective or subjective factors.

Infrastructure risks for tourism resources are composed of objective risks of the destruction of natural complexes and historical-cultural assets. The specific parameters of these risks represent the level of vulnerability of such objects to adverse natural and social factors, and their degree of instability of functioning.

Technical systems (tourism infrastructure) are designed to provide tourists and staff of tourism businesses with everyday amenities, and to meet people's specific needs for health, leisure, and active recreation. Therefore, the risks of such systems are related to the disruption of the comfort and safety of the whole life support system, as well as the disruption of the functioning of engineering, structural transport, wellness, and other systems. From a risk management point of view, the main characteristics of infrastructure facilities are the level of safety of the technical systems during operation.

Tourism enterprise risks are classified according to the groups of enterprises providing tourism services. In this case, two groups of enterprises can be

distinguished: typical enterprises, i.e., those maximally involved in the tourism industry; and related enterprises, i.e., those producing accompanying goods and providing accompanying services.

As a tourism enterprise produces a specific product (goods or services), the risk of the tourism product plays a key role in risk management.

If the entity being assessed has prior knowledge of the description of tourism systems, as well as the characteristics of potential tourism risks, the assessment can be greatly simplified. In this case, the requirements for the tourism complex can be expressed in the form of risk norms. The whole assessment procedure is then based on a comparison of the risk indicators with risk norms.

However, assessment procedures become more complex if the situation is unknown. The main challenge then becomes determining the causes, nature, and scale of the impact of the risk on the development of the tourism system. The assignment of numerical values becomes a separate task of the integrated assessment.

The economic assessment of tourism risk is carried out in 2 stages: the development of the methodology and its testing in practice, where there is a sequence to each stage, as shown in Table 12.

Table 12. Elements of the steps in the economic assessment of tourism risk

Elements	Phase 1	Phase 2
Task	Development of risk assessment methods for tourism complexes	Tourism complex risk assessment
Object	Knowledge of risk assessment theory and methodology	Specific types of tourism risks
Measures and procedures	Methods and tools for developing a risk assessment methodology	Presentation of tourism risk indicators
Product	Risk assessment methodology and guidance on its use	Evaluation tables, charts, comments

Risk assessment is carried out through a system of qualitative and quantitative

indicators. The selection of indicators is linked to the requirements for risks in tourism systems. These requirements form the basis for the list of indicators.

The methodological plan should try to identify the optimum number of indicators. It should be noted that the quantification of loss in the engineering-technical and cultural-historical spheres is straightforward, but the quantification of loss in the social sphere, such as the death of a human being, poses certain difficulties. The identification of risk indicators is only meaningful if a scale is provided with which to make the relevant assessment. The essence of developing a risk assessment scale is to find patterns in the transition from risk measurement to risk assessment. The measurement and evaluation processes reflect the unity of two sides of the same phenomenon: measurement is the quantitative side, and evaluation the qualitative side.

Key steps can be outlined in the risk assessment of a tourism complex, and the principled research design thus includes the following aspects of the research:

1. formulating the aims and objectives of the study;
2. disclosing the relationship between tourism risk and the assessment entity;
3. developing a risk assessment model;
4. developing and ranking a risk indicator system;
5. developing a risk indicator system and selecting the number of stages, ranges, and weighting factors;
6. developing risk assessment scales for tourism complexes;
7. developing methodological guidance and a study program for risk assessment;
8. gathering and organizing empirical information using statistical and expert tools;
9. obtaining risk assessment data;
10. presenting the results of the study and making recommendations for risk management

However, before this study can be carried out, it is necessary to describe the methodology in detail and to develop a specific survey instrument. The risk

assessment of a tourism complex consists of a number of indicators that describe the impact of one or another threat. It is therefore appropriate to carry out the assessment using a matrix. The rows of the matrix describe the elements of tourism risk and the columns describe the types of tourism activity. The intersection of the rows and columns will reflect the impact of the respective risk element on one or other type of tourism.

In order to establish a typical risk assessment matrix, the research methodology needs to identify the main types of tourism, assess the impact of various adverse factors, and select the inherent risk elements that are necessary for the risk assessment of the tourism complex.

The analysis of the classification of tourism in section 1 showed that four main types of inbound tourism activities can be identified:

- medical tourism;
- summer/wellness and winter/wellness;
- extreme sports;
- sightseeing tourism.

It should be noted that any granularity in tourism activities complicates risk assessment. The introduction of each new group requires the calculation of additional indicators. If the risk components are detailed, it is necessary not only to select the components in full, but also to classify them according to the variety of activities in the course of developing the matrix. For example, natural hazards, which directly affect health tourism, increase the vulnerability of tourism infrastructure and fundamentally adjust consumer preferences. In sports tourism, on the other hand, natural hazards act as stimulating factors.

According to the risk analysis carried out in the first section, the risks of the tourism complex can be described in a general way, consisting of the following components:

- natural;
- organizational-economic;

- socio-economic;
- techno-economic.

The grouping of the risk factors to be assessed according to the diversity of impacts is related to the degree of spatial distribution. For example, natural hazards have a wide-ranging impact on the development of tourism activities, while investment risks are localized, i.e., in infrastructure facilities during the preparation and implementation of the project in tourism areas.

The sequence for developing a typical risk matrix consists of three steps:

- preparation of a report on risk components and main tourism activities;
- report detailing the nature and severity of risk impacts;
- creating an evaluation matrix.

The breakdown of the risk components in the matrix is given in Table 13. It should be noted that the set of specific and additional tourism risk variables may change depending on the target destination and the scale of the assessment. The larger the target, the more aggregated the selection has to be, as in this case the most important threats to the tourism industry and to tourists themselves have to be covered. Depending on the chosen assessment section, the detailed risk assessment needs to be both more complete and more specific.

Table 13. Breakdown of risk components by type of tourism activity

Risk components	Types and indicators of inbound tourism
Natural	Medical
Natural threats	Provision of medical equipment
Threats caused by human activity	Degree of amenity of the area
Environmental accidents and disasters	Quantity and cyclical nature of recovery procedures
	Supply of mineral water and therapeutic mud
Organizational-economic	*Wellness*
Transport accidents and delays	Comfort of fixed holiday bases
Failures in tourist services (accommodation, catering, etc.)	Reliability of engineering and technical elements of tourism infrastructure

Violations of economic ties between tourism businesses	Level of attractiveness of tourism programs
Internal threats to tourism businesses	Diversity of natural and cultural-historical complexes
Material damage to tourists	Accessibility by transport and visa options
Socio-economic	*Extreme sports*
Social instability at destination	Uniqueness of natural complexes
Political-ideological constraints	Intensity of physical activity
Threats from terrorism and military conflict	Natural barriers
Economic crises	Organization of the tourist route
	Nature of medical-sanitary formalities
Techno-economic	*Sightseeing*
Utilities accidents	Concentration of natural and cultural monuments
Failure of sanitary, medical, sports equipment	Enriching tourism programs with excursions
Tourist and staff life support system failures	Comfort of transport, accommodation and meals
Relocation of supply systems	Provision of communication networks and engineering structures
Database problems	Nature of passport-visa formalities

The evaluation of the tourism complex through the matrix above changes the sequence of the evaluation steps. The development of common assessment principles is necessary not only for the development and improvement of risk assessment methodologies, but also for the development of risk assessment methodologies for specific tourism systems. The content of such methodologies may vary depending on the objectives of the study, the empirical basis, the instrument, and other objective and subjective factors that influence the results and mechanism of tourism risk assessment.

In order to analyze the macroeconomic environment of Lithuanian tourism and its impact on tourism risks, it is first necessary to carry out PEST and SWOT analyses of the Lithuanian state policy towards inbound tourism and to identify the main external and internal, as well as individual or subjective, risks of the inbound tourism complex through a survey of experts.

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CHAPTER VIII. ECONOMIC SECURITY AND TOURISM RISK MANAGEMENT

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Abstract. *Monitoring, analyzing, and forecasting the risks that lead to threats are key elements of economic security. To achieve economic security, it is necessary to minimize the risks and factors that have a negative impact on the economic sphere by making optimal use of the potential of various sectors of the economy. The use of tourism as an economic tool will have a positive impact on society, enterprises, and territorial associations through the diversification of risks, the development of infrastructure, the improvement of the image of regions, and other aspects. At the same time, there is a risk of various externalities due to environmental and social problems linked to the specific nature of tourism activities.* ***The subject of this article is*** *economic security and tourism risk management.* ***The aim of the paper*** *is to analyze the significance of tourism at all levels in the context of economic security and to develop a mechanism for managing the risks involved.*

Study objectives:

- *to set levels of economic security for tourism;*
- *to analyze the contribution of tourism to economic development;*
- *to carry out a tourism risk assessment on the basis of the main risks identified*

by experts, group them by means of factor analysis, carry out a survey of tourism service suppliers, and assess the identified risks – both external and internal – in terms of the negative impact they have and the likelihood of their occurrence for individual types of tourism activities;

- *to calculate an integrated risk index for the tourism complex;*
- *to perform a multi-criteria assessment of the inbound tourism complex.*

Research methods: *analysis of scientific literature, expert evaluation, factor analysis, COPRAS method.*

A survey of experts and the application of the multi-criteria COPRAS method led to the identification of the significance of risk factors. This method was then used to perform an integrated risk assessment. Studies have shown that the COPRAS method can be used to carry out risk assessments based on both quantitative and qualitative indicators. The results of a literature review show that in an economic risk assessment, 68 risk factors or risk assessment criteria have the highest significance in relation to external environmental factors. When comparing the significance of risk assessments in terms of the external and internal environment and personal risks faced by tourism service users, the results of an expert survey show that the most important risks are external environment risks and internal business risks. In contrast, the personal risk faced by tourism service users is rated at only 0.16, which means that the tourist's exposure to risks depends primarily on external risk factors and the internal risks related to business service providers.

The integrated risk index of the tourism complex by type of tourism is calculated, showing that the riskiest type of tourism is extreme sports tourism. The lowest risk in Lithuania's inbound tourism sector is accounted for by winter wellness and medical tourism. This is due to low risk probability estimates for infrastructure, transport, and health. Extreme sports tourism has high risk ratings due to higher probabilities of economic losses related to health or injury, and other higher risks in the operational, infrastructure, and transport risk groups.

The multi-criteria assessment of the inbound tourism complex allows risks to be

analyzed according to the main categories and permits their comparison between the different areas of the tourism complex. This model is not only valuable for the assessment of risk in tourism complexes, but also for economic risk assessments of specific enterprises operating in the tourism sector.

Keywords: *economic security, tourism risk assessment, tourism risk management, expert evaluation, COPRAS method*

Introduction

Economic security is a significant component of overall national security, which directly affects the successful development of the state. To achieve economic security, it is necessary to minimize the risks and factors that have a negative impact on the economic sphere by making optimal use of the potential of various sectors of the national economy.

In today's context of international integration and globalization, tourism and related industries are becoming increasingly important for economic security. Tourism has a qualitative impact on the socio-economic stability of territories, and ensuring economic security allows tourism operators to have a comprehensive impact on reducing both potential and actual threats.

The tourism industry not only brings economic stability to the islands and resort countries of the South, as is commonly assumed. It has also has led to significant development in many European countries, including Austria, Croatia, Iceland, Italy, and Spain (which is currently experiencing increasing resentment from its permanent residents over the huge numbers of tourists).

8.1. Levels of tourism-related economic security

Each destination has a life-cycle, from discovery to the necessity of relaunching. The environmental debate in tourism recognizes the (negative) impacts of the

travel and tourism industry on the environment. An analysis of scientific articles on the interlinkages between economic security and tourism shows a diversity of views among scholars. Padrilan et al. (2023), for example, suggest focusing on identifying the different tourism activities offered in selected tourist attractions, focusing on the different tourism management practices used by selected tourist attractions which help to maintain their businesses in the long run, and understanding whether there is a significant relationship between tourism activities and management practices. By conducting a study in Guiuan, Padrilan et al. (2023) indicate that environmental safety and risk management practices are extensively utilized by tourism destination owners, demonstrating that risk-awareness and environmental management are employed. In this case, the latter are used to assure visitors that they should feel secure enough to visit any tourist destination in Guiuan. Furthermore, cultural and human rights practices are highly observed. It is clear that tourism destination owners place value and emphasis on cultural and human rights practices, which strive to build a safe environment for tourist destinations at the aforesaid location. Operators also place a strong emphasis on constant improvement to draw in more visitors, which significantly contributes to the municipality's ability to maintain its economic stability. Based on the findings of their study, Padrilan et al. (2023) indicate that environmental safety, risk management, and continuous improvement were found to be significant for a range of different activities.

Edirisinghe et al. (2021) indicates that management in destinations can play a vital role in helping to unlock the many benefits that are associated with tourism, while also ensuring that a destination delivers something unique for travelers. This is a coordinated process, where almost all aspects of a destination are managed, including marketing efforts, local resources, accommodation, activities, events, environmental concerns, tourist attractions, and transportation. Korstanje and Seraphim (2020) provide an insightful guide for policy-makers, specialists,

and social scientists interested in the future of tourism in a society where uncertainty, anxiety and fear prevail.

Safety and security are among the most basic needs in life and are essential in tourism as in other research areas; thus, researchers need to focus on the topic. Since the 1970s, when the first scientific paper on tourism safety was published, the amount of research in this field has significantly increased. Toker and Emir (2023) carried out a bibliometric analysis on tourism safety and security research conducted over the past 45 years. The literature on the subject includes 597 studies obtained from the Scopus database. The VOSviewer scientific mapping software was used to perform the analysis. The results contribute to: tourism literature and the development of the tourism safety field; the study and development of tourism safety literature in the historical context; identifying the leading researchers, resources, journals, and countries that contribute to the field; and the analysis and visualization of relational network structures for the key concepts of the research. The results are expected to encourage researchers to focus more on tourism safety and security issues and become catalysts for raising awareness in this context. Toker and Emir (2023) indicate that studies on tourism safety and security have concentrated on terrorism, crime, COVID-19, and risk perception. However, it is striking that studies related to ecology, climate change, food and beverage safety, fear, violence, and accidents are less emphasized. In addition, security issues concerning alternative tourism, including adventure tourism, activity tourism, medical tourism, and dark tourism, have been only partially covered. In this regard, future research can investigate potential safety and security issues within the scope of emerging tourism types in order to contribute to the scientific development of the field. In addition, ecological security threats and natural disasters due to climate change may also be examined within the framework of tourism security. Considering the role of the tourism industry in climate change, the social costs of security problems are among the other vital subjects worth

examining. Therefore, it is critical to address the issue of tourism security from the perspective of sustainability, marketing, management, and alternative tourism types. On the other hand, for tourism-specific incidents on tourism safety and security, further research may concentrate on comparative content analysis of the topic. Finally, the current study utilized the VOSviewer program to map and analyze the data.

Other scholars (Akamavi et al., 2023) argue that literature on the effects of security threats such as terrorism, political instability, and geopolitical power-plays on travel and tourism has produced mixed results with scant attention paid to the spillover effects on the tourism economy (e.g., employment, leisure expenditure, travel, and tourism services' contribution to gross domestic product). In Akamavi et al.'s view, travelers and tourists react to insecurity, which leads to the suspension, cancellation, or substitution of their travel plans. This inherent reaction to insecurity is not dissimilar to the traveler's reaction to the COVID-19 pandemic – for instance, international tourism may give way to domestic tourism or staycations.

Ghaderi et al. (2016) investigated the relationship between security and international tourist arrivals. The system Generalized Method of Moments technique is applied in two panels of 29 developed and 45 developing countries over the period 2006–2012. Employing social, economic and political security indexes beside other control variables, the results show that the relationship among all the three sub-indexes of security and tourism is positive and significant in developed nations while it is negative and significant in developing countries.

A group of researchers (Ghaderi et al, 2024) identify the main threats to tourism at the turn of the century. They indicate that security threats are not new to the world travel and tourism, and they have existed for a long time. Concurrent with the development of mass tourism after the Second World War, the tourism industry has been the target of terrorists to achieve strategic or ideological

objectives, and has been affected by security incidents. The twentieth century observed two world wars, many regional conflicts and civil wars, and the threat of nuclear annihilation during the Cold War between the two big powers, the USA and the Soviet Union. However, the twenty-first century is also characterized by intensifying security concerns for tourism – from natural and environmental threats to human-induced concerns such as the 2004 Indian Ocean tsunami, European volcanic eruptions, climate change, the Japan earthquake and tsunami in 2011, the Bali bombing in Indonesia, the 9/11 attacks in the USA, the Mumbai attacks in 2008, the SARS, H1N1, and Avian influenza diseases, the global economic crisis, the US-led war against Iraq, and the Palestine and Israel conflict. The characteristics of these security concerns mean that not only has the tourism industry directly been the soft target of threats, but also the frequency and severity of these incidents has dramatically increased and become more organized. Furthermore, the geographical dimension of security incidents has been expanding (Pizam & Mansfeld, 2006), and the ripple effects encompassing the wider region (Hall et al., 2004) due to extensive media coverage of the events has grown. Media exposure sometimes adds fuel to the flame and exaggerates the magnitude and severity of security issues, especially when these incidents are considered by the media as important news generators (Pizam & Mansfeld, 2006). Hence, when incidents occur, the media become preoccupied in providing their audiences with the most vivid information and analyses of these issues.

Events in the current period (2020–2024) show that threats to tourism are only increasing – Russian attacks on Ukraine, escalating tensions with Iran, the Israeli-Hamas war, piracy by the Yemeni Houthis, and the escalation of Sino-Taiwan relations. Therefore, studies on tourism security are constantly needed, as the strengthening of a country's international authority and economic sovereignty is influenced by both the intensification of existing threats to economic security and radically new challenges to national interests. Measures taken at the national

level do not sufficiently increase the receptivity of most sectors of the economy to innovative development and the move away from foreign technologies. In this context, it is possible to look for ways to ensure greater economic security by developing industries that are less dependent on foreign technology, as well as on the global market for resources such as oil and gas. Tourism is such an industry, as it is able to diversify economic risks and create an economic cushion by realizing the potential of territories with a minimum amount of innovative technologies and without depleting natural resources. Tourism is designed to meet people's needs and to improve their quality of life by creating social and economic infrastructure and increasing revenues for budgets at all levels. It is export-oriented, and therefore more stable than other industries in unstable global markets. The consideration of the role of tourism in the context of economic security is proposed on the basis of the levels of economic security of tourism, taking into account the main interrelated and interdependent elements.

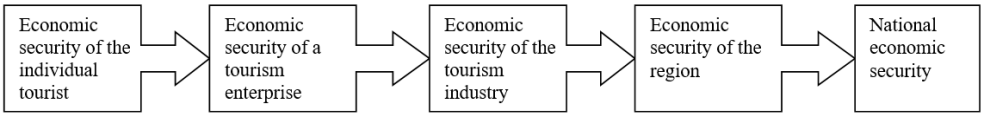


Figure 1. Levels of economic security in tourism

Source: compiled by the authors

The lowest level is the economic security of the individual tourist, which consists of the provision of a guarantee of protection of the individual's vital interests and their social and economic protection. This level influences the number of tourist arrivals in a given area or the number of customers an undertaking has, depending on the quality of the services it provides. Thus, the provision of higher-quality socio-economic services will increase tourist arrivals and have a positive impact on a higher level of economic security.

The second level analyzes the economic security of an entity operating in the tourism industry. At this stage, the rational use of the company's existing

resources and potential is the key issue. Intellectual potential is of great importance for a tourism industry enterprise. It is necessary to maximize the use of the intellectual resources of enterprises and to develop intellectual capital to attract new flows of tourists. Research shows that the economic security of a tourism enterprise enables it to develop in a sustainable way through stable, productive, and efficient operations in the face of the external environment, and covers three areas: ensuring economic security for the individual tourist (related to the first level); ensuring the functioning of the enterprise and protecting it from adverse environmental conditions (legal protection, maintaining financial and economic stability, marketing, personnel policy, etc.); and preventing the negative effects of tourist flows (prevention of environmental and social conflict).

At the enterprise level, the need to incorporate modern technologies into production processes, especially lean technologies, should be taken into account. While it is assumed that such technologies can only be used in manufacturing companies, the use of lean management in the tourism industry will allow organizations to be better prepared for increasing customer demands, as well as to reduce costs through the better and faster delivery of services. Improving the efficiency of tourism businesses will reduce economic risks and have a positive impact on both the industry's economic performance and the quality of life of the inhabitants of the relevant areas. The industry is thus an effective tool for diversifying macroeconomic risks.

The third level highlights the economic security of the tourism industry, which combines the existing situation and the development of individual interrelated economic activities, such as a hotel business, the transport network, catering establishments, medical and recreational complexes, sports and entertainment centers, etc. Thus, tourism development has a significant impact on many areas of the downstream sector, which allows us to talk not only about the generation of additional budget revenue, but also about the creation of social effects. It is this

impact that allows human potential to be realized more effectively and reduces the negative impact on the population. There is no doubt that, in this context, information flows play a major role in the development of the tourism industry. From the tourism industry's point of view, informal sources of information are the most important in this respect for management decision-making.

At the fourth level, the economic security of the territorial association in which the organizations providing tourism services operate must be taken into account, as well as the potential for attracting tourist flows. At this level, it is necessary to identify a number of factors that reflect the stability of the region in terms of the provision of tourism services. These factors include the geographical location of the region, the availability of information flows, environmental conditions, the socio-economic situation, etc. Tourism is an important element in terms of economic growth and strategic national development priorities.

The fifth level (the highest) considers tourism in the context of a country's economic security. This level describes the many macroeconomic factors influencing tourism. For example, the share of tourism in a country's GDP, the impact on the quality and standard of living of the population, the number of people employed in the tourism industry, the impact on related industries, the total cost of tourist arrivals, etc.

8.2. The development of the tourism sector

The role of the tourism industry in the economy can be examined by identifying the dynamics of individual indicators.

Between 2012 and 2023, the tourism industry in Lithuania has been steadily expanding. Tourism value added has increased from €372.6 million in 2012 to €707.0 million in 2023 (Turizmas, 2024). A new national tourism brand, structural changes in the organization responsible for the implementation of tourism marketing, a consistent increase in the competitiveness of Lithuania's tourism

opportunities in the regions, and other factors have helped to create the conditions for this period to be characterized by a strong increase in both inbound and outbound tourism flows. As can be seen in the chart below (Figure 2), tourism receipts grew at a fairly rapid pace during the period under analysis, largely driven by strong growth in inbound tourist expenditure.

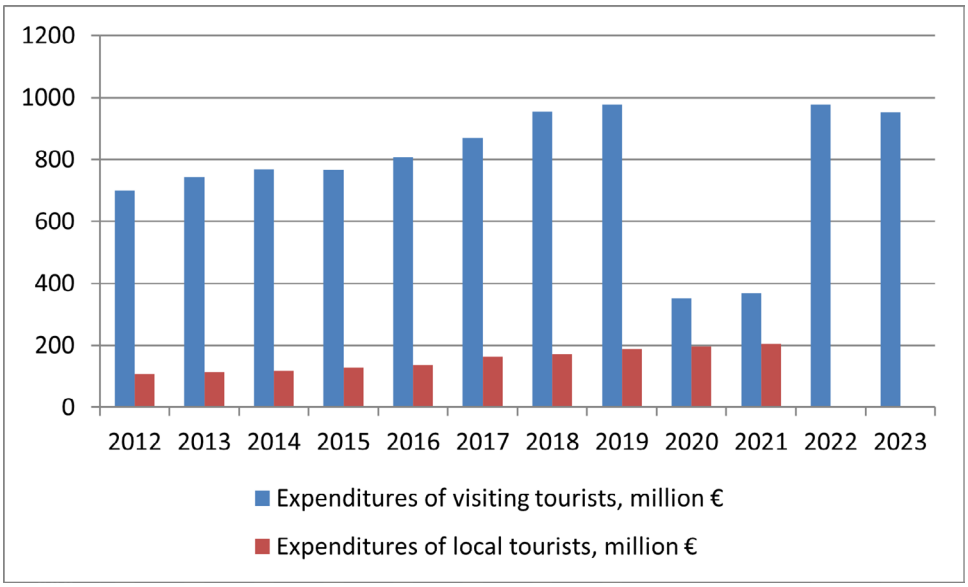


Figure 2. Expenditures of visitors and domestic tourists in Lithuania, 2012–2023

Source: Turizmas (2024)

It can also be noted that the COVID-19 pandemic period was characterized by a strong drop in tourist arrivals, so the negative impact of the pandemic is undeniable. It is not possible to assess the impact of COVID-19 (for the 2020–2021 period) on domestic tourist expenditure as no data is yet available.

Domestic tourism in Lithuania is growing, but its value creation is much lower than that of inbound tourism. In 2022, each foreign tourist spent on average around €374 per trip in Lithuania, while each domestic tourist spent €103 (Turizmas, 2024. Although the share of tourism in the country's economy depends on the performance of other sectors, before the COVID-19 pandemic it reached and even exceeded the value of the agriculture and forestry sector, which

is particularly important for Lithuania. The tourism sector has a huge potential for service exports. Before the pandemic, it employed over 51,000 people, and in some regions tourism is the most important employer.

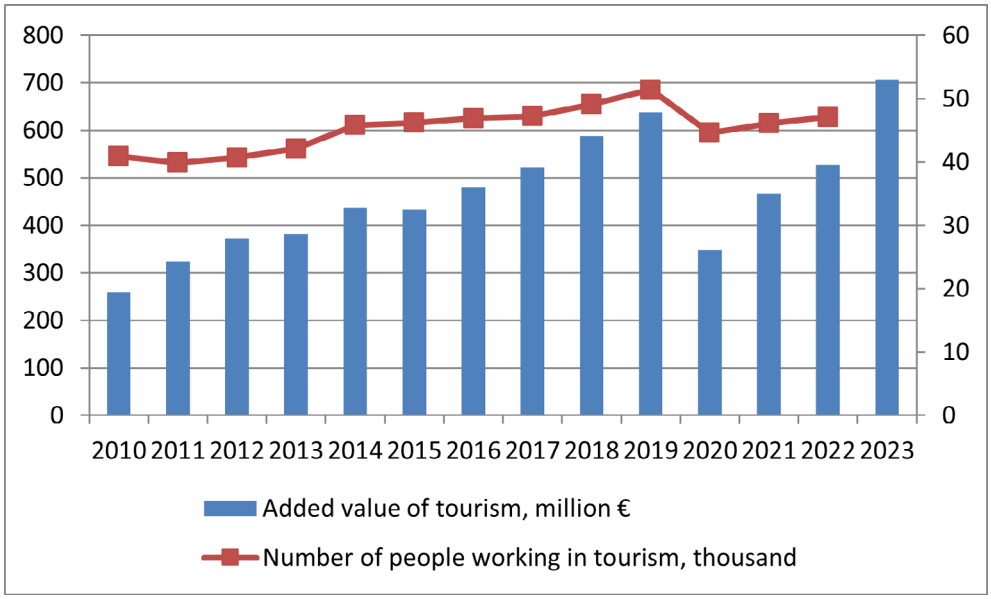


Figure 3. Tourism value added (million €) and number of people employed (thousands) in tourism in Lithuania, 2010–2023

Source: Department of Statistics (2024)

Tourism's added value and share of GDP, while increasing year on year, remain negligible, but the country's economy is large and many other industries are also growing. It would therefore be appropriate to look not only at the relative share of GDP, but also at the quantitative volumes of revenue and tourist arrivals.

The tourism industry is underperforming due to the industry's weak competitiveness and lack of incentives from the authorities. This problem is particularly acute in times of domestic economic crisis. In order to ensure a better level of economic security, it is necessary to create the conditions for developing the competitiveness of the industry's operators, as tourist flows can protect regions from risk situations in the event of an economic downturn in the manufacturing sector. The tourism industry is a high-risk business, which is highly influenced by both

external and internal factors and conditions. The increased interest of foreign tourists in Lithuanian tourism products needs to be maintained and developed, as inbound tourism not only benefits tourism businesses, but also has a multiplier effect on the related economic sectors that sell goods and services to foreign tourists during their trips. Significant changes in the external environment of the tourism industry affect the economic security of the tourism business and the possibilities of ensuring it in Lithuania.

Tourism safety is a key challenge for all those involved in tourism. The occurrence of hazards during travel not only causes direct damage from the incident, but also economic consequences such as a reduction in demand for the tourism product. Depending on the level of the emergency, the economic damage and the cost of restoring the confidence of tourists can be so high that it can lead to the collapse of the entire tourism industry.

The concept of security is defined in scientific literature and state legislation as a state of protection of the vital interests of the individual, society and the state against internal and external threats. Tourism security is a complex of interrelated factors and phenomena resulting from the interaction of three main tourism agents – the territory with its individual configuration and the correlation of conditions and resources, the persons initiating tourism development in a given territory (territory owners and tour operators), and, in fact, tourists.

The economic security of the tourism sector is understood as the most effective use of available resources to prevent threats, successfully counteract emerging negative impacts, and ensure stable functioning and development. Thus, tourism economic security is a complex concept consisting of many interrelated and interdependent factors. Based on the approaches to the definition of economic security that exist in the scientific literature, it is possible to distinguish a number of tourism economic security and development objects and to divide them into levels.

Current methods of tourism security research only allow for tourism-based economic security to be assessed as a separate component, without taking into account other levels. This raises the problem of the lack of a comprehensive approach to assessing economic security. Developing a comprehensive assessment of all components of tourism-based economic security will provide objective information on the state of tourism in the country. On the basis of such an assessment, it will be possible to develop a tourism-based economic security monitoring system that will significantly increase the attractiveness of the tourism industry.

Tourism services are provided by a large number of independent businesses offering different activities (tour operators, travel agencies, restaurants, hotels, tourist information centers, etc.), all working towards their own objectives. This study will analyze tour operators, who are defined by the World Tourism Organisation as businesses that combine two or more travel services (e.g., transport, accommodation, catering, entertainment, excursions) and sell them, either through travel agencies or directly as a single product to end-users (known as a package), at competitive prices (Frechtling, 2010). These activities can be analyzed from two perspectives: producers of the tourism product, and sellers of the tourism product. In the first case, from the point of view of the producers of the tourism product, the activities of tour operators are similar to those of manufacturing companies: there are resources and reserves, suppliers and consumers, costs and investments. In the second case, the tour operator acts as a wholesaler of tourism services. In this respect, the tour operator sells its product to a travel agent rather than to the final consumer. The tour operator becomes the link between tourism enterprises and the final sellers of tourism services. The main risk in this link lies with the tour operator, who is responsible for the quality of the product and for avoiding failures. This situation increases the need to look for points of contact between the company's risk policy and the tour operator. The tour operator, as a specific economic entity, is involved in various relationships.

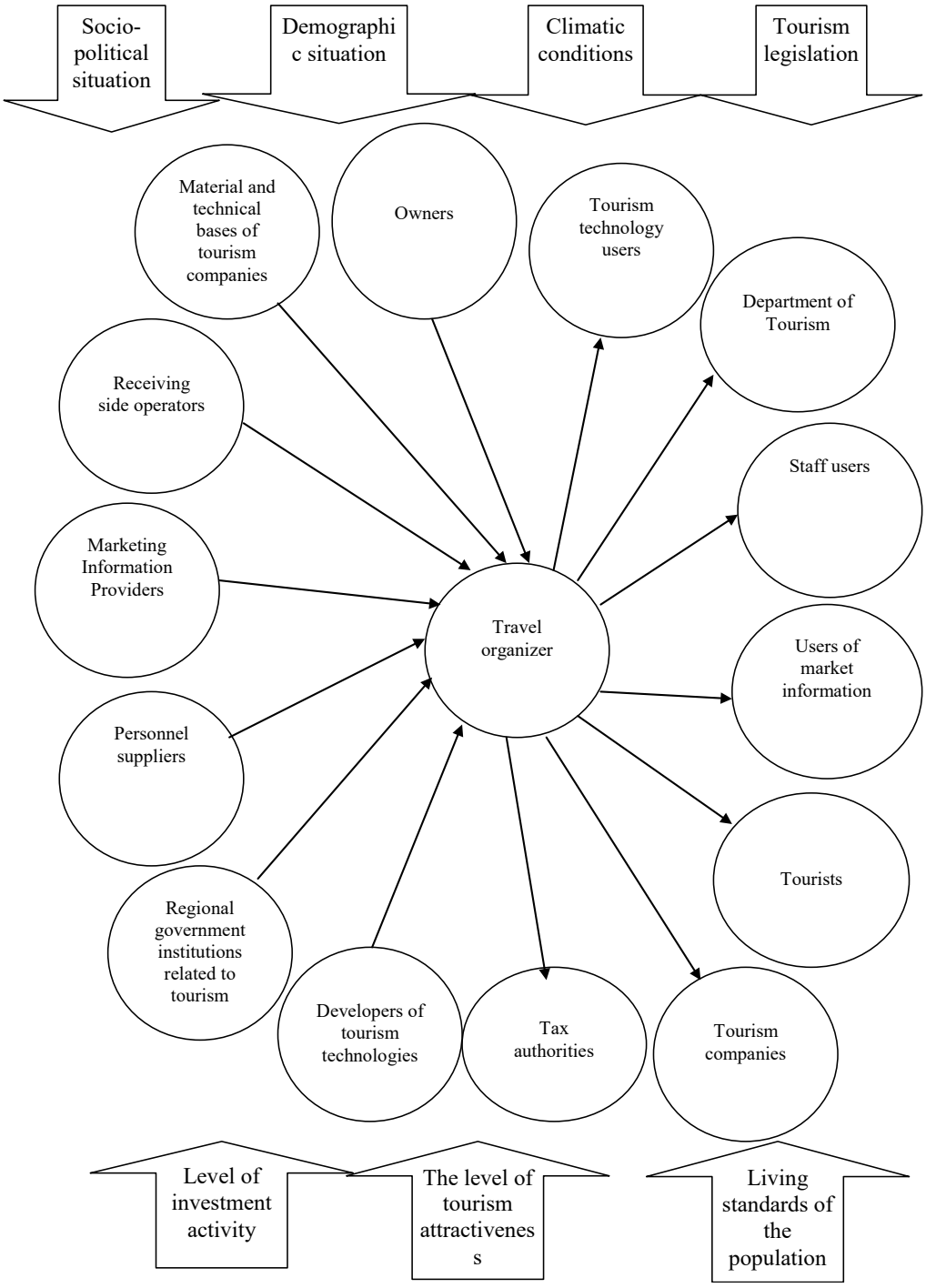


Figure 4. Tour operators' economic relationships

Risk factors include only the random processes of the tour operator. This approach is based on the stochastic nature of risk, which makes it impossible to predict or forecast many economic events in advance. Risk factors differ in their heterogeneous expression, the discreteness of their measurement, and their abrupt termination.

The variety of risk factors leads to the emergence of risks associated with virtually all activities of tour operators. The scientific literature is rich in risk classification criteria (Raval & Fichadia, 2007; Kerzner, 2013; Assael, 1995; Engel et al., 1995; Mowen & Minor, 1998; Schiffman & Kanuk, 1991; Fuchs & Reichel, 2006; Shaw, 2010; Sönmez et al., 1999; Aziz, 1995; Bar-On, 1996; Leslie, 1999; Richter & Waugh, 1986; Enders et al., 1992; Sönmez, 1998; Gartner & Shen, 1992; Hollier, 1991; Ioannides & Apostolopoulos, 1999; Pizam, 1999; Pizam et al., 2002; Richter, 1992; Seddighi et al., 2001; Teye, 1986; Wall, 1996; Carter, 1998; Cossens & Gin, 1994; Lawton & Page, 1997; Brunt et al., 2000; Dimanche & Leptic, 1999; Ellis, 1995; Garcia & Nicholls, 1995; Hall et al., 1995; Moore & Berno, 1995; Pizam et al., 1997; Navickas, 2010; Mačerinskienė & Sakhanova, 2011; Pridotkienė, 2009). Based on the work of the authors listed above, a classification of tour operators' risk has been developed, which is presented in Figure 5.

In related studies, the vast majority of authors focus on the risk perceptions of tourists, especially after the 9/11 attacks in the USA (Fuchs & Reichel, 2011; Kim et al., 2015; Wolff et al., 2019), providing a reliable reference for tourism service optimization and tourist risk management. In contrast, relatively few studies have focused on identifying risks for tourism companies. Among the few studies that take companies as research samples, the topics are more concerned with risk management, assessing a specific risk related to an event, or the influence of company characteristics (such as corporate social responsibility and advertising spending) on their risk status (Kim et al., 2015; Lee & Jang, 2011; Paraskevas & Quek, 2019; Park et al., 2017). While these studies provide specific recommendations

for business management, they still lack a theoretical framework, resulting in a fragmented understanding of company risks in general. Li et al. (2020) analyzed 51,008 risk headings from 255 public companies' financial statements, where 30 risk exposures for tourism companies can be observed. From the internal perspective, each sub-industry has unique business characteristics, and the risk exposures it faces are also different: high debt risk, funding risk, and credit risk can reflect the economic attributes of casinos and the gaming industry; partnership risk is the representative risk of the hotels, resorts, and cruise lines industry; high investment risk and catastrophe risk is due to the many outdoor activities and the larger floor space in the leisure facilities industry; and supply risk, potential/ongoing lawsuits, and demand fluctuation risk reflect the characteristics of the restaurant industry. From the time perspective, most risk exposures maintain a relatively stable disclosure proportion. Risk exposures with an average fluctuation rate exceeding 5% include tax risk (5.98%), epidemic risk (5.86%), asset impairment risk (5.25%), information technology risk (4.98%), food safety risk (4.36%), and seasonal risk (–4.47%).

However, it should be borne in mind that tourism risks are local in nature, i.e., risks are defined by the chronological order of certain events. Further down the line, the consequences of the risk may arise, which may vary in severity and form a trend. It is therefore necessary to distinguish between the content of the risk as a potential threat and the outcome of the risk as potential damage.

The variety and scope of risk exposures makes it necessary for tour operators to seek effective regulatory approaches and instruments. Two trends can be identified: macroeconomic regulation of tourism risk problems, which is part of the state regulation of the tourism economy, where the main thrust is to improve market conditions with third countries; and the use of internal reserves of insurance against operating losses (micro level).

There are two ways of assessing the risk of tour operators:

- Investigating and classifying potential counterparty issues.
- Carrying out a risk assessment by analyzing the financial stability of the tour operator.

The two are linked, as the stability of a tour operator is linked to the reliability of tourism providers and the quality of business diagnostics.

The risk analysis of third parties (with whom the tour operator enters into a contract) should include an expert assessment of the counterparty's performance. It is appropriate to analyze the weaknesses of the counterparty that may influence unexpected and negative events.

Financial soundness analysis should be carried out by examining specific indicators on the company's balance sheet.

All risk analysis methods for tourism entities are based on the internal stability test. Stability in this context is understood as the strength of a company's internal and external links. Instability is seen as an inadequate response to the impact of risk factors, the absence of strong links between the tour operator and the economic environment, and the inability to withstand negative changes in the competitive environment.

The risks of tourism service providers are linked to the risks of demand for their services, which in turn depend on the personal risks of the tourism service users, as well as on external environmental factors: natural, political, and economic factors, which also affect personal risks. Thus, the risks to the tourism consumer depend not only on external environmental factors, but also on the internal risks to the tourism supplier. Therefore, when assessing the risks of an inbound tourism complex, some of the risks on the sides of the supplier and consumer overlap, and it is thus necessary to take into account the interrelationship between the risks and their factors on each side when assessing the risks of a tourism complex.

Another important aspect in assessing the risks of an inbound tourism complex is the assessment of these risks in relation to the types of inbound tourism activities: therapeutic; summer/health and winter/health; extreme sports; and sightseeing. This is because these inbound tourism business risks are characterized by different risks, both in terms of the certainty of the risk and the potential for losses. Therefore, in the tourism supply sector, risks will be assessed by type of tourism activity.

Thus, when assessing the risks of tourism service providers, it is important to conduct a survey of tourism business service providers based on the main risks identified by experts and grouped by factor analysis, and to assess external and internal risks in terms of the negative impact they have and the likelihood of their occurrence for individual tourism activities. In order to carry out such a survey, it is necessary to draw up a questionnaire allowing for a qualitative assessment of these risks by means of a 5-point Likert scale for both the probability and potential impact of individual risks. The results obtained will allow for an assessment of the external and internal risks for each type of tourism and a final assessment of the significance of each risk.

In order to uncover and evaluate the economic processes under study, researchers are confronted with confusing patterns of observed variation, unclear interrelationships, a huge number of qualitative and quantitative variables, and unreliable data. The search for the most appropriate methods then often turns to factor analysis, whose methods allow hundreds of variables to be handled simultaneously, compensating for random errors, unraveling complex interrelationships, and identifying patterns and periodicities in their evolution.

Factor analysis helps to analyze and identify patterns and structure in a phenomenon. All phenomena occurring at a given place and time have patterns of variation, and many of these patterns are linked by interdependent relationships. Factor analysis is special in that it does not have a single solution. The correlation

matrix can be represented by factors in an infinite number of ways. Moreover, factor analysis is not a single method. The SPSS software offers the following methods: the principal components method, the maximum likelihood method, general factor analysis, the unweighted least squares method, the alpha method, and image factors. The choice of the best method is usually determined by the convenience of the calculation, as well as by the preference or attachment of the researcher, who may find one or another method more adequate to their perception of the generalities.

Factor analysis methods solve two types of problems: exploratory and confirmatory. According to these objectives, factor analysis is also called exploratory and confirmatory. Confirmatory factor analysis is used when theoretical or empirical research is known in advance and it is required to confirm or extend existing knowledge. In addition, factor analysis reduces the amount of data, which often complicates the analysis of market processes. Factor analysis techniques identify a number of general patterns in which concentrated information can be substituted without loss for information captured in dozens of attributes.

Factor analysis is one of the tools used to construct an empirical typology. Interrelated attributes are grouped into distinct categories, which can be used to form groups of objects with similar characteristics, to assess relationships, and to make comparisons.

Thus, the task of factor analysis is to categorize observable variables into groups that are united by some factor that is not directly observable, based on correlations (Shrestha, 2021). Moving from a large number of variables to factors can concentrate information. The factors themselves often do not have a quantitative measure – e.g., aggression or altruism cannot be measured directly – but these concepts can be imagined as categories that unite groups of attributes. Factor analysis aims to:

- reduce the large number of variables by moving towards fewer common

factors;
- validate the scale used by showing that the components of the scale fall within the same factor and at the same time remove those components that fall within multiple factors;
- create orthogonal (uncorrelated) factors that can be used in regression analysis, avoiding the problem of multicollinearity of variables.

Factor analysis belongs to the General Linear Model (GLM) category and relies on assumptions similar to those of multivariate linear regression (Garson, 2013), the main examples being: linear dependence of the variables, interval data or data close to it, appropriate choice of knits, and no multicollinearity of variables. The condition of multivariate normality is imposed when the maximum likelihood method is used for factor extraction. In general, the condition of a normal distribution of variables is not critical for factor analysis. Factor analysis is also applicable to rank variables with a consistent, close-to-interval scale of measurement. However, in the case of binary data, too many factors are extracted, with many variables being assigned to them. For ordinal Likert scale data, interval scale analysis methods (including factor analysis) are widely used, where the scale is composed of at least 5, and preferably 7, values. The following steps take place in factor analysis:

– data is checked for suitability for factor analysis;
– factor extraction – determining the number of factors;
– factor rotation and interpretation;
– calculating estimates of factor values.

Factor analysis does not make sense for uncorrelated variables. Therefore, it is first necessary to ascertain whether the observed variables are correlated with each other. This helps to establish Bartlett's sphericity criterion, which tests the hypothesis that the correlation matrix of the variables is unitary, i.e., that all the observed variables are uncorrelated. If Bartlett's sphericity criterion results in a *p-value* greater than the chosen significance level α, i.e., the hypothesis is accepted,

then factor analysis is not applicable to the data. The linear factor analysis model is applied to a set of variables that are linearly correlated. This means that the partial correlation coefficients between two variables should be small compared to the correlation coefficients between those variables. The Kaiser–Meyer–Olkin (KMO) measure assesses whether the data are suitable for factor analysis in this respect. The KMO is an index of comparison between the empirical values of the correlation coefficients and the values of the partial correlation coefficients. If the KMO measure has a low value, the factor analysis of the variables under consideration is not successful. A low KMO value indicates that the correlation between pairs of variables is not explained by other variables. The KMO is assumed to be at least 0.7, and in the limiting case at least 0.6 (Shrestha, 2021). SPSS automatically calculates the *p*-values and KMOs of Bartlett's sphericity criteria.

A risk assessment of a tourism complex needs to be carried out from the perspective of both tourism service user and tourism service, as their risks are interrelated. When assessing the risks of a tourism service complex, it is appropriate to apply an integral approach, which would allow for the assessment of the risks of tourism entities, objects, processes, and phenomena at various levels. A flowchart for the risk assessment of tourism services is presented in Figure 5 below.

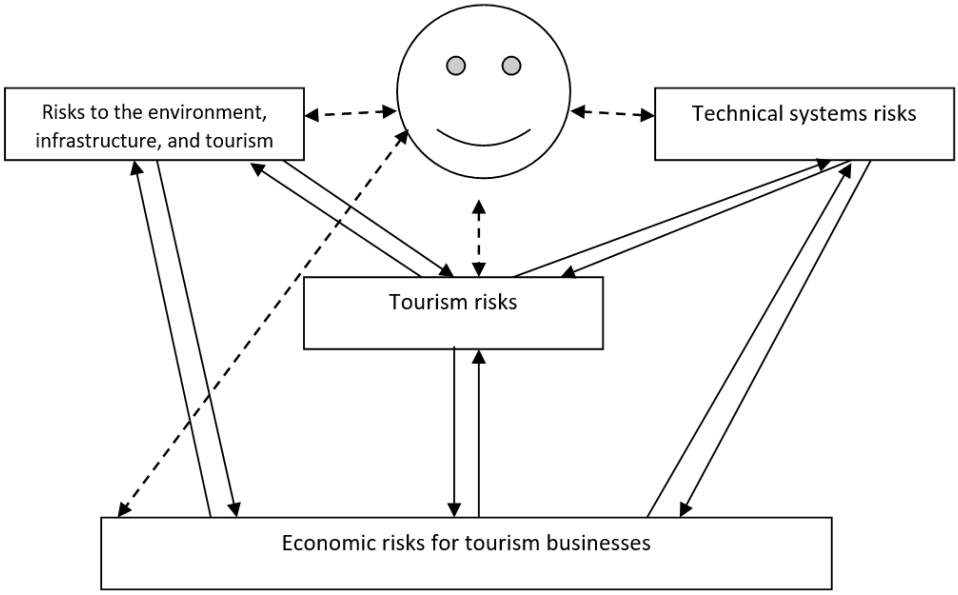


Figure 5. Risk assessment for consumers of tourist services

As can be seen from Figure 5, the risks for the inbound tourism consumer depend on the risks of the tourism providers and the environmental, infrastructural, technical, and personal risks of the consumer. In contrast, the risks of the tourism supplier depend on both the risks of the external environment and the personal risk factors of the tourism consumer, so that a risk assessment of the tourism complex needs to take into account all risks.

All existing negative risk factors are concentrated at the base level. Negative risk factors are grouped into different clusters (Wilks & Moore, 2003; Reichel et al., 2007; Li et al., 2020). Using previously studied risk assessment methodologies (Wilks & Moore, 2003; Reichel et al., 2007; Hotia et al., 2007; Sun et al., 2008; Šakienė & Zovytė, 2009; Shaw, 2010; Labanauskaitė, 2011; Oroian, 2011; Demir et al., 2020; Caldara et al., 2021), an integrated risk assessment on the consumer side of the tourism service may be depicted as follows:

$$R_b = \sum_{i=1}^{3} \propto_1 \cdot R_i \qquad (1)$$

where: R_b is the general risk assessment; is the weighting of the risk indicator at the i-th baseline level; is the risk assessment of the i-th baseline risk (i = 1 is personal risk; i = 2 is external environmental risk; and i = 3 is the internal risk of the tourism service provider). The baseline risk assessment is based on the m^1 indicator assessment of , with the lower order differential equation set as follows:

$$R_i = \sum_{j=1}^{m_i^1} \beta_{ij}^1 \cdot R_{ij}^1 \qquad (2)$$

where: β_{ij}^1 is the weighting of the j-th risk indicator of the first differentiated level; R_{ij}^1 is the risk assessment of the j-th group of the first differentiated level; and m_i^1 is the number of risk indicators at the first differentiated level.

The second and nth differentiated levels are calculated by means of a recurrence relation:

$$R_{ij}^{p-1} = \sum_{i=1}^{k_{ij}^p} \gamma_{ijl}^p \cdot R_{ijl}^p \qquad (3)$$

where: γ_{ijl}^p is the weighting of the third risk indicator at the differentiated level l; R_{ijl}^p is the risk assessment for the l-th group of the differentiated level p; k_{ij}^p is the number of risk indicators at the differentiated level; and p is the number of the differentiated level (p = 2,3.....n).

For a practical risk assessment, we will use two levels of assessment, i.e., p = 2. Each level is characterized by a corresponding number of risk indicators. The assessment of the base level can be presented as follows:

$$R_b = \alpha_1 R_1 + \alpha_2 R_2 + \alpha_3 R_3 \qquad (4)$$

The weightings are determined by the relative role of the relevant baseline indicator. The sum of the weightings shall be equal to 1; α_1, α_2, and α_3 shall be determined by an expert survey.

Accordingly, risk assessment must be carried out at all levels.

Each valuation parameter must be represented in a summative multiplicative model. For the first parameter (personal risk) at level 1, this would be:

$$R_1 = \beta_{11}^1 R_{11}^1 + \beta_{12}^1 R_{12}^1 + \beta_{13}^1 R_{13}^1 \qquad (5)$$

where: R_{11}^1 is the risk of psychological and educational problems; R_{12}^1 is age and health risks; R_{13}^1 is financial risk; and β_{ij}^1 is a risk-weighted indicator.

Thus, the assessment of personal risk (R_1) consists of the risk of psychological and educational problems (R_{11}^1), age and health risks (R_{12}^1), and financial risks (R_{13}^1). Each of these components forms a differentiated level 2.

Thus, the risk of psychological and educational problems can be presented as follows:

$$R_{11}^1 = \gamma_{111}^2 R_{111}^2 + \gamma_{112}^2 R_{112}^2 + \gamma_{113}^2 R_{113}^2 \qquad (6)$$

where: R_{111}^2 is the risk of insufficient language skills; R_{111}^2 is the risk of cultural differences; and R_{113}^2 is the risk of insufficient skills.

Financial risks include: the risk of running out of cash while travelling; the risk of credit card payment problems; the risk of currency exchange problems, etc. Health risks in turn consist of the risk of health problems and accidents, the risk of not receiving medical services on time, the risk of a lack of adequate medicines, etc.

The results of the risk assessment should show the localization of the risk. The risk assessment approach applied from the point of view of the consumer of tourism services will enable the risk profile of modern inbound tourism to be identified by tourism businesses. Further implementation of the risk model is linked to the development of compensation measures, the neutralization of negative risk phenomena, and insurance.

Both the personal risks of the consumer of the tourism service and the internal risks of the tourism service provider, as well as the risks of environmental factors, will be assessed through the calculation of integrated risk indicators. The risk

assessment will be carried out using qualitative risk assessment indicators based on an assessment of the likelihood of the risk and the resulting impact. A survey of experts will be carried out to assess the risk indicators. This expert assessment will also allow for the determination of the significance of the individual risk level indicators based on the risk estimates provided by experts.

Classical methods of analysis and assessment are not sufficient to fully analyze the risks of a tourism complex, their main drivers, and their impact. In the context of a comprehensive risk assessment of tourism facilities, it is rational to combine quantitative and qualitative assessment. It is the multi-criteria methods of analysis that allow for a more comprehensive study of an object, linking quantitative and qualitative criteria and integrating the results of economic evaluation methods into the analysis. On the basis of multi-criteria analysis methods, tourism complexes or their components, such as tourism service providers, service companies, and tour operators, can be analyzed comprehensively, taking into account the quantitative and qualitative parameters of the market conjuncture characterizing the object (e.g., the objective is to identify the quantitative – e.g., area served, number of facilities, cost of production or service, production capacity, cost of restoration – and qualitative – e.g., legislative and regulatory constraints, technological novelty, environmental compliance, level of innovation, influence of interest groups, etc. – criteria characterizing the market). All of these important criteria have an impact on the assessment of business risk in the tourism sector.

Methods for determining the values and significance of criteria for environmental factors can be broadly divided into two groups:

- methods that allow criteria to be expressed in quantitative units (e.g., monetary, technical parameters, other units of measurement);
- methods by which criteria are expressed/described in relative, qualitative units (scores, percentages).

While quantitative criteria can be expressed in monetary terms or in terms of

technical parameters that characterize objects, the determination of the values and significance of qualitative criteria is more complex. The significance of qualitative criteria can be determined by analyses, scientific studies, databases, and articles, by comparing analogous objects with the objects under consideration, or by analyzing the macro, meso, and micro environments of regions with similar development trends. The values and significance of qualitative criteria are usually determined by means of expert or sociological surveys. Using expert methods, the values of qualitative criteria can be determined as follows:

- determining the best value for a given criterion;
- giving the best value of the criterion in question a value of, e.g., 1 point (or 10 points, or 100%);
- establishing the ratio between the best criterion value and the values of all the other criteria;
- giving relative values to remaining criteria in such a way that their sum equals 1;
- setting the significance levels of the criteria.

In order to achieve comparability, the values of quantitative and qualitative criteria should be normalized using formulas used in the literature (Ginevičius & Podvezko 2005; Zavadskas et al., 1999). The most widely used method for determining the significance of criteria in different areas is the expert judgment method. By assessing the significance of criteria using expert methods, we can prioritize them in order of importance. Although expert methods do not calculate the values of quantitative criteria with high precision, the complex method of determining the importance of criteria assesses their qualitative and quantitative characteristics. The significance of the criteria can be assessed using a ranking method. This method usually involves the evaluation of criteria on the basis of methodologically designed questionnaires, completed by experts, which are set up in such a way that the significance of the criteria or groups of criteria can be assessed.

The risk assessment of tourism complexes first identifies the external risks that have the greatest impact, both in terms of the damage caused and the likelihood of occurrence. A system of quantitative and qualitative criteria affecting the risks must then be established and their significance determined. In describing the risks of tourism service providers, the environment of the sector as a whole must be taken into account and relevant information describing the macro-, meso-, and micro-environmental factors affecting the risks must be selected.

The risk analysis of the selected tourism business service providers is then carried out by creating a multi-criteria analysis grouped decision-making matrix, which contains the quantitative and qualitative information developed. Once the grouped decision matrix has been compiled and the multi-criteria analysis of alternatives has been carried out, it is possible to select the riskiest area or business in the tourism supply chain and to analyze the most important determinants of this high risk. This also identifies the values and significance of the risks of the facilities under consideration.

Using the multicriteria comprehensive proportional assessment method (COPRAS), the business riskiness of the selected tourism service providers can be determined and ranked. This ranking depends on a framework of risk factors that adequately characterize the selected facilities, the risk assessment values, and the magnitudes of the significance values, which are determined by the experts during the survey.

The multi-criteria complex proportional assessment method calculates the priority and significance of the objects under consideration in four stages (Kaklauskas et al., 2006; Zavadskas et al., 1999; Andria et al., 2021; Liao et al., 2023):

Stage 1. The aim of this step is to obtain dimensionless (normalized) estimates from the comparators. The dimensionless estimates allow a comparison of all the

indicators in different units of measurement. This is done using the following formula:

$$d_{ij} = \frac{x_{ij} \cdot q_i}{\sum_{j=1}^{n} x_{ij}}, \quad i = \overline{1,m}; \quad j = \overline{1,n}, \tag{6}$$

where: x_{ij} is the value of risk i in decision option j; m is the number of risks; n is the number of options compared; and q_i is the significance of risk i.

The sum of the dimensionless weighted values, d_{ij}, obtained for each risk, x_i, is always equal to the significance, q_i, of that risk category:

$$q_i = \sum_{j=1}^{n} d_{ij}, \; i = \overline{1,m}; \; j = \overline{1,n} \tag{7}$$

The significance value, q_i, of the risk under consideration shall be apportioned to all alternatives according to their values, x_{ij}.

Stage 2. Calculate the sums of the normalized scores of the minimizing S_{-j} and maximizing S_{+j} estimated for option j. The following formulae are used to calculate them:

$$S_{+j} = \sum_{i=1}^{m} d_{+ij}; \tag{8}$$

$$S_{-j} = \sum_{i=1}^{m} d_{-ij}; \; i = \overline{1,m}; \; j = \overline{1,n}. \tag{9}$$

In this case, the larger the size of S_{+j}, the higher the riskiness of the object under consideration. The smaller the value of S_{-j} (negative risk factors), the more environmental factors that negatively influence the degree of riskiness of the object. In any case, the sums of the pluses, S_{+j}, and the minuses, S_{-j}, of all the alternatives are always equal to the sums of all the values of the maximizing and minimizing risk factors, respectively:

$$S_{+} = \sum_{j=1}^{n} S_{+j} = \sum_{i=1}^{m} \sum_{j=1}^{n} d_{+ij}; \qquad (10)$$

$$S_{-} = \sum_{j=1}^{n} S_{-j} = \sum_{i=1}^{m} \sum_{j=1}^{n} d_{-ij}; \; i = \overline{1,m}; \; j = \overline{1,n}. \qquad (11)$$

This is another way of checking the correctness of the calculations made.

Stage 3. The relative significance (effectiveness) of the options being compared is determined on the basis of the positive risk indicators, S_{+j}, and the negative risk indicators, S_{-j}. The relative significance, Q_j, of each object, *aj*, is determined according to the following formula:

$$Q_j = S_{+j} + \frac{S_{-\min} \cdot \sum_{j=1}^{n} S_{-j}}{S_{-j} \cdot \sum_{j=1}^{n} \frac{S_{-\min}}{S_{-j}}}; \quad j = \overline{1,n}. \qquad (12)$$

Stage 4. Prioritization of the sites under consideration in terms of risk. The higher the Q_j, the higher the riskiness of the object. If $Q_1 > Q_2 > Q_3$, then the first object can be considered the riskiest.

The above approach makes it relatively easy to assess and then select the riskiest options. The generalized criterion, Q_j, developed depends directly and proportionally on the relative influence of the values, x_{ij}, and the significances, q_i, of the risks being compared in the final result. This gives an objective prioritization of the objects to be analyzed in terms of their riskiness. The calculations using the multicriteria complex assessment method are usually carried out using software which allows the selection of the appropriate number of objects for the analysis and the use of a sufficient number of quantitative and qualitative indicators to characterize the risks in detail.

Stage 5. A clustered decision-making matrix for multi-criteria analysis of the analyzed objects is created, as shown in Table 1.

Table 1. Multi-criteria analysis grouped decision matrix

Risks of comparable objects $(a - a)_{1n}$	* (+ / –)	Significance	Unit of measurement	Evaluative and comparative objects					
				a_1	a_2	...	a_j	...	a_n
1. Personal risk factors	ž	q_1	m_1	x_{11}	x_{12}	...	x_{1j}	...	x_{1n}
2. External risk factors	$ž_2$	q_2	m_2	x_{21}	x_{22}	...	x_{2j}	...	x_{2n}
Health risks	$ž_i$	q_i	m_i	x_{i1}	x_{i2}	...	x_{ij}	...	x_{in}
Criminogenic situation	...	...	...	...	...	...	...	...	...
Economic risk	$ž_t$	q_t	m_t	x_{t1}	x_{t2}	...	x_{tj}	...	x_{tn}
3. Tourism business risk factors	$ž_{t+1}$	q_{t+1}	m_{t+1}	$x_{t+1\,1}$	$x_{t+1\,2}$	...	$x_{t+1\,j}$	...	$x_{t+1\,n}$
Business risks	$ž_{t+2}$	q_{t+2}	m_{t+2}	$x_{t+2\,1}$	$x_{t+2\,2}$	...	$x_{t+2\,j}$	...	$x_{t+2\,n}$
Operational risk	$ž_i$	q_i	m_i	x_{i1}	x_{i2}	...	x_{ij}	...	x_{in}
...	...	...	...	...	...	...	...	...	...
Competitiveness	$ž_m$	q_m	m_m	x_{m1}	x_{m2}	...	x_{mj}	...	x_{mn}
Sum of ranks				Q_1	Q_2	...	Q_j	....	Q_n

* *A +/– symbol indicates that a positive or negative value of the indicator corresponds to the impact of the risk*

In a complex site analysis, it is rational to combine quantitative and qualitative assessment. Multi-criteria methods of analysis allow for a more comprehensive study of the object, linking quantitative and qualitative criteria and integrating technical data and the results of economic evaluation methods or analyses in the analysis. Methodologies for weighting criteria are known as weighting methodologies, and are one of the methods of preference elicitation for quantifying or qualitatively assessing the importance that people attach to certain criteria for deciding on the implementation of a given measure. These methods include a wide range of surveys, which quantify public values, and indirect assessment methods, where relevant factors are identified through discussions between working groups or stakeholders to determine their preferences.

The methods for determining the values and significance of the criteria for external risk factors can be broadly divided into two groups:

- methods that allow risk assessments to be expressed in quantitative units (e.g. economic units, technical parameters).
- methods by which criteria are expressed/described in relative qualitative units (scores, percentages).

While quantitative criteria can be expressed in monetary terms or in other parameters, the determination of the values and significance of qualitative risk assessments is more complex. The significance of qualitative criteria can be determined by analyses, scientific studies, or databases, by comparing analogous objects with the objects under consideration, or by analyzing the macro, meso, and micro environments of regions with similar development or development trends. The values and significance of qualitative criteria are usually determined by means of expert or sociological surveys.

However, the use of expert methods to determine the values and significance of criteria (risks) may not avoid errors in determining the significance of quantitative criteria. As the values of the criteria change, so do their significance. Therefore, it is necessary to correctly determine the values of the criteria when determining their significance. The significance of the criteria should be constant across all comparisons. It is also necessary to adjust the significance of quantitative and qualitative criteria according to their importance.

In an expert judgment approach, it is important to establish the significance of the criteria, without which it is difficult to assess the reliability of the study. The purpose of this calculation is to determine whether there is a sufficient degree of agreement between the opinions of the individual experts to be able to rely on the results of the expert evaluation. The degree of agreement between the experts is indicated by Kendall's concordance coefficient, *W*. The calculation of this coefficient, using the established table of indicators of expert judgement, is carried

out on the basis of the formulae in the literature. This coefficient is equal to 1 if all experts have the same opinion. When all the rankings are different, the coefficient is equal to 0 (Podvezko, 2005).

It is difficult to achieve consistency of opinion in the development of a wide range of solutions in many economies in the tourism sector. In order to ensure the credibility of studies, experts must be selected in such a way that the social and interest groups they represent, the level of knowledge they have in the area under analysis, and their qualifications allow them to provide a balanced view reflecting qualitative indicators.

The concordance coefficient, *W*, can be used to determine the consistency of the opinions of a group of experts. The concordance coefficient is calculated as follows:

$$W = \frac{12S}{m^2 n\left(n^2 - 1\right)}, \quad W \in [0;1] \qquad (13)$$

where: *m* is the number of experts, *j* = 1,2..., *m*; *n* is the number of indicators, *i* = 1,2..., *n*; and *S* is the sum of squares of the deviations of the indicator values (ranks) from the overall mean of the experts' rank.

The sum of the squares of the deviations of the ranks, *Rij*, of each criterion from the mean rank, *S*, can be conveniently calculated using the following formula:

$$S = \sum_{i=1}^{n}\left[\sum_{j=1}^{m} R_{ij} - \frac{1}{2}m(n+1)\right]^2, \qquad (14)$$

where *Rij* is the rank given to the *i*-th criterion (indicator) by the *j*-th expert.

If the experts are in agreement, the value of the concordance coefficient, *W*, is

close to one; if the assessments are very different, the value of *W* is close to zero. The concordance coefficient can be used in practice if a threshold value is set to indicate when the experts' assessments can still be considered to be consistent. Kendall has shown that if the number of objects, *n*, is >7, the significance of the concordance coefficient can be determined using the χ^2 criterion:

$$\chi^2 = Wm(n-1) = \frac{12S}{mn(n+1)}, \qquad (15)$$

The random variable is distributed according to the χ^2 distribution with $\nu = n - 1$ degrees of freedom. According to the chosen significance level, α (in practice, α is usually taken to be 0.05 or 0.01), the critical value, χ^2_{kr}, is found from the χ^2 distribution table with $\nu = n - 1$ degrees of freedom. If the value of χ^2 calculated according to formula (5) is higher than χ^2_{kr}, the experts' assessments are in agreement.

In order to perform a factorial risk analysis of the tourism complex, a structured questionnaire covering 68 risk factors of tourism business was developed, the results of which were processed with Microsoft Excel and the SPSS software package (Field, 2005; Pukėnas, 2009).

The factor analysis led to the identification of 12 risk factors (categories):

F1 – Operational risk (internal risk).

F2 – Natural environment risks.

F3 – Country competitiveness risk.

F4 – Criminogenic situation and political environment risks.

F5 – Infrastructure risk.

F6 – Business risk (internal risk).

F7 – Health risks.

F8 – Economic risk.

F9 – Transport risks.

F10 – Risk of psychological and educational gaps (personal).

F11 – Health and age risks (personal).

F12 – Financial risk (personal).

The ratings (mean value*)* of all of these risk factors were determined as the average of the ratings of all the smaller risk factors that make up the risk factor. The 12 risk factors accounted for 60% of the total variation. All factors had relatively high reliability coefficients, ranging from 0.35 (for health risk) to 0.93 (for operative risk). Reliability coefficients were calculated according to the KMO test. KMO is a comparative index of the empirical values of the correlation coefficients and the values of the partial correlation coefficients. If the KMO measure has a low value, the factor analysis of the variables under consideration is not successful. A low KMO value indicates that the correlation between pairs of variables is not explained by other variables. It is assumed that KMO should be at least 0.7, or at least 0.6 in a borderline case (Čekanavičius & Murauskas, 2002).

Although the KMO obtained for the health factor is 0.35, which is quite low, only two risk factors describe this factor. All other calculated KMOs exceed 0.63 (one factor exceeding 0.63) and the calculated KMOs for all other 9 factors exceed 0.82. This indicates that, with the exception of the health factor, all other assessment results are reliable.

The internal correlation between a group of factors describing a particular factor indicates whether the specific factors are correctly assigned to the factor. The health factor has an internal correlation coefficient of 0.15, which is the lowest possible according to the requirements for factor analysis (Pukėnas, 2009). The internal correlation between risk factors in the other groups ranges from 0.15 to 0.69, indicating high internal consistency. The high correlation between a factor and its constituent factors, obtained for all factors, of more than 0.3, indicates a good compatibility of the factors selected to describe the factor.

Another important indicator in factor analysis is the weightings of the factors that make up each factor. A factor (e.g., operational risk) is considered to

be related to those variables – X_1, X_2, ... X_n (product mix, theft, etc.) – for which the weight estimates, λ_k, are at least 0.4 in absolute value (Pukėnas, 2009, formula 4.10). A positive weight indicates that the variable is positively correlated with the factor, while a negative weight indicates a negative correlation. Variables are equally important regardless of the sign of their weight (Pukėnas, 2009). As can be seen from the data presented in Table 2, all the factor weights are above 0.4, indicating that the respective factors are correlated with the factors.

The KMO test, the weights of the factors, and the internal correlation between the factors in the group showed that the factors were well chosen and grouped to describe the risk factors. A summary of the factor analysis results is presented in Table 2.

The KMO, the factor weights, and the internal correlation between factors were calculated using SPSS.

Table 2. Factor analysis results

Risks	***Factor weighting coefficients***	***Average value***	***KMO***	***Internal correlation between factors within a group***
Factor 1: Operational risk		**2.29**	**0.93**	**0.49**
Product range too small	0.806			
Theft/fraud in business by staff	0.792			
Theft by tourists	0.755			
Black market	0.753			
It is impossible to meet the needs of tourists	0.738			
Excessive prices in the industry in general	0.729			
Technological innovations such as reservation systems	0.700			
Lack of quality services	0.574			
Staff turnover	0.570			
Overtime worked by staff	0.476			
Frequency of leave and absenteeism	0.422			

Number of temporary staff compared to total staff	0.370			
Factor 2: Nature		**2.47**	**0.85**	**0.48**
Urbanization	0.814			
Seasonality	0.807			
Water contamination	0.713			
Air pollution	0.515			
Factor 3: Competitiveness		**3.18**	**0.82**	**0.36**
Negative country image	0.754			
Exchange rate fluctuations	0.681			
Currency exchange rate	0.547			
Low airline security	0.538			
Increase in international competition	0.537			
Inadequate airport security	0.530			
Increase in competition in the industry	0.354			
Changing tourist needs	0.277			
Factor 4: Criminogenic situation		**2.71**	**0.83**	**0.49**
Political unrest in the country	0.782			
Political instability in neighboring countries	0.764			
Wars/conflicts	0.578			
Terrorist activities	0.548			
Climate change	0477			
Fires	0.403			
Natural cataclysms	0.397			
Kidnapping and theft	0.277			
Factor 5: Infrastructure		**3.27**	**0.82**	**0.33**
Poor road safety in the form of road conditions, inadequate streets	0.686			
Prices too high	0.679			
Low level of IT technology development	0.558			
Poor public utilities such as water, electricity, sewage, etc.	0.430			

Too little attention paid to advertising from local authorities	0.418			
Ineffective national marketing	0.398			
Non-compliance with legislation	0.364			
Poor road safety in the form of road conditions, inadequate streets	0.363			
Prices too high	0.350			
Factor 6: Business risk		**2.83**	**0.84**	**0.51**
Shortage of skilled workers	0.776			
Lack of experienced staff	0.772			
Ageing tourism sector	0.760			
Insufficient funding for training	0.586			
Lack of adequate financial systems	0.468			
Insufficient funds for product development	0.278			
Factor 7: Health risks		**2.11**	**0.35**	**0.15**
HIV/AIDS	0.753			
COVID-19	0,789			
Diseases such as tuberculosis, influenza	0.688			
Factor 8: Economic risk		**3.12**	**0.63**	**0.46**
Inflation	0.763			
Interest rate	0.750			
Declining tourist leisure	0.291			
Factor 9: Transport risk		**2.88**	**0.82**	**0.69**
Rising fuel prices	0.455			
Transport-related costs	0.371			
Flight delays or cancellations due to unreliable airlines	0.285			
Insufficient tourist transport capacity	0.258			
Factor 10: Psychology and education		**2.00**	**0.65**	**0.55**
Insufficient knowledge of languages	0.355			

Cultural differences	0.471			
Insufficient skills	0.185			
Insufficient knowledge of languages	0.258			
Factor 11: Age and health		**2.01**	**0.63**	**0.56**
Health problems and accidents	0.733			
Failure to provide timely medical services	0.750			
Lack of necessary medicines	0.331			
Factor 12: Financial situation		**2.22**	**0.72**	**0.59**
Lack of cash when travelling	0.563			
Credit card payment problems	0.550			
Currency exchange problems	0.391			

The factor analysis shows the risks assessed by travel agencies based on the average score for the factor and for the individual sub-factors describing the factor. The importance of the risk category describing each factor is represented by factor importance. The factor analysis carried out led to the identification of 12 risk factors and the grouping of the factors, describing them accordingly. The data obtained allow the design of a questionnaire for a survey of experts to assess the risks to the tourism complex in terms of their likelihood of occurrence and their economic impact on the basis of the risk factors identified, which cover a range of important risk factors.

8.3. Expert risk assessments of the inbound tourism complex

A consumer risk assessment of the inbound tourism complex was carried out by interviewing experts, covering external environmental risks, internal risks of tourism service providers, and personal risks of tourism service users by type of tourism activity. The multi-criteria COPRAS method was applied to find the significance of the risk factors. This method led to the integrated risk assessment described in formulae 1 to 6. The COPRAS method can also be used to carry out risk assessment on the basis of both quantitative and qualitative indicators

(Ginevičius & Podvezko, 2005; Zavadskas et al., 1994; Kubiliūtė & Neverauskienė, 2023). This study was limited to qualitative assessments, but COPRAS allows multi-criteria risk assessment based on both quantitative and qualitative indicators.

Expert methods are usually used to determine the significance of qualitative criteria. In order to investigate and determine the significance of the risks at all levels of risk assessment, a survey questionnaire was designed. The questionnaire was designed to assess all the risks for the selected tourism complexes, i.e., leisure tourism, winter wellness tourism, summer wellness tourism, sightseeing tourism, and extreme sports tourism. For the expert survey, 6 expert groups (containing 6 experts each) representing different parts of the tourism complex with different interests were formed. As the assessment of the risks of the tourism complex and macroenvironmental aspects requires specific knowledge of the country's macro-economic business environment, one group of experts consisted of financial analysts and academics working in the field of macro-economic policy. The other group of experts consisted of service level employees of the tourism complex who are directly involved in the provision of services to tourists. An important group of experts are the guides who serve tourists and are the most familiar with the personal risks of tourists. Managers of travel agencies and their departments are the most familiar with the internal risks of tourism suppliers, and are therefore best placed to assess them. Managers of tourist information centers are also in a good position to objectively assess the various risks of a tourism complex, both in terms of the marketing of services and other risks. In order to make the study more objective, the experts were grouped as follows:

expert group 1 – staff at the service level of the tourism complex;

expert group 2 – heads of tourism agency departments

expert group 3 – heads of travel agencies;

expert group 4 – tour guides;

expert group 5 – heads of tourist information centers;

expert group 6 – economic experts.

The questionnaire was divided into three sub-sections, describing external risks, internal risks, and personal risks.

Each sub-system consisted of a series of indicators describing risk factors. The latter risk factors are in turn composed of a series of risk factors. The risk questionnaire had to assess the economic losses both in terms of the probability of the occurrence of the risk and its consequences on a 5-point scale. The higher the risk significance obtained, the more important this criterion was to the expert who assessed its significance and the more it will have an impact on the final outcome of the risk assessment. The averages of the criterion scores calculated from the expert assessment results and the resulting final risk assessment significances were determined for each expert group and for all expert groups. The COPRAS method allows for the assessment of both the positive and negative influence of risk factors. In the expert survey, all risk factors were formulated as positively influencing the increase in risk.

Table 3 summarizes the significance ratings for the tourism complex risk factors.

Table 3. Assessing the significance of risk factors in the tourism complex

Risks	Risk factors	Description of the risk		+ -	Average of the sum of the criteria scores under all experts					Σ (6- 10)	Criteria Significance (Exp. Groups I– VI)	Ranking of criteria
					Therapeutic tourism	Winter Fitness	Summer Fitness	Cognitive	Extreme sports tourism			
1	2	3	4	5	6	7	8	9	10	11	12	13
Personal risk for the consumer of tourism services	Psychology a and education	Insufficient knowledge of languages	scores	+	6	6	16	16	15	59	0.0186	**1**
		Cultural differences	”	+	8	9	8	8	20	53	0.0167	2
		Insufficient skills	”	+	20	20	16	16	25	97	0.0306	3
	Age and health	Health problems and accidents	”	+	10	20	9	9	25	73	0.0231	4
		Failure to provide timely medical services	”	+	10	15	12	12	20	69	0.0218	5
		Lack of necessary medicines	”	+	6	8	4	4	20	42	0.0133	6
	Financial situation	Lack of cash when travelling	”	+	6	9	9	9	9	42	0.0133	7
		Credit card payment problems	”	+	4	8	6	6	9	33	0.0104	8
		Currency exchange problems	”	+	6	9	9	9	9	42	0.0133	9

External environmental risks	National competitiveness	Negative country image	”	+	15	15	20	20	12	82	0.0259	10
		Exchange rate fluctuations	”	+	9	12	15	15	9	60	0.0190	11
		Currency exchange rate	”	+	8	8	4	4	8	32	0.0101	12
		Low airline security	”	+	10	10	10	10	10	50	0.0158	13
		Increase in international competition	”	+	9	12	8	8	8	45	0.0142	14
		Inadequate airport security	”	-	8	8	8	8	8	40	0.0126	15
		Increase in competition in the industry	”	+	9	9	6	6	9	39	0.0123	16
		Changing tourist needs	”	+	6	9	9	9	15	48	0.0152	17
	Infrastructure	Poor road safety in the form of road conditions, inadequate streets	”	+	10	10	10	10	8	48	0.0152	18
		Prices too high	”	+	6	16	12	12	12	58	0.0183	19
		Low level of IT technology development	”	+	6	4	6	6	6	28	0.0088	20
		Poor public utilities such as water, electricity, sewage, etc.	”	+	5	4	4	4	5	22	0.0070	21
		Too little attention to advertising from local authorities	”	+	9	12	12	12	16	61	0.0193	22
		Ineffective national marketing	”	+	9	12	9	9	16	55	0.0174	23
		Non-compliance with legislation	”	+	4	6	9	9	20	48	0.0152	24
		Power outages	”	+	8	9	9	9	9	44	0.0139	25
	Transport	Rising fuel prices	”	+	9	6	9	9	15	48	0.0152	26
		Transport-related costs	”	+	8	20	5	5	4	42	0.0133	27
		Flight delays or cancellations due to unreliable airlines	”	+	9	6	6	6	6	33	0.0104	28
		Insufficient tourist transport capacity	”	+	9	9	9	9	9	45	0.0142	29
	Economic environment	Inflation	”	+	4	4	4	4	4	20	0.0063	30
		Interest rate	”	+	4	9	6	6	12	37	0.0117	31
		Declining tourist leisure	”	+	16	12	12	12	6	58	0.0183	32
		Reduced tourist revenue due to the economic crisis	”	+	4	1	2	2	9	18	0.0057	33
	Natural environment	Urbanization	”	+	16	16	12	12	8	64	0.0202	34
		Seasonality	”	+	5	5	5	5	3	23	0.0073	35
		Water contamination	”	+	10	10	10	10	10	50	0.0158	36
		Air pollution	”	+	5	5	10	10	10	40	0.0126	37
	Health risks	HIV/AIDS	”	+	15	8	8	8	3	42	0.0133	38
		Diseases such as cholera, tuberculosis, malaria, COVID-19	”	+	5	5	4	4	3	21	0.0066	39
	Criminogenic situation and political stability in the country	Political unrest in the country	”	+	8	6	8	8	6	36	0.0114	40
		Political instability in neighboring countries	”	+	5	5	5	5	5	25	0.0079	41
		Wars/conflicts	”	+	5	5	10	10	10	40	0.0126	42
		Terrorist activities	”	+	8	10	6	6	10	40	0.0126	43
		Climate change	”	+	15	15	10	10	10	60	0.0190	44
		Fires	”	+	15	15	15	15	20	80	0.0253	45
		Natural cataclysms	”	+	5	4	4	4	4	21	0.0066	46
		Kidnapping and theft	”	+	10	6	6	6	6	34	0.0107	47
		High overall criminogenic level	”	+	8	6	15	15	20	64	0.0202	48

Internal risk of the tourist service provider	Business risks	Shortage of skilled workers	”	+	15	6	25	25	25	96	0.0303	49
		Lack of experienced staff	”	+	9	6	9	9	9	42	0.0133	50
		Ageing tourism sectors	”	+	12	12	16	16	16	72	0.0227	51
		Insufficient funding for training	”	+	12	12	15	15	15	69	0.0218	52
		Lack of adequate financial systems	”	+	12	12	12	12	15	63	0.0199	53
		Insufficient funds for product development	”	+	16	16	12	12	8	64	0.0202	54
	Operational risk	Product range too small	”	+	8	8	8	8	12	44	0.0139	55
		Theft/fraud in business by staff	”	+	3	3	3	3	3	15	0.0047	56
		Theft by tourists	”	+	9	3	3	3	3	21	0.0066	57
		Black market	”	+	6	8	15	15	6	50	0.0158	58
		It is impossible to meet the needs of tourists	”	+	12	9	12	12	12	57	0.0180	59
		Excessive prices in the industry in general	”	+	8	8	8	8	10	42	0.0133	60
		Technological innovations such as reservation systems	”	+	12	15	12	12	6	57	0.0180	61
		Lack of quality services	”	+	6	4	6	6	4	26	0.0082	62
		Staff turnover	”	+	4	4	4	4	16	32	0.0101	63
		Overtime worked by staff	”	+	4	4	4	4	4	20	0.0063	64
		Frequency of leave and absenteeism	”	+	9	9	9	9	12	48	0.0152	65
		Number of temporary staff compared to total staff	”	+	12	12	12	12	20	68	0.0215	66
		Customer complaints	”	+	12	12	12	12	20	68	0.0215	67
		Non-compliance with statutory norms	”	+	6	6	16	16	15	59	0.0186	68
		Number of rankings			**738**	586	611	618	618	3165	1	

The results of the expert assessment show that among the 68 risk factors or risk assessment criteria in the economic risk assessment, external environmental factors have the highest significance. The ranking of the significances was based on the order of priority given by the experts, as shown in Table 4.

Table 4. Ranking of tourism complex risk factors in order of significance

x_i	Criterion	Significance of criterion
1	Operational risk	0.17
2	Business risks	0.15
3	Risks related to national competitiveness	0.13
4	Criminogenic risk	0.11
4	Infrastructure risks	0.10
5	Psychological factors	0.07
6	Age and health-related risks	0.06
7	Transport risks	0.05
8	Economic environment risks	0.05

9	Natural environment	0.05
10	Financial risks	0.04
11	Health risks	0.02
	Total	1

When comparing the significance of the risk assessment in terms of the external environment, the internal tourism business environment, and the personal risks of tourism service users, the results of the survey of experts showed that the most important risks are external environmental risks (0.5172) and internal business risks (0.332). In contrast, the personal risk of the tourism consumer is only 0.16, meaning that the risks faced by the tourist depend primarily on external risk factors and the internal risks of business service providers.

The expert evaluations were further analyzed using the criterion significance ranking method. The significance of the criteria can be determined using the following formula:

$$q_j = \frac{t_j}{\sum_{j=1}^{n}\sum_{k=1}^{r} t_{jk}}. \qquad (16)$$

In the present study, the significance levels are as follows: $q1$ = 0.0186; $q2$ = 0.0167; $q3$ = 0.0301.

To determine whether the results of the study are sufficiently reliable and can be used for further analysis, the consistency of the experts' opinions was established. The reliability of the study was checked by calculating the degree of agreement between the groups of experts, expressed as a concordance coefficient. In this study, the experts were grouped according to their individual interest groups, and the concordance of opinions was therefore assessed on the basis of the aggregated results of the groups' criterion scores.

The sum of the squares of the deviation of the scores for each criterion was calculated according to the following formulae (Kvederytė et al, 2000):

$$S = \sum_{j}^{n} \left(\sum_{k=1}^{r} t_{jk} - \frac{1}{n} \sum_{j=1}^{n} \sum_{k=1}^{r} t_{jk} \right); \quad (17)$$

$$T_k = \sum_{l=1}^{H_l} \left(h_l^3 - h_l \right) \quad (18)$$

where: T_k is the indicator of the ranks involved in rank k; H_l is the number of ranks in rank k; h_l is the number of ranks in rank k; l is the number of related ranks in group for k experts; t_{jk} is the rank assigned to the criterion of k experts; r is the number of experts; and n is the number of criteria to be assessed.

The average of the sum of the criterion ranks was then calculated.

$$1/68(59+53+57..+..67+68)=3165/68=46.54$$

The sum of the squares of the deviation of the scores for each criterion was then calculated:

$$S = (59 - 46.54)^2 + (53 - 46.54)^2 + (6746.54)^2 + ...+ (59 - 46.54)^2 = 21192$$

Using the above ranking and formulas, we can determine the concordance coefficient (the degree of agreement between opinions) and its significance:

$$W = \frac{12 \times 21192}{36 \times 24360} = 0.29$$

This calculation establishes the reliability of the expert survey conducted. The coefficient indicates the degree of agreement between the individual opinions (the coefficient is equal to 1 if all the experts' rankings are the same, 0 if all the rankings are different, and 0 if the experts' opinions are not the same). The calculated value of the coefficient of concordance, W, is greater than zero, so we can conclude that the reliability of the significance values of the criteria obtained by the ranking method is sufficient.

The criterion for the concordance factor is defined as follows:

$$\chi^2 = 254304/(6 \times 68 \times 70) = 48.9 > \chi^2$$

The number of degrees of freedom for this problem is:

$$v = n - 1 = 68 - 1 = 67$$

The study used 68 criteria assessed by 6 expert panels. The result shows a low degree of agreement between the experts. This is understandable, as the criteria values were set by different expert groups assessing the environment and its impact on the sector. In addition, the 69 criteria evaluated make the study more complex and expert bias more likely. In order to increase the reliability of the study, it could be carried out by determining the significance of the criteria separately for each of the sub-systems of the risk under consideration: external risk factors, internal business risk factors, and personal risk factors. This would make the study simpler for the experts. The experts' evaluations are stochastic in nature, and changing the composition of the groups would also change the values of the indicator scores and the table on which the concordance coefficient depends (Podvezko, 2005).

The results of the expert survey were processed using a multi-criteria complex proportional hazards method, and are summarized in Table 5.

Table 5. Economic risk assessment of tourism complex risk factors

Risks	Risk factors	Description of the risk		+ -	Numerical values of the normalized criteria assessed					Significance of the criteria
					Therapeutic tourism	Winter Fitness	Summer Fitness	Cognitive	Extreme sports tourism	
1	2	3	4	5	6	7	8	9	10	11
Personal risk for the consumer of tourism services	**Psychology a and education**	Insufficient knowledge of languages	**scores**	+	0.007	0.007	0.019	0.019	0.018	0.01871
		Cultural differences	”	+	0.007	0.008	0.007	0.007	0.017	0.01681
		Insufficient skills	”	+	0.025	0.025	0.020	0.020	0.031	0.03076
	Age and health	Health problems and accidents	”	+	0.009	0.019	0.008	0.008	0.023	0.02315
		Failure to provide timely medical services	”	+	0.011	0.016	0.013	0.013	0.022	0.02188
		Lack of necessary medicines	”	+	0.004	0.005	0.003	0.003	0.013	0.01332
	Financial situation	Lack of cash when travelling	”	+	0.009	0.013	0.013	0.013	0.013	0.01332
		Credit card payment problems	”	+	0.005	0.009	0.007	0.007	0.010	0.01047
		Currency exchange problems	”	+	0.009	0.013	0.013	0.013	0.013	0.01332
External environmental risks	National competitiveness	Negative country image	”	+	0.020	0.020	0.026	0.026	0.016	0.02601
		Exchange rate fluctuations	”	+	0.011	0.015	0.019	0.019	0.011	0.01903
		Currency exchange rate	”	+	0.010	0.010	0.005	0.005	0.010	0.01015
		Low airline security	”	+	0.016	0.016	0.016	0.016	0.016	0.01586
		Increase in international competition	”	+	0.011	0.014	0.010	0.010	0.010	0.01427
		Inadequate airport security	”	-	0.013	0.013	0.013	0.013	0.008	0.01269
		Increase in competition in the industry	”	+	0.012	0.012	0.008	0.008	0.012	0.01237
		Changing tourist needs	”	+	0.010	0.009	0.009	0.009	0.015	0.01522
	Infrastructure	Poor road safety in the form of road conditions, inadequate streets	”	+	0.015	0.015	0.015	0.015	0.012	0.01522
		Prices too high	”	+	0.007	0.018	0.018	0.014	0.014	0.01840
		Low level of IT technology development	”	+	0.009	0.006	0.009	0.009	0.009	0.00888
		Poor public utilities such as water, electricity, sewage, etc.	”	+	0.007	0.006	0.006	0.006	0.007	0.00698
		Ineffective national marketing	”	+	0.011	0.015	0.015	0.015	0.019	0.01935
		Too little attention to advertising from local authorities	”	+	0.010	0.013	0.010	0.010	0.017	0.01744
		Non-compliance with legislation	”	+	0.003	0.005	0.007	0.007	0.015	0.01522
	Transport	Rising fuel prices	”	+	0.012	0.014	0.014	0.014	0.014	0.01395
		Transport-related costs	”	+	0.009	0.006	0.009	0.009	0.015	0.01522
		Flight delays or cancellations due to unreliable airlines	”	+	0.005	0.013	0.003	0.003	0.003	0.01332
		Insufficient tourist transport capacity	”	+	0.010	0.007	0.010	0.007	0.007	0.01047

	Economic environment	Inflation	”	+	0.014	0.014	0.014	0.014	0.014	0.01427
		Interest rate	”	+	0.006	0.006	0.006	0.006	0.006	0.00634
		Declining tourist leisure	”	+	0.004	0.004	0.006	0.006	0.012	0.01173
		Reduced tourist revenue due to the economic crisis	”	+	0.018	0.014	0.037	0.037	0.007	0.01840
	Natural environment	Urbanization	”	+	0.003	0.003	0.001	0.001	0.006	0.00571
		Seasonality	”	+	0.020	0.020	0.015	0.015	0.010	0.02030
		Water contamination	”	+	0.007	0.007	0.007	0.007	0.004	0.00729
		Air pollution	”	+	0.008	0.016	0.016	0.016	0.016	0.01586
	Health risks	HIV/AIDS	”	+	0.063	0.006	0.013	0.013	0.013	0.01269
		Diseases such as tuberculosis, influenza	”	+	0.013	0.007	0.013	0.007	0.003	0.01332
	Criminogenic situation and political stability in the country	Unstable political situation	”	+	0.007	0.007	0.005	0.005	0.004	0.00666
		Political unrest in neighboring countries	”	+	0.011	0.009	0.011	0.011	0.009	0.01142
		Wars/conflicts	”	+	0.008	0.008	0.008	0.008	0.008	0.00793
		Terrorist activities	”	+	0.006	0.006	0.013	0.013	0.013	0.01269
		Climate change	”	+	0.010	0.013	0.008	0.008	0.013	0.01269
		Fires	”	+	0.019	0.019	0.013	0.019	0.013	0.01903
		Natural cataclysms	”	+	0.019	0.019	0.019	0.019	0.025	0.02537
		Kidnapping and theft of tourists	”	+	0.007	0.005	0.005	0.007	0.005	0.00666
		High overall criminogenic level	”	+	0.011	0.006	0.006	0.006	0.006	0.01078
Internal risk of the tourist service provider	Business risks	Shortage of skilled workers	”	+	0.008	0.008	0.015	0.015	0.020	0.02030
		Lack of experienced staff	”	+	0.018	0.018	0.030	0.030	0.030	0.03045
		Ageing tourism sectors	”	+	0.013	0.013	0.013	0.013	0.013	0.01332
		Insufficient funding for training	”	+	0.017	0.017	0.023	0.023	0.023	0.02284
		Lack of adequate financial systems	”	+	0.018	0.018	0.022	0.022	0.022	0.02188
		Insufficient funds for product development	”	+	0.016	0.016	0.016	0.016	0.020	0.01998
	Operational risk	Product range too small	”	+	0.020	0.020	0.015	0.015	0.010	0.02030
		Theft/fraud in business by staff	”	+	0.009	0.014	0.009	0.009	0.014	0.01395
		Thefts by tourists	”	+	0.005	0.005	0.005	0.005	0.005	0.00476
		Black market	”	+	0.003	0.003	0.003	0.003	0.003	0.00285
		It is impossible to meet the needs of tourists	”	+	0.006	0.008	0.016	0.016	0.006	0.01586
		Excessive prices in the industry in general	”	+	0.018	0.018	0.018	0.018	0.018	0.01808
		Technological innovations such as reservation systems	”	+	0.011	0.011	0.011	0.011	0.013	0.01332
		Lack of quality services	”	+	0.014	0.018	0.036	0.014	0.009	0.01808
		Staff turnover	”	+	0.008	0.005	0.012	0.008	0.005	0.00825
		Overtime worked by staff	”	+	0.003	0.003	0.003	0.003	0.010	0.01015
		Frequency of leave and absenteeism	”	+	0.006	0.006	0.006	0.006	0.006	0.00634
		Number of temporary staff compared to total staff	”	+	0.011	0.011	0.011	0.011	0.015	0.01522
		Customer complaints	”	+	0.013	0.013	0.013	0.013	0.036	0.02157
		Non-compliance with statutory norms	”	+	0.013	0.013	0.013	0.013	0.036	0.02157
		Sum of maximizing criteria, S_+			0.767	0.764	0.814	0.782	0.877	**1**
		Object significance, *Qj*			**0.767**	**0.764**	**0.814**	**0.782**	**0.877**	
		Ranking of objects according to the economic impact of risk			**4**	**5**	**2**	**3**	**1**	

The significance of *Qj* was determined, thus outlining the riskiest elements of tourist complexes.

The assessment of the inbound tourism complex in terms of the most important risk criteria affecting the probability of risk and the economic consequences of risk has been presented, both in terms of the significance of the risk criteria and their values. Therefore, from the information presented in the table, an integrated risk index of the tourism complex by type of tourism can be calculated, the calculation of which is presented in formulae 1 to 6. Multiplying the values of each risk by the weights of the criteria and summing the weighted risks gives the risk assessment of tourism complexes by type of tourism. For example, the overall risk score for therapeutic tourism is 0.767, and the scores for the individual levels are summarized in Table 6.

Table 6. Significance of risk criteria and values by risk category

x_i	Criterion	Medical tourism	Winter Fitness	Summer wellness	Cognitive	Extreme sports tourism	Significance of criterion
1	Operational risk	9.87	10.20	12.17	10.47	12.90	0.17
2	Business risks	5.350	5.350	6.300	6.300	6.500	0.15
3	Risks related to national competitiveness	6.767	7.150	6.433	6.433	6.533	0.13
4	Criminogenic situation	8.050	7.400	7.217	7.750	7.417	011
5	Infrastructure risks	11.47	12.42	12.00	11.75	13.08	0.10
6	Psychological factors	1.58	1.65	2.04	2.04	2.94	0.07
7	Age and health-related risks	1.20	1.95	1.16	1.16	3.00	0.06
8	Transport risks	2.89	3.07	2.85	2.52	2.87	0.05
9	Economic environment risks	3.33	3.08	4.50	4.50	3.38	0.05
10	Natural environment	2.94	3.44	2.97	2.97	3.10	0.05
11	Financial risks	1.78	2.89	2.67	2.67	3.00	0.04
12	Health risks	6.00	1.03	2.00	1.53	1.20	0.02
	Overall risk indicator		0.764	0.814	0.782	0.877	1

As can be seen from the information presented in Table 6, extreme sports tourism is the riskiest type of tourism. The lowest risk in Lithuania's inbound tourism sector is represented by winter wellness and medical tourism. This is due to low risk probability estimates for infrastructure, transport, and health risks. Extreme sports tourism has high risk ratings due to higher probabilities and economic losses related to health damage and injuries and other higher risks in the operational, infrastructure, and transport risk groups.

The information in the table allows for an analysis of risks according to the main categories and a comparison between the different areas of the tourism complex. The model is not only valuable for assessing the risks of tourism complexes, but is also suitable for the economic risk assessment of specific enterprises operating in the tourism sector. Another very important feature of the applicability of the model is that it allows for economic risk assessment using both qualitative and quantitative indicators, both together and separately. The model allows for the identification of different risk categories and levels of risk factors, along with the assessment of risk in terms of risk factors, risk enhancers, and risk mitigators. A computer-based risk assessment model based on the COPRAS complex multi-criteria assessment method has been developed, which can be easily adapted and can quickly assess risks by changing their indicators, their values, and the significance of the criteria.

8.4. Tourism complex risk management

Based on the study, the following risk management model is proposed (Figure 6). This model consists of 4 steps.

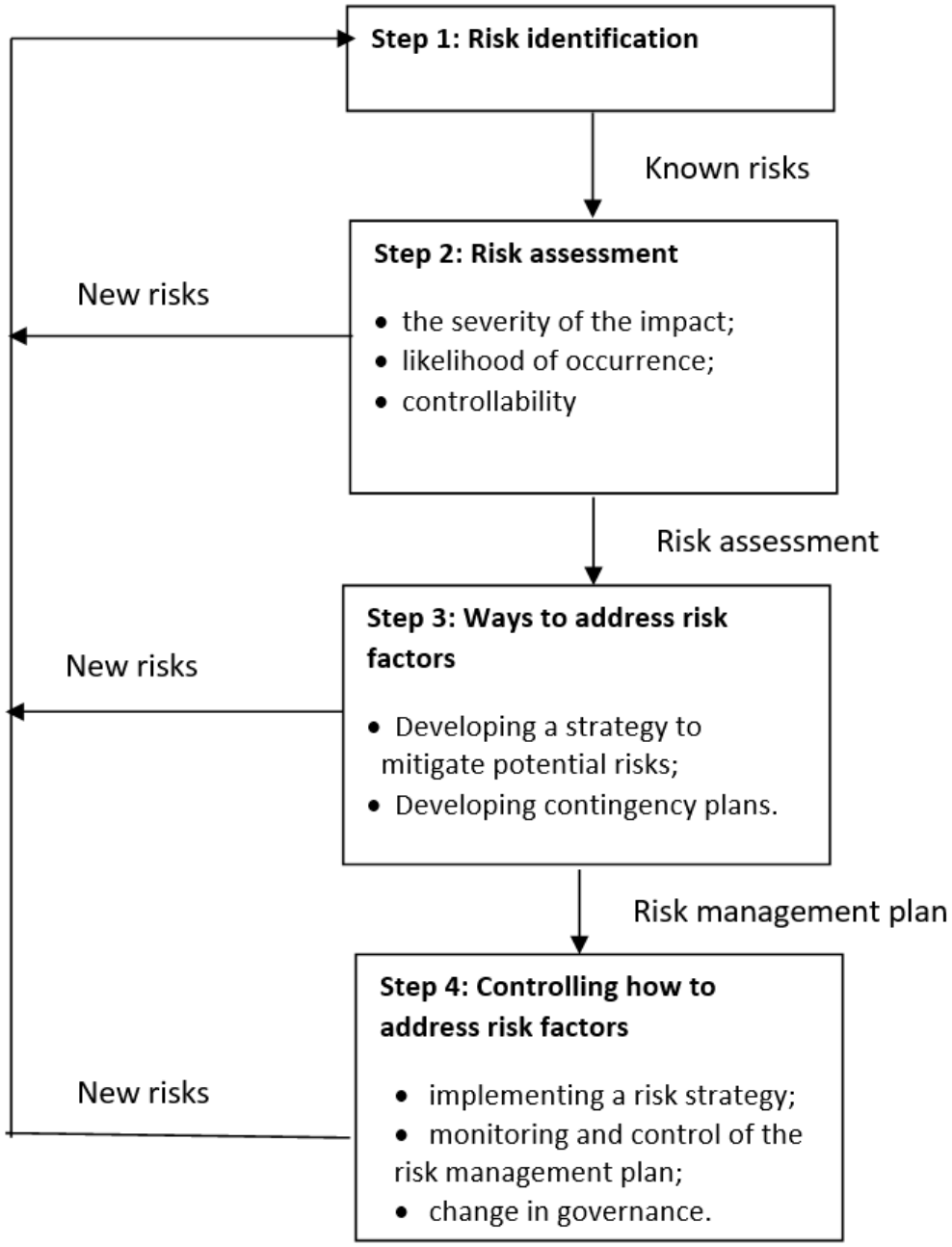


Figure 6. Risk management model

Table 7 shows the content of the 5 main risk management phases.

Table 7. Content of risk management steps

1. Risk planning	Planning is the preparation of an organization for risk management, which establishes sequences of actions, assigns responsibility for specific areas, and allows for the continuous collection of external and internal data to monitor and improve the risk management process.
2. Risk identification	A list of threats is drawn up on the basis of statistical information, historical data, and practical knowledge. In this way, threats can be grouped into clusters, depending on which areas of the clusters' activities are affected by the threats and which are likely to have the greatest negative consequences. These lists should be kept under constant review and updated. It is important that once problems have been identified, it is possible to move on to specific actions.
3. Risk assessment	This involves is the determination of the likelihood that a particular threat will affect specific activities and cause undesirable consequences. Risk assessment can be either qualitative – where risks are not measured in numbers or percentages, but only in terms of concepts (low, medium, high), and therefore do not lead to accurate results – or quantitative – a sophisticated method that provides accurate data on potential risks. The latter approach is much more effective than the former, making risks fully manageable, allowing the accurate and rapid prediction of their impact, their financial evaluation, and the choice of the best risk management approach.
4. Selecting risk management tools	This entails the selection of tolerable and intolerable risks and the selection of ways and means to ensure effective protection against them. It is important that the cost of the risk management measure is less than the loss caused by the risk itself, and that it is robust and does not create other unmanageable risks.
5. Risk control	In most cases, the actual processes are different from those planned and regulated, and it is important to make the appropriate adjustments before the next cycle so that the deviations do not distort the management process.

The five main stages of the risk management process are closely interlinked. At the outset, the organization's planning process sets the conditions for risk management (responsible parties, sequences of actions, etc.). The risks are then identified and evaluated, and appropriate tools and procedures are selected to manage them. Risk control covers all stages of management; it records deviations from the regulated conditions, which are evaluated at the start of the next management cycle, or adjustments are made promptly within the same cycle. Risk management is a collective effort that must be carried out on an ongoing basis by internal and external specialists. Only a regular and continuous process can produce positive

results

As can be seen from the risk management model presented in Figure 6 and Table 7, it is essential to identify the risks and then assess them in terms of their likelihood of occurrence and the severity of their impact. An important aspect is controllability: once the risk factors have been assessed and the nature of the risk has been determined, it is possible to identify ways to address the risk factors, develop strategies to mitigate the assessed risks, and develop contingency plans to address them. Once mitigation and control strategies and plans have been developed, it is important to ensure that the risk monitoring plan is monitored and to assess the effectiveness of the measures implemented in mitigating and controlling the risks.

In summary, business risk management is becoming an increasingly important issue. It is important for companies to be able to manage risks, as this is key to their success and survival in a dynamic, competitive market, and to achieving positive results. A company can only operate effectively if it understands the causes, sources, and types of risk and assesses the degree of risk. Business risk management provides an opportunity to forecast results and minimize the negative consequences for a company's performance.

Conclusions

Factor analysis was carried out to identify 12 risk categories and to group factors accordingly. Factor analysis showed the risks assessed by travel agencies in terms of the average score for the category and for the individual factors describing it.

A survey of experts and the application of the multi-criteria COPRAS method led to the identification of the significance of risk factors. This method led to the creation of an integrated risk assessment. Studies have shown that the COPRAS method can be used to carry out risk assessments based on both quantitative and qualitative indicators.

The results of the peer review showed that 68 risk factors or risk assessment criteria used in economic risk assessments have the highest significance in relation to external environmental factors. When comparing the significance of the risk assessment in terms of the external environment, the internal environment of the tourism business, and the personal risks of tourism service users, the results of the expert survey showed that the most important risks are the risks of the external environment (0.5172) and the risks of the internal business (0.332). In contrast, the personal risk of the tourism consumer is only 0.16, which means that the tourist's exposure to risks depends primarily on external risk factors and the internal risks of business service providers.

The information on the significance of the risk criteria and the values of the risk categories obtained during the research allows risks to be analyzed according to their main categories, and enables comparison between the different areas of the tourism complex. The presented model of economic assessment of tourism risk is not only valuable for assessing the risks of tourism complexes, but is also suitable for the economic risk assessment of specific enterprises operating in the tourism sector. Another very important feature of the applicability of the model is that it allows for economic risk assessment using both qualitative and quantitative indicators, both together and separately. The model allows for the identification of different risk categories and levels of risk factors, along with the assessment of risk in terms of risk drivers, risk enhancers, and risk mitigators. A computer-based risk assessment model based on the COPRAS complex multicriteria assessment method has been developed, which can be easily adapted and can quickly assess risks by changing their indicators, their values, and the significance of the criteria.

In summary, business risk management is becoming an increasingly important issue. It is important for companies to be able to manage risks, as this is the key to their success and survival in a dynamic, competitive market, and enables them to

achieve positive results. A company can only operate effectively if it understands the causes, sources, and types of risk and assesses the degree of risk. Business risk management provides an opportunity to forecast results and minimize the negative consequences for a company's performance. The model of risk management developed in this paper can be fully realized by using the methodology proposed.

An integrated risk index of the tourism complex by type of tourism has been calculated, showing that the riskiest type of tourism is extreme sports tourism. The lowest risk in Lithuania's inbound tourism sector is characterized by winter wellness and medical tourism. This is due to low risk probability estimates for infrastructure, transport, and health risks. Extreme sports tourism has high risk ratings due to higher probabilities and economic losses related to health damage and injuries, and other higher risks in the operational, infrastructure, and transport risk groups.

The multi-criteria assessment of the inbound tourism complex allows risks to be analyzed according to the main categories and enables their comparison between the different areas of the tourism complex. This model is not only valuable for the risk assessment of tourism complexes, but is also suitable for the economic risk assessment of specific enterprises operating in the tourism sector.

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CHAPTER IX. THE REGULATION OF NON-HORIZONTAL CONCENTRATIONS IN THE CONTEXT OF EU ECONOMIC SECURITY

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Abstract*. This paper examines the relationship between the EU's economic security policy, common security policy, and common commercial policy, and the reasons for its development. It also explores the objectives and legal tools available under merger regulation to ensure EU economic security. The remainder of the paper delves into a comprehensive analysis of different issues associated with non-horizontal concentrations, considering the objectives of economic security policy.*

Keywords: *Economic security, security policy, merger, vertical concentration, conglomerate concentration*

Introduction

Each country's approach to regulating concentrations depends on its policy-makers' views on competition. In some countries, the prevailing view is that undertakings become monopolists due to their more efficient operations (Whish, 2001, p. 10): they introduce innovations, create new products, and respond to consumer needs faster than competitors, producing goods or services more efficiently. Therefore, it would be a mistake to regulate and punish them. Some even argue that fierce competition in the market can be harmful, and can lead companies to bankruptcy (Allen, 1968). Others consider the existence of competition

as a necessary condition for the successful development of the state's economy (Dabbah, 2004, p. 2). In a competitive market, a product's price corresponds to demand, while the quality of goods is constantly improving, their supply is increasing, and the efficiency of business entities is on the rise. Thus, a monopoly can reduce the efficiency of economic entities, support the production of lower-quality goods or services, and limit the emergence of innovations. Depending on the state's approach to competition regulation, the goals of concentration regulation also differ.

The regulation of non-horizontal concentrations is even more complex because their effect on competition is not unambiguous. The impact of an undertaking's ability to leverage market or financial power to another market does not become apparent immediately, but only after some time. This effect can be both beneficial and harmful. Regarding benefits, it could be said that non-horizontal concentrations make it possible to: improve the efficiency of merger undertakings faster and cheaper by rationalizing the structure of undertakings, eliminating weak competitors, more efficiently allocating resources for production due to economies of scale, as well as more effectively allocating funds for research, innovation, the distribution of goods, accelerating technical progress, encouraging large-scale, long-term investments, etc. (Cook & Kerse, 2000, p. 165; Lindsay, 2006, p. 375; Craig & Burca, 2003, p. 1035); activate economic activity in a stagnant market; and reduce the risk of bankruptcy due to the acquisition of a diversified business group, the stabilization of income, and the reduction of risk for business mistakes (Turner, 1965, p. 1317). Buying a bankrupt company can be one way to protect the interests of creditors, owners, and employees.

However, considering the negative impact of nonhorizontal concentrations, it could be said that they can increase the merger undertakings' power in the market to the extent that they can: change the "rules of the game" in their favor and influence price; negatively affect the common interests of society; reduce democracy;

infringe the freedoms of persons; and limit the distribution of benefits to society (Jones & Sufrin, 2004, p. 853). Non-horizontal concentrations can make it easier for merger undertakings to weaken competitors or force them out of the market (Sandonis & Fauli-Oller, 2002, p. 2; Comanor & Rey in Kirkwood, 2004, p. 445). If the process of forming non-horizontal concentrations was left unchecked, it would be possible for entire industries to be transferred to the control of several undertakings. This could have a harmful effect not only on the economic development of states, but also on the political situation.

National security policy can influence concentration regulation, as governments can promote the emergence of "national leaders" (Whish, 2001, p. 724), international concentrations, and technical progress (Jones & Sufrin, 2004, p. 974). The transfer of control of national undertakings to foreign entities may be restricted, or business areas of importance to the state, such as energy or media, may be otherwise regulated (Whish, 2001, p. 729).

The situation in the EU is even more complicated, as the regulation of concentrations at the national level is combined with the regulation of concentrations at the EU level, as carried out by the European Commission. Both Member States and the EU itself take care of economic security issues. EU law and policy documents indicate that EU merger regulation contributes to strengthening the internal market, increasing competitiveness, protecting effective competition, and raising living standards in the EU. In 2023, the European Commission and the High Representative of the Union for Foreign Affairs and Security Policy clearly indicated an additional objective – Strengthening European Economic Security. The appearance of this objective was determined by the new reality: "the global pandemic, Russia's war in Ukraine, hostile economic actions, cyber and infrastructure attacks, foreign interference and disinformation, and a global increase in geopolitical tensions." This "has exposed risks and vulnerabilities in EU societies, economies, and companies that did not exist only a few short years ago"

(European Commission, 2023, p. 1).

Merger regulation in the EU was initially dedicated to the protection of effective competition in the common market. Considering that it has had to address economic security issues in recent years with the aim of protecting the EU market, questions arise as to: what place economic security issues occupy in the regulation of competition in the EU; how they are compatible with other objectives; whether the regulatory system surrounding concentrations provides the prerequisites to take economic security issues into account; whether the rules for the assessment of concentrations allow economic security issues to be considered; and whether economic security issues are taken into account in practice.

Considering the questions identified above, this paper aims to determine how economic security issues influence the regulation of non-horizontal concentrations.

To accomplish this goal, the paper examines the relationship between the EU's economic security policy, common security policy, and common commercial policy and the reasons for its development. It also explores the objectives and legal tools available under merger regulation to ensure EU economic security. The remainder of the paper delves into an analysis of different issues associated with non-horizontal concentrations, considering the objectives of economic security policy.

9.1. Non-horizontal concentrations and economic security

9.1.1. The concept of non-horizontal concentrations

Under EU law, Article 3 of the Council Regulation No 139/2004 of 20 January 2004 on the control of concentrations between undertakings (hereinafter – Regulation 139/2004) a concentration arises "where a change of control on a lasting basis results from the merger of two or more previously independent undertakings

or parts of undertakings … or the acquisition, by one or more persons already controlling at least one undertaking, or by one or more undertakings … of direct or indirect control of the whole or parts of one or more other undertakings."

Economic theory classifies concentrations (mergers) into three categories: horizontal, vertical, and conglomerate.

Horizontal concentrations are formed when the concentration involves competing undertakings producing substitute goods and operating on the same supply level of goods or services. Areeda and Hovenkamp (2017, § 1900) are more concrete: they define horizontal mergers as mergers involving direct competitors that sell identical products or close substitutes in the same geographic market before the merger occurs. Such a concentration can involve two or more wholesalers or two or more retailers. For example, in the Commission case of *JD Sports/Marketing Investment Group* (2023), merger undertakings requested that the European Commission approve a transaction under which JD Group would acquire sole control of MIG. Both companies were active in the retail and wholesale supply of sports goods. The merger group members had overlapping activities in Bulgaria, Croatia, Czechia, Estonia, Germany, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia.

Non-horizontal concentrations, which include vertical and conglomerate concentrations (Guidelines for non-horizontal mergers, § 2), differ from horizontal concentrations. In a vertical concentration, undertakings do not directly compete. Still, one undertaking serves as a supplier of inputs to the other before the concentration (Areeda & Hovenkamp, 2017, § 1900), which means that undertakings operating at different supply levels of goods or services merge. In particular, this can involve a wholesaler merging with a retailer or a manufacturer with a supplier. For example, in the Commission case of *Coca-Cola/Amalgamated Beverages* (1997), Coca-Cola acquired a 51% stake in the UK's largest bottling company, Amalgamated Beverages, from Cadbury Schweppes. In another case,

Tomtom/Tele Atlas (2008), the Commission found that the proposed transaction was purely vertical since it involved two companies operating at different levels in the supply chain. This merger is a case of "upstream" integration in the sense that a producer of a good acquires its leading provider of an important input. In this case, TomTom, a manufacturer of portable navigation devices and a supplier of navigation software for use in navigation devices, wanted to acquire shares of Tele Atlas, a supplier of digital map databases for navigation and other end-uses.

Conglomerate concentrations appear when undertakings that do not compete with each other are combined and operate in different markets that are not horizontally or vertically related. In other words, the conglomerate category encompasses all other types of concentrations. Miller (2019, p. 315) indicates that this "can range from firms with no economic relationship to mixed conglomerates with quasi-vertical or quasi-horizontal relationships, such as firms that sell similar products in different geographic markets." An example of a conglomerate merger is *General Electric/Honeywell* (2001) in which the European Commission indicated that General Electric, a merger undertaking, operated in several markets: the production of jet engines and electric generators, the provision of financial services, the molding of plastic products, the provision of medical therapy, and the provision of information services.

Depending on whether merger undertakings produce or sell complementary or unrelated products, conglomerate concentrations can be divided into mergers in complementary product markets, mergers in neighboring product markets, and mergers in unrelated product markets (Church, 2006, p. 2). Markets are considered complementary when markets' products complement each other (where one product increases the value or functionality of the other product). For example, in the Commission case of *General Electric/Honeywell* (2001), one of the merger undertakings, General Electric, produced engines for large aircraft, while the other, Honeywell, produced auxiliary parts and electronic equipment.

Products complement each other when a price increase in one product reduces the demand for the other. For example, staple machines and staples, shavers and razor blades, or printers and printer cartridges: if the price of staple machines, shavers, or printers increases, the use of staple machines and staples, shavers and razor blades, or printers and printer cartridges decreases respectively (Regulation (EU) 2023/914, Annex I).

Unrelated goods in neighboring product markets do not have this effect on each other, although they may be distributed similarly. They can involve products with a common set of buyers (Proctor, 2015b). For example, banking and financial intermediation services are not necessarily considered substitutes or complementary to each other, but the same consumer group may use them. They may be provided using the same distribution channels or a similar promotion strategy. A "pure" conglomerate merger involves acquiring products unrelated to demand or supply (Church, 2006, p. 3).

Sometimes, the concentration consists of multiple divisions (Guidelines for non-horizontal mergers, § 7; Miller, 2019, p. 315) when undertakings in the concentration are connected with the undertakings of one market horizontally and with the undertakings of other markets by vertical or conglomerate ties. For example, in *Skanska/Scancem* (2001), the Commission examined the horizontal and vertical ties of the undertakings in the concentration with other undertakings.

Some authors argue that categorization into horizontal, vertical, and conglomerate mergers is often less obvious "in the age of digital platforms operating entire ecosystems of interrelated product and services" (Witt, 2022, p. 2). Witt suggested considering Microsoft as an example (*Microsoft/LinkedIn*, 2016). Microsoft is a global technology company offering various products and services, including PC operating systems, servers, mobile devices, productivity applications, software solutions, hardware devices, cloud-based solutions, and online advertising. At the time when Microsoft acquired LinkedIn, a professional social network,

and considered pre-installing LinkedIn on its Windows PC operating system, the question arose as to whether LinkedIn should be considered an input for the Microsoft ecosystem, making the merger vertical. Or would this be a conglomerate merger, as Microsoft had not previously offered professional networking services and is now entering a new market? The answer to this question hinges on how one defines the relevant market (Witt, 2022, p. 2). Witt indicates that "multi-sided, multi-product digital platform mergers will commonly present horizontal, vertical and conglomerate features all at once" (p. 3).

The impact of non-horizontal concentrations on the market is different from that of horizontal concentrations. In the case of horizontal concentrations, the merger of competitors may directly reduce competition in the market and increase the prices of goods or services. Alternatively, it may keep prices the same or even reduce them because the concentration allows the productivity or efficiency of the undertakings in the concentration to be increased (Bishop et al., 2005, p. i).

In the case of non-horizontal concentrations, undertakings that are related vertically or in complementary, neighboring, or completely unrelated product markets are combined, so competition in the market is not directly reduced. Usually, such a concentration reduces the prices of goods or services because a reduction in one good increases the demand for other goods if the goods are sold together (Bishop et al., 2005, p. 119). For example, reducing the distribution cost of goods would increase the number of goods sold by the manufacturer; reducing the price of a car would increase the sales volume of additional products (e.g., tires).

Experts in competition law and economics disagree on whether vertical concentrations are harmful and should be restricted or whether they are beneficial and should be allowed. Some believe that such concentrations are useful and do not harm competition, as they: create the conditions to increase the productivity (Whish, 2001, p. 724; Craig & Burca, 2003, p. 1036) and technical progress

(Cook & Kerse, 2000, p. 165) of an undertaking due to economies of scale; encourage large-scale, long-term investments (Guidelines for non-horizontal mergers, § 14); accelerate the implementation of research and innovations; improve access to loans for undertakings in the concentration (Whish, 2001, p. 724; Craig & Burca, 2003, p. 1036); and allow operating costs to be reduced and the product development, production, and distribution processes to be better coordinated. For example, a merger between seller and distributor may reduce distribution costs, while the merger of a manufacturer with a supplier of raw materials ensures the supply of raw materials necessary for production. The vertical integration of production and distribution is particularly significant in markets where the trade mark is important, as it allows the trade mark holder to maintain full control over the product's development, promotion, and marketing (*Guinness/GrandMetropolitan*, 1997, § 36). Vertical concentrations can also reduce competitors' market power (Lindsay, 2006, p. 375) and improve inter-brand competition (Craig & Burca, 2003, p. 1035).

Other experts disagree with the above notion. According to their view, vertical concentrations have a harmful effect on competition in the market (Sandonis & Fauli-Oller, 2002, p. 2; Salop, 2018, p. 1975; King et al., 2023, p. 1080; Weinstein, 2022, p. 1089) as they enable monopolists in the vertical upstream of the market to make better use of their market power (Comanor & Rey in Kirkwood, 2004, p. 445). They may then seek to eliminate competitors or limit their activities in the downstream market to fully enjoy the market power available in the upstream market (Comanor & Rey in Kirkwood, 2004, p. 443). Furthermore, competition in the market can decrease even when undertakings in the concentration do not have power in the market, allowing them to "close" the market to competitors. Sandonis and Fauli-Oller express the most radical approach to this issue. According to them, vertical concentrations should never be allowed because those that benefit society are not profitable for undertakings in the concentration, and

therefore, they are not created (Sandonis & Fauli-Oller, 2002, p. 16).

The third group of experts take an intermediate view. They admit that concentrations can have a negative effect on competition (Bishop et al., 2005, p. ii; Nouel, 2001, p.1), but posit that vertical concentrations increase business productivity more than they reduce competition in the market. According to these experts, when evaluating concentrations, it is necessary to consider both the harmful effects of the concentration on competition and the benefits obtained from improving the efficiency of the undertaking (Comanor & Rey in Kirkwood, 2004, p. 456).

Assessing the impact of conglomerate concentrations on competition is even more difficult than assessing the impact of vertical concentrations. Their impact on the market structure is not unambiguous (Craig & Burca, 2003, p. 1035), as the goals and effects of such mergers may benefit the market or not affect competition.

If merging undertakings are located in related markets, the prices of goods are usually reduced. As a result of a conglomerate concentration, the undertaking's production efficiency increases due to economies of scale. The undertaking can reduce the costs of implementing individual business decisions (production, sales, etc.), set optimal prices, and/or preserve profits (Bishop et al., 2005, section 4). Merged undertakings selling goods belonging to the same group of goods or selling to the same group of consumers create conditions for consumers to buy goods from one seller (Guidelines for non-horizontal mergers, § 14).

On the other hand, conglomerate concentration can also have a detrimental effect on competition in the market when the concentration strengthens a merger undertaking's ability to weaken or eliminate competitors by leveraging the power it has or would gain as a result of concentration from one market to another. Using the techniques of mixed bundling and customer-based price discrimination, predation, and exclusion can be a powerful strategy in a conglomerate merger

(Proctor, 2015a, p. 11). When an undertaking leverages its power from one market to another, the prices of competitors' goods are not directly increased. However, the merger group's lower prices and a wider portfolio of products encourage consumers to buy the products of the partners in the concentration. The concentration partners may also gain better conditions than the competitors regarding access to the capital market, or may use the cash funds accumulated inside the merged structure (Church, 2006, p. 260). Such actions result in competitors' profits decreasing and weakening, before they are finally eliminated from the market. In addition, it should be noted that the concentration partners may reduce the prices of goods (Bishop et al., 2005, p. ii) or expand the assortment of goods only for a short period of time until competitors are removed from the market. After eliminating competitors, prices may increase, even resulting in price discrimination (Lindsay, 2006, p. 376).

Considering the above, it could be concluded that non-horizontal concentrations can both benefit and harm competition. Concentrations of this type need to be regulated due to their possible harmful effects on competition. However, this must be done as carefully as possible so as not to suppress undertakings' incentives to improve the efficiency of their operations. Any assessment should consider both the benefits and harms resulting from the concentration.

9.1.2. Economic security and concentration policy

The regulation of non-horizontal concentrations in each country depends on the competition policy in that country (Bork, 1993, p. 50) and the acknowledged concept of competition itself (Shelkoplyas, 2003, p. 215). Different jurisdictions give different meanings to the concepts of "competition policy" and "competition." Some believe that competition in the market must be effective or efficient (Clark, 1940; Sosnick, 1958; Bishop & Walker, 1999). For others, market structure is important – in their opinion, the most important thing is that the market in

which undertakings operate should be "contestable" (Baumol et al., 1988), and there must be no high cost to enter or exit the market (Bailey, 1981).

When discussing countries where the main focus is on increasing economic efficiency in the market, it should be underlined that economic efficiency is also understood differently in those countries. Economists disagree on what should be considered to represent economic efficiency.

The theory distinguishes allocative, productive, static, and dynamic efficiencies. Allocative efficiency is ensured when the buyer receives a product or service for the price they agree to pay (Shelkoplyas, 2003, p. 217). Production efficiency occurs when the producer cannot sell goods at either higher (if they do so, consumers will leave immediately) or lower prices (they will work without profit). If prices were to be increased, new competitors would enter the market, which would force them to lower prices. If prices were to be reduced, capital would be removed from the market. Dynamic efficiency is when a manufacturer has to implement innovations and produce new products to stay in the market, and competition has a dynamic effect (Whish, 2001, pp. 3–4).

The importance of a particular concept of efficiency in evaluating the effectiveness of the undertaking depends on the approach to market regulation. At least two approaches can be distinguished. According to representatives of the Chicago School of Economics, the behavior of business entities in the market must be regulated only minimally, so as not to limit the supply of goods or services (Stanikūnas, 2009, p. 33). In this case, the efficiency of the undertaking is evaluated, considering the increase in supply. Harvard School representatives say that the market must be supervised (Amato, 1997, pp. 110–113) and continuously regulated (Shelkoplyas, 2003, p. 217) to protect the common interest. Following these approaches, improved efficiency should be recognized as a harmful effect of a concentration when it could restrict competition in the market.

In addition to the main goal of protecting the competition process and ensuring

efficiency (Willimsky, 1997, p. 54), competition regulation can also pursue other goals such as the rational distribution of resources, prohibiting practices that restrict the activities of competitors, prohibiting market monopolization or the abuse of economic power (Shelkoplyas, 2003, p. 220), protecting small and medium-sized undertakings, and fighting inflation (Stanikūnas, 2009, pp. 19–20).

A different approach to regulating competition leads to a different approach to regulating concentrations. In this vein, governments can promote the emergence of "national leaders" (Whish, 2001, p. 724), international concentrations, and technical progress (Jones & Sufrin, 2004, p. 974). States can also facilitate the withdrawal of undertakings from the market. Selling and exiting a business in one market is easier when a small undertaking with a significant patent or substantial know-how is first acquired. States can consider the detrimental effect of concentrations on the long-term development of undertakings when long-term investments would not be available due to changes in management (Whish, 2001, pp. 724, 729). Employment and regional policy may have implications here, as the rationalization of undertakings' activities stimulated by concentrations may increase unemployment in the region (Easterbrook & Fischel, 1991). The transfer of control of national undertakings to foreign entities may be restricted, or business areas of importance to the state, such as energy or media, may be otherwise regulated (Whish, 2001, p. 729).

Considering that the goals of concentration regulation are not unambiguous and vary among states, it is useful to assess the goals that have been pursued in regulating competition in the EU in recent years.

EU policy on market regulation

The goals of the EU established in the Treaty on the European Union (hereinafter – TEU) and the Treaty on the Functioning of the European Union (hereinafter – TFEU) form the basis for the regulation of EU competition policy.

Article 3(3) of the TEU (2012) indicates that the EU established an internal market and now works for the sustainable development of Europe. This development should be based on balanced economic growth, price stability, and a highly competitive social market economy. It aims at full employment and social progress, a high level of protection and the improvement of the quality of the environment, and the promotion of scientific and technological advancement.

The TFEU (2012) specifies the implementation of the aims indicated in the TEU. In Article 9, the treaty states that the EU, when defining and implementing its policies and activities, takes into account requirements to promote a high level of employment, guarantee adequate social protection, fight against social exclusion, and ensure a high level of education, training, and the protection of human health. Other articles provide additional EU commitments. Article 12 specifies that consumer protection requirements are considered when defining and implementing other EU policies and activities. Article 11 foresees that environmental protection requirements are integrated into defining and implementing the EU's policies and activities, particularly to promote sustainable development. When discussing the EU's economic policy defined in Article 119, it should be noted that it must be conducted by the principle of an open market economy with free competition.

EU policy, as defined in EU laws, shows that the regulation of concentrations, alongside the regulation of prohibited agreements and the abuse of a dominant position, forms a unified EU competition regulation system. The regulatory objectives of concentrations align with the regulatory objectives of other areas of competition. The regulation of non-horizontal concentrations also does not pursue specific objectives. When determining whether concentrations are compatible with the common market, it is essential to consider the provisions of Regulation 139/2004 and the EU's common goals outlined in the EU's founding treaties. The wide range of objectives specified in the EU constitutional treaties indicates

that competition regulation does not operate in isolation. The objectives of competition regulation must align with the aims of social protection, employment, education, consumer protection, environmental protection, and others.

According to § 2 of the Preamble of Regulation 139/2004, the regulation is dedicated to achieving the aims of the treaties – in particular, the requirement to ensure that competition in the internal market is not distorted. It further specifies that to ensure effective competition in the internal market, all activities of the EU Member States and the EU itself must be conducted considering the principle of an open market economy with free competition. Following that, Regulation 139/2004 distinguishes three objectives of concentration regulation: "increasing competitiveness," "protecting effective competition," and "raising living standards."

The objective of "increasing competitiveness" is found in § 4 of the preamble, which states that reorganizations capable of increasing the competitiveness of European industry are welcomed.

The objective of "protecting effective competition" is reflected in more than one preamble paragraph: § 5 indicates that EU law must regulate concentrations that may significantly impede effective competition; § 23 shows that the European Commission must evaluate the concentration's compatibility with the common market, considering the need to maintain and develop effective competition in the common market; and § 25 stresses the need to maintain effective competition in an oligopolistic market. In addition, several paragraphs provide guidance on what "effective competition" means: § 4 talks about "dynamic competition," whereas § 24 about "free competition."

Finally, the objective of "raising living standards" is found in § 4 of the preamble, which states that reorganizations capable of improving growth conditions and raising the standard of living in the EU are welcomed.

Considering the variety of goals and regulatory areas, it is reasonable to discuss

the goals that are being pursued at the implementation level and the areas that are given more attention. This can be determined by examining the policy documents of the European Commission, which oversees compliance with competition rules in the EU and allows or prohibits concentrations at the EU level.

The Commission Work Programme 2023 (European Commission, 2022b) is the most recent publicly available policy document clarifying the aims of the European Commission's actions. The Programme was influenced by the outcomes of the Conference on the Future of Europe (European Commission, n.d.; Council of the European Union, 2022), which succeeded in developing an ambitious and inspiring vision for our Union. The report on the final outcome (Council of the European Union, 2022) indicates that EU citizens are calling for stronger EU action. "Outstanding transnational challenges, such as inequalities, competitiveness, health, climate change, migration, digitalization, or fair taxation, call for proper European solutions" (p. 53). Citizens need a comprehensive strategy to ensure better well-being for European citizens in the different aspects of their lives. Indicators showing progress in Sustainable Growth and innovation should address the new European priorities, such as the European Green Deal or the European Pillar of Social Rights, and better reflect the ecological and digital transitions and the well-being of people. There is also a need for a strong functioning market economy in order to facilitate the vision of a more social Europe (pp. 53–55).

In the Communication from the European Commission (2022a), which was prepared considering the outcomes (proposals) of the "Putting Vision into Concrete Action" Conference on the Future of Europe, the Commission drew up the first lines of action on proposals falling into its competence. Four out of five new initiatives announced in the Commission Work Program 2023 are part of the Commission's follow-up on the Conference on the Future of Europe.

The Commission Work Programme 2023 (European Commission, 2022b, p.

1) indicates that the European Commission's actions have been influenced by the collision of crises that Europe and the world have confronted over the last year. The Russian invasion of Ukraine and the energy crisis have compounded an already escalating cost of living squeeze, which has dented Europe's strong post-pandemic recovery.

The actions provided in the Commission Work Programme 2023 (European Commission, 2022b, p. 1) are framed by three cornerstones indicated by the European Commission. The Commission is sure that these challenges can only be tackled collectively as one Union. These crises underline the need for Europe to continue to accelerate radical transformations to tackle climate and natural crises, make EU economies and democracies more resilient, make EU industries more competitive, make EU societies fairer, and strengthen the EU geopolitical stature. Finally, the Commission thinks that the EU must find new ways to deal with this unique set of crises; a business-as-usual approach is not enough.

The Commission Work Programme 2023 indicates that the Commission's first priority in dealing with future challenges is responding to the most pressing needs – reducing energy prices, securing the crucial supplies needed for EU industrial competitiveness and food security, strengthening the EU social market economy, and continuing measures against the COVID-19 pandemic that is still present across the Union.

In the competition regulation area, the European Commission addressed the energy crisis and aimed to implement measures to safeguard and strengthen the resilience of the EU Single Market, safeguard a high level of employment, and foster social justice in the labor market. It also put forward measures to reinforce EU competitiveness. The Commission indicated that it is taking measures to strengthen EU competitiveness and the resilience of the Single Market while fostering social justice in the labor market. The Commission stressed that its work will continue to be guided by the implementation of the United Nations

Sustainable Development Goals in all policy areas (European Commission, 2022b, pp. 2–3).

The program also underlines the need to make digital solutions accessible and available to all Europeans and ensure that Europe becomes the leading force for ethical, transparent, and safe digital transformation (European Commission, 2022b, p. 6).

Finally, the Commission stresses that Russia's war of aggression against Ukraine is testing Europe's economic and social resilience at a time of profound transformations. Therefore, the EU needs to develop a strong set of strategic trade and investment controls to strengthen our economic security while also working to diversify value chains (European Commission, 2022b, p. 7) and reinforce our European social market economy model (p. 8).

The EU's vision of market regulation can also be found in EU institutions' policy documents. The mission of the Directorate-General for Competition, which implements EU competition policy in practice under the name of the European Commission, can be found in its Strategic Plan 2020–2024 (European Commission, 2020). The Strategic Plan explains that the Directorate's mission is to enable the Commission to make markets deliver more benefits to consumers, businesses, and society as a whole by protecting competition in the market and fostering a competition culture in the EU and worldwide. While enforcing competition rules, the Directorate considers other public policy interests. The Directorate acknowledges that competition policy is an indispensable element of a functioning internal market, ensuring that all companies compete equally and fairly on their merits, thereby making markets more competitive and resilient while generating higher productivity and growth (p. 8). The Strategic Plan emphasizes that the main beneficiaries of the EU competition policy are European citizens, businesses operating in the EU, and society as a whole (p. 9).

The Strategic Plan also underlines that the COVID-19 outbreak affected

merger control. To mitigate the influence of this outbreak, the Commission takes measures to ensure business continuity but does not forget to control the undertaking's compliance with legal obligations. The Commission is committed to helping and supporting businesses at this difficult time while, at the same time, continuing to enforce the EU merger control rules to the benefit of businesses and consumers (European Commission, 2020, p. 5). The Commission thinks that the relaxation of mergers could lead to a delayed recovery from the COVID-19 crisis.

In addition, the Strategic Plan makes it clear that vigilance in merger control areas is also justified in view of signs of weakened competition in the EU following the financial crisis. The Commission states that merger rules have built-in flexibility, allowing for the assessment of the economic context in each case when applying them (European Commission, 2020, p. 7)

Finally, the Directorate-General for Competition, in its Strategic Plan 2020–2024, indicates that it focuses on three headline ambitions: "A European Green Deal," "A Europe fit for the digital age," and "An Economy that works for people," as indicated in the European Commission's Work Programmes.

Addressing the European Green Deal objective, the European Commission underlined that merger control, together with other EU competition policy instruments, can significantly contribute to the European Green Deal by enabling a cost-effective, fair, and green transition for companies, regions, and people to a climate-neutral EU by 2050. Sound merger control also contributes to the circular economy (European Commission, 2020, p. 10).

Addressing the "Europe fit for the digital age" objective, the Commission stressed that it needs powers and rules that are fit to promote competition in an economy that is becoming more and more digital (European Commission, 2020, p. 21). Discussing the strengthening of competition enforcement in support of "A Europe fit for the digital age," the Commission indicated that it allows smooth

market restructuring by assessing non-harmful mergers in a streamlined manner and prohibits changes in the market structure, which lead to significant impediments to effective competition. It acknowledges that industry consolidation can harm competition, considering the merging companies' degree of market power and other market features (p. 21).

Addressing the "An economy that works for people" objective, the Commission stressed that merger control, together with other branches of EU competition policy, ensures fair and competitive outcomes for EU citizens and businesses as well as society and the economy as a whole. They contribute to a well-functioning internal market where companies compete on their merits, and efficiencies are passed on, resulting in lower prices, better quality, and new products and services. EU competition policy thus underpins the competitive social market economy as one of the EU's foundations (European Commission, 2020, p. 25).

The analysis of EU law and policy documents allows us to distinguish four pillars that should be considered the basis of the EU's merger policy: strengthening the internal market, increasing competitiveness, protecting effective competition, and raising living standards in the EU. These pillars are analyzed below.

Strengthening the internal market

Article 3(3) of the TEU (2012) states that the internal market is established in the EU. It shows that the EU's aim to create an internal market that existed in earlier versions of EU treaties has changed because it has already been achieved. Now, the EU focuses on improving the internal market. The meaning of this change can be explained by the opinion of the former commissioner of competition policy, Neli Kroes, who states that the increased number of cross-border mergers "shows that the Single Market is a reality, that it is working and that our businesses are taking advantage of it" (Kroes, 2006). Such changes allow us to state that the internal market in the EU is considered established, and the EU

has moved to the next stage of market development, which aims not to create the internal market but to strengthen it.

The TFEU (2012) specifies how the internal market will continue to be developed. Article 119 indicates that under the EU's economic policy, the internal market will be developed in accordance with the principle of an open market economy with free competition, considering other aims indicated in the EU law and policy.

The European Commission's (2022b) Work Programme 2023, "A Union standing firm and united," confirms the importance of protecting the Single Market in an energy crisis situation. The document states that to "address the energy crisis, we need to protect the fundamentals of our economy, and in particular safeguarding our Single Market and a high level of employment" (p. 2).

Protecting effective competition and increasing competitiveness

Regulation 139/2004 also aims to preserve the market structure that facilitates effective competition in the market, as concentration may affect the market structure in such a way as to distort competition. The concepts of "effective competition" and the "distortion of effective competition" are not provided in either the EU treaties or Regulation 139/2004. In *Metro SB v. Commission* (1977, § 20), the ECJ defined the concept of "workable competition." This court decision allows us to assume that "effective competition" is a "workable competition" that refers to the degree of competition in the market which is necessary to ensure the observance of the basic requirements and the attainment of the objectives of the Treaty establishing the European Economic Community (1957). The court also noted that "the nature and intensiveness of competition may vary to an extent dictated by the products or services in question and the economic structure of the relevant market sectors."

The question arises as to what economic criteria the European Commission

considers when evaluating effective market competition. One criterion is undoubtedly clear: "consumer welfare."

Mario Monti, the former Commissioner for Competition Policy, rigorously supports the use of the consumer welfare criterion. According to him, "the goal of competition policy, in all its aspects, is to protect consumer welfare by maintaining a high degree of competition in the common market. Competition should lead to lower prices, a wider choice of goods, and technological innovation, all in the interest of the consumer" (Monti, 2001). "When competitive forces are at play, producers make greater efforts to attract customers by offering them lower prices, higher quality and better service than when the market is controlled by a monopolist or a handful of companies" (Monti, 2002a). "Consumers are the beneficiaries of a properly conducted enforcement policy, enjoying lower prices and a wider choice of products and services as a result" (Monti, 2002b). Another former Member of the European Commission, Neelie Kroes, even declared that consumer welfare "is now well established as the standard the Commission applies when assessing mergers and infringements of the Treaty rules on cartels and monopolies." She emphasized that "Our aim is simple: to protect competition in the market as a means of enhancing consumer welfare and ensuring an efficient allocation of resources" (Kroes, 2005).

In the Commission's assessment, the criterion of economic efficiency is also important, although in most cases, it is associated with the value of benefits to the consumer. When applying the economic efficiency criteria to assess the effectiveness of competition, attention is paid to: production efficiency; the promotion of innovation; the optimal, economically rational distribution of resources; restrictions of undertakings' abuse; the presence of effective suppliers; and the easy entry of new market participants (McDonnell, 2005, p. 167).

In some of the Commission's decisions and statements, in cases such as *Mannesmann/Valourec/Ilva*, 1994; *Aérospatiale-Alenia/de Havilland*, 1991; *Boeing/*

McDonnell Douglas, 1997; *General Electric/Honeywell*, 2001), the Commission encouraged "national leaders" who are able to compete effectively at the global level.

Analyzing the provisions of EU treaties and the practice of the CJEU and the European Commission, it can be said that neither the protection of consumer welfare nor the efficiency created are considered separate or sole objectives of EU competition policy. The effectiveness of competition is assessed considering not only the maximum provision of consumer welfare and the optimal distribution of resources but also the implementation of the goals set out in the TEU and the TFEU, which aim for a "highly competitive social market economy" and seek to ensure "the economic and social progress of their States."

The goals established by the TEU and the TFEU indicate that the concept of effective competition is not solely dedicated to protecting consumers. However, it is claimed that "when multiple assessment criteria are applied, a large amount of fish are unnecessarily caught and must be returned to the sea at the cost of considerable effort and uncertainty" (Neven et al., 1998, p. 37). Moreover, there is a danger that the Economic Community competition process can be compared to Russian roulette: no one knows which competition theory will be applied in the next economic assessment (Hildebrand, 2002, p. 428), but the structure of the EU and its aims do not support a different approach. When applying the criterion of common welfare, priority can be given to the welfare of consumers, but it would be completely unjustified not to take into account other efficiency criteria. This is especially true considering the current challenges facing the EU, such as third countries' pressure on the EU economy, barriers for the supply of necessary raw materials, the war in Ukraine, the recovery of businesses after the COVID-19 pandemic, and more.

The European Commission's (2020) Strategic Plan 2020–2024 shows that the Commission, when implementing the EU merger policy, undoubtedly considers

the common welfare of all market participants when assessing competition in the market. In the Strategy plan, the Commission indicated that EU merger control contributes to making the EU industry more competitive and ensuring that consumers and businesses have access to high-quality, innovative goods and services at competitive prices. It also presented examples of recent decisions in the pharmaceutical sector, illustrating how merger control helps to protect innovation. The Commission has prevented transactions that could compromise research and development efforts to launch new medicines or to extend the therapeutic use of existing medicines (p. 21).

Addressing the current situation in Europe and around the world, the Commission underlined in the Strategic Plan that, more generally, merger control has a central role in speeding up recovery through corporate restructuring. It also specified that merger control needs to control and deter efforts by players with strong market positions to engage in transformative acquisitions in already concentrated sectors, which may be particularly harmful to society. Discussing this issue, the Commission indicated the need to facilitate the activities of small and medium-sized enterprises (SMEs). The Commission underlined that the EU has many competitive SMEs that can only continue to thrive if they remain part of competitive value chains with access to high-quality, innovative, and competitively priced inputs. The Commission thinks that anticompetitive mergers could damage such value chains, as it already observed a decrease in competition over the last two decades. Therefore, the Commission will pay particular attention to the merger area in concentrated industries with high barriers to entry (European Commission, 2020, p. 21)

However, it should be noted that the Commission pays particular attention to customers' benefits when applying the common welfare criterion. The Strategic Plan 2020–2024 (European Commission, 2020) indicates that the results of its implementation will be assessed considering the estimate of customer benefits

resulting from merger interventions (p. 31). Following the Commission, intervention means a merger prohibition, a merger approval subject to conditions, or a withdrawal of a merger notification in Phase II due to preliminary concerns identified by the Commission (p. 41). Estimating the customer benefits from interventions, the Commission will take into account: 1) the likely price increase avoided (3% and 5% for the lower and upper boundary of the estimated customer benefits, respectively); 2) the total size (by value) of the product market affected; and 3) the expected duration of the price increase avoided (p. 43).

Raising living standards

As mentioned above, the final objective indicated in Regulation 139/2004 is "raising living standards." This objective is broad enough to facilitate the implementation of the social aims indicated in the TEU. The TEU indicates in Article 3 that the EU aims to promote the well-being of its people and specifies that the EU works for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment. The EU promotes scientific and technological advances, economic, social, and territorial cohesion, and solidarity among Member States. Article 9 indicates that the EU promotes a high level of employment, guarantees adequate social protection, fights against social exclusion, and ensures a high level of education, training, and protection of human health. Article 12 specifies consumer protection, and Article 11 foresees environmental protection and the promotion of sustainable development. All of these aims contribute to rising living standards in the EU.

The case law of EU courts confirms that social objectives are important in EU competition regulation. For example, the ECJ, in *Albany v. Stichting Bedrijfspensioenfonds Textielindustrie* (1999, § 54), recognized that safeguarding competition

also considers social policy. In another case, *Vittel v. Commission* (1995, § 38), the Court of First Instance (hereinafter – CFI) indicated that, in assessing whether a concentration is compatible with the common market, in certain circumstances, its detrimental impact on social objectives (in this case, employment issues) might be taken into account more than the creation or preservation of effective competition. Some authors assert that employers generally have considerable labor market power due to a concentration, and such transactions can raise difficulties in searching for a job. For example, US empirical data shows that employers' considerable labor market power has significantly diminished the bargaining power of U.S. workers in recent years (Meese, 2024, p. 167).

Environmental protection should be given particular attention. The European Commission (2020), in the Strategic Plan 2020–2024, paid attention to the European Green Deal in EU merger policy. The Commission indicated that in merger control, in assessing notifications involving renewable electricity generation, it will be particularly vigilant in ensuring that mergers do not create excessive market power, eliminate promising emerging entrants, or lead to foreclosure in areas that are central to the green transition, such as renewables and infrastructure essential for recycling and other aspects of the circular economy. Such attention is paid considering the recent sustained pattern of investments in such assets by non-energy companies, including investment funds, and by energy companies not previously involved in renewables (p. 14).

Strengthening European Economic Security

The group of pillars mentioned above should include an additional element – strengthening European economic security, which the European Commission recently clearly indicated as a priority.

In its Communication on European Economic Security Strategy, the European Commission (2023) indicated that the need to take measures for Strengthening

European Economic Security is determined by the new reality: "the global pandemic, Russia's war in Ukraine, hostile economic actions, cyber and infrastructure attacks, foreign interference and disinformation, and a global increase in geopolitical tensions." This "has exposed risks and vulnerabilities in EU societies, economies, and companies that did not exist only a few short years ago" (p. 1).

It is welcome that the European Commission is raising the issue of the EU's economic security. Most countries around the world are dealing with problems related to economic security. For example, South Africa works on the protection of public interest, promoting the "adaptability" of the national economy, and expanding opportunities for participation in the global market, while China takes measures to protect national security and safeguard justifiable interests in foreign trade or foreign economic cooperation, as well as the protection of the social public interest (Osti, 2015, pp. 255–256).

It should be noted that in some countries, local agencies' real goals may differ from those laid down in the legislation. Some authors argue that some countries, if not most, "may have been persuaded to adopt competition law regimes by international pressure or as a condition to entry to an international organisation or access to an international financing program" (Osti, 2015, p. 256). Therefore, it could be that the law cannot foresee economic security measures, but that they exist in practice.

Even advanced economies such as Canada, all EU countries, and the UK have provisions in their antitrust legislation for the authorization of mergers on the basis of public interest, national security, or industrial considerations.

Dessie (2021, p. 24) indicates that there is no "universal consensus on what national security means nor what it contains." However, it is understood that it encompasses several goals "beyond the conventional conception of securing national survival" (p. 24). The earlier focus on the military aspect of national security now "has a broad range of facets, all of which connotes the non-military or

economic security of the nation and the values supported by the national society" (p. 24).

Depending on the practices of various countries, economic security can be considered an integral part of national security (Jackson, 2020, p. 102) or a separate issue. Economic security is considered an integral part of national security in the US, China, and other countries. In the 2017 National Security Strategy, the US indicated that "economic security is national security" (Executive Office of the President of the United States, 2017, p. 17), and the 2022 National Security Strategy is essentially based on economic strategy (Executive Office of the President of the United States, 2022). The economic turn in national security has thus become explicit in US policy (Eichensehr & Hwang, 2023, p. 557). In a similar way, under China's broad notion of national security, economic security constitutes an essential dimension (Meirong & Qian, 2023). Some international treaties also indicate this. In particular, the 1948 GATT security exceptions indicate that economic security is closely related to national security, and it is prioritized by countries worldwide (Dessie, 2021, p. 23).

The EU's approach regarding the place of European economic security differs somewhat.

Common Security Policy in the TEU

Part V of the TEU (2012) is exclusively dedicated to defining the agreement of EU Member States on common foreign and security policy. Article 24(1) specifies that the EU's competence covers all EU security questions. However, this section of the treaty does not specify that European economic security is an integral part of the common security policy.

The TEU indicates that EU security policy is subject to specific rules and procedures. Decision-making power is concentrated in the European Council and the Council. The TEU states that the European Council and the Council define

and implement a common security policy. The European Council identifies the EU's strategic interests and objectives related to the common security policy, which can address a specific country or region or may be thematic in approach (Article 22(1)).

Notably, the European Parliament and the Commission have less power in this area than in other EU decision-making areas. However, the role of Member States is higher than in other EU areas. Following Article 31(1), as a general rule, Members States' representatives at the European Council and the Council make decisions unanimously. It should be noted that despite abstaining from voting, the Member State must respect the "spirit of mutual solidarity." The state is not obliged to apply the decision, but it must refrain from any action likely to conflict with or impede Union action based on that decision. When one-third or more of the Member States comprising at least one-third of the EU population abstain from voting, the decision is not adopted. By derogation from the mentioned provisions, the Council can act by a qualified majority when adopting decisions defining an EU action or position following the decision of the European Council or proposal of the High Representative of the Union for Foreign Affairs and Security Policy (Article 31(2)).

To ensure the smooth implementation of the common security policy, a special institution was established – the High Representative of the Union for Foreign Affairs and Security Policy, which, together with EU Member States, is responsible for the implementation of this policy.

Notably, EU institutions cannot make regulations or directives on this issue. The treaty specifies that the adoption of legislative acts is excluded from EU institution's decision-making (Article 31). Article 25 indicates that EU institutions can only: a) define the general guidelines; b) adopt decisions defining (i) actions to be undertaken by the EU, (ii) positions to be taken by the EU, and (iii) arrangements for the implementation of the mentioned decisions; and c) strengthen systematic

cooperation between Member States.

Finally, it should be noted that the CJEU does not have jurisdiction with respect to common economic security provisions, with the exception of when EU action under security policy impacts other fields of EU competence, in which the court is authorized to control the implementation of EU policy and decisions (Article 24(1)).

Analysis of the EU treaty documents suggests that European economic security is not an integral part of the common security policy. EU policy and EU secondary law analysis are required to draw final conclusions on this issue.

EU secondary legislation

Regulation (EU) 2019/452 of the European Parliament and of the Council of 19 March 2019, establishing a framework for screening foreign direct investments (FDI) into the Union (hereinafter – Regulation 2019/452) , establishes an FDI screening mechanism. The regulation was adopted under the ordinary legislative procedure.

Article 1(1) of Regulation 2019/452 indicates that this Regulation establishes a framework for Member States to screen foreign direct investments into the EU on the grounds of security or public order and for a mechanism for cooperation between the Member States and the Commission regarding FDI likely to affect security or public order. The Regulation requires Member States to establish national mechanisms for screening FDI following Regulation 2019/452.

Article 4 provides factors to be considered by Member States in determining whether FDI is likely to affect security or public order. In determining the potential effects of FDI, Member States and the Commission may consider the impact on: critical infrastructure (energy, transport, water, health, communications, media, data processing or storage, aerospace, defense, electoral or financial infrastructure, sensitive facilities, and land and real estate crucial for the use of

such infrastructure, etc.); critical technologies and dual-use items (artificial intelligence, robotics, semiconductors, cybersecurity, aerospace, defense, energy storage, quantum and nuclear technologies, nanotechnologies and biotechnologies, etc.); the supply of critical inputs (energy or raw materials, food security, etc.); access to sensitive information (personal data, ability to control such information, etc.); and the freedom and pluralism of the media.

Regulation 2019/452 not only identifies vulnerable fields where any influence could trigger the infringement of the State's security or public order, but also provides a list of subjects who can affect those vulnerable fields. Such subjects could include: a foreign investor who is directly or indirectly controlled by the government, including state bodies or armed forces, of a third country, including through ownership structure or significant funding; a foreign investor who has already been involved in activities affecting security or public order in the Member State; or where there is a severe risk that the foreign investor engages in illegal or criminal activities.

Furthermore, § 36 of the Preamble of Regulation 2019/452 indicates that when a foreign direct investment constitutes a concentration falling within the scope of Regulation No 139/2004, this Regulation and Article 21(4) of Regulation 139/2004 should be applied consistently. This means that the grounds for screening set out in Article 1 of Regulation 2019/452 and the notion of legitimate interests within the meaning of the third paragraph of Article 21(4) of Regulation 139/2004 should be interpreted coherently, without prejudice to the assessment of the compatibility of the national measures aimed at protecting those interests with the general principles and other provisions of EU law.

The analysis of Regulation 2019/452 shows that an FDI screening mechanism is directly related to ensuring economic security. Such regulation proves that economic security is not part of the EU security policy. Otherwise, the European Parliament and the Council could not have adopted such legislation. As mentioned

in the analysis of the TEU, EU institutions cannot make regulations or directives on EU security policy issues, and any decision in this field could be taken by the European Council, the Council, and the High Representative of the Union for Foreign Affairs and Security Policy only, but not the European Parliament. In addition, any decisions in the security field could be taken only by voting in unanimity. This regulation was adopted with the ordinary legislative procedure, which means that a qualified majority could adopt it.

The EU's secondary legislation, which exclusively regulates mergers, also allows us to state that EU economic security is separated from the EU common security policy. Regulation 139/2004, in which Article 21 allows Member States to take measures to protect public security in the Member State, was similarly adopted by the Council under a qualified majority voting mechanism, considering the opinion of the European Parliament.

Even the draft of the EU regulation which is dedicated to controlling foreign subsidies shows that EU economic security issues related to foreign countries' subsidies and mergers are not an integral part of the EU common security policy. The Proposal for a Regulation on Foreign Subsidies Distorting the Internal Market (European Commission, 2021), forwarded to the Council and European Parliament by the ordinary legislative procedure, clarifies that the European Commission considers EU economic security an integral part of the EU's common commercial policy. The Commission indicates that "the proposed regulation falls mainly within the scope of Article 207(2) TFEU, which provides for the adoption of measures defining the framework for implementing the common commercial policy."

EU Economic Security Policy and EU Common Security Policy

The analysis of EU law shows that the European Commission and other EU institutions, while establishing an EU-level legal framework for implementing

the common commercial policy, made decisions in those areas that in non-EU countries are part of the economic security policy, which is an integral part of the national security policy. Considering the place of the common commercial policy, it can be stated that the European Commission has the broad power to adopt decisions allowing or prohibiting mergers. Not all Member States are in favor of such a broad jurisdiction of the European Commission.

In particular, Germany and France ran out of patience when, on 6 February 2019, the Commission announced its decision to prohibit an acquisition in the *Siemens/Alstom* case despite political pressure (Rees & Chan, 2019) from the respective countries to authorize the transaction.

In *Siemens/Alstom* (2019), the European Commission concluded that the concentration by which Siemens AG would acquire sole control of Alstom SA by combining Alstom and Siemens' mobility business, including its rail traction drives business and related activities, was incompatible with the internal market and the functioning of the EEA Agreement.

The participants of the merger explained the economic rationale for such an acquisition, stating that:

> The ... economic rationale for the Transaction is to combine two global railway players with unique customer value and operational potential. The combination of the Parties' experience, complementary product offerings and geographic footprints would enable the Merged Entity to compete effectively at the global level in the future and respond to tomorrow's mobility challenges while addressing the increasing competitive pressure from rapidly growing (Asian) competitors, to the benefit of customers and consumers. (§ 9)

Following this decision, France and Germany were quick to state that "there is an increasing awareness that a reform is necessary" (Rees & Chan, 2019) before

announcing, on February 19, 2019, "A Franco-German Manifesto for a European industrial policy fit for the 21st century," which proposed changing the EU competition merger framework. In this Manifesto, France and Germany called for a more ambitious European industrial strategy with clear objectives for 2030.

In the Manifesto, both countries' governments stressed that "Europe's economic strength in the coming decades will be hugely dependent on our ability to remain a global manufacturing and industrial power." Enabling the EU to compete globally in specific fields, such as carbon-neutral technology, is so important that the EU can only succeed if its undertakings pool funding, skills, and expertise.

They propose three pillars on which European industrial strategy should be built: 1) massive investment in innovation, ensuring access to funds, allowing emerging leaders and cooperation, and creating consortiums; 2) adapting the EU regulatory framework, changing existing competition rules; and 3) the implementation of effective measures for defending EU technologies, companies, and markets.

Further actions of the European Commission show that its approach to economic security issues has changed. It began to consider this issue as a component of national security; therefore, it initiated a procedure foreseen in the TEU, title V, which is dedicated to common security policy issues.

On June 20, 2023, the European Commission and the High Representative of the Union For Foreign Affairs and Security Policy issued a joint communication to the European Parliament, the European Council, and the Council on the "European Economic Security Strategy." The Communication proposed a Strategy which aims to provide a framework for the robust assessment and management of risks to economic security at the EU, national, and business levels while preserving and increasing EU economic dynamism (European Commission, 2023, p. 2).

When reviewing the proposed Strategy, one can observe the messages of the Franco-German Manifesto (2019) and other experts' opinions (Lymperopoulos, 2024). In the proposed Strategy, the European Commission stressed that open and rules-based trade and investment, secure cross-border connectivity, and collaboration on research and innovation will remain critical drivers of European competitiveness and resilience. It also expressed the need to rely on trade and the Single Market to spur competition and ensure that EU undertakings have access to raw materials, technologies, and other inputs, which are crucial for boosting their competitiveness and resilience and sustaining current and future employment and growth. Considering this, the Commission indicated three priorities on which the EU should focus its actions to ensure the achievement of the strategy aims: (1) promoting EU competitiveness, (2) protecting the EU from economic security risks, and (3) partnering with the broadest possible range of countries who share EU concerns or interests in economic security (European Commission, 2023, p. 2).

The proposed Strategy aims to protect the EU's economic security and reinforce the economy's resilience while maintaining and growing the EU's technological edge. This means promoting and investing in EU competitiveness and growth, supporting a strong and resilient economy, diversifying supply chains, fostering the EU's research, technological, and industrial base, and responding to practices such as economic coercion (European Commission, 2023, pp. 2, 6).

However, it should be noted that despite the economic security goals set in the Communication on the European Economic Security Strategy (European Commission, 2023), the European Commission and the High Representative of the Union For Foreign Affairs and Security Policy strongly indicate that the EU does not forget the main goal that led to the creation of the Economic Community that later became the EU. This objective was to create a Single Market in which there is the free movement of goods, persons, services, and capital and

effective competition. As mentioned above, changes implemented by the Lisbon Treaty indicate that the creation of the Single Market is complete, and the EU will strengthen it. The positions of the European Commission and the High Representative of the Union For Foreign Affairs and Security Policy on the Strategy indicate that strengthening the Single Market must remain the basis of economic security policy. They observe that the Single Market is the EU's best asset to keep its economy prosperous, innovative, and resilient. This is most often associated with ensuring economies of scale for cooperating across borders within the EU and maintaining a level playing field (European Commission, 2023, p. 6).

Now, it is up to the European Council to decide whether EU economic security should be considered part of the Common Security Policy or remain under the Common Commercial Policy. If the European Council decides that EU economic security is an integral part of the Common Security Policy, then this means that the powers of the European Commission will be narrowed, and not only the European Council but also the Member States will have to be more active in this field. Considering the unanimity requirement in making decisions on Common Security Policies, this means that decisions on economic security issues may be hindered, especially when the current geopolitical situation shows that the EU Member States do not find consensus on other EU national security issues.

In the area of Common Security Policy, EU Member States that do not agree with the decisions of the European Council or the Council may decide not to comply with them; they are only obliged not to create obstacles for other states to implement those decisions. The integration of the Economic Security Policy into the Common Security Policy may not only weaken the EU's economic security but may also have a detrimental effect on the Single Market. Therefore, it can be concluded that it would be preferable if Economic Security remained an integral part of the Common Commercial Policy. If EU policymakers would like to decide differently and consider that competition regulation falls under economic

security, which is an integral part of EU national security, then EU constitutional treaties should clearly allocate EU institutional responsibilities from EU Member States. The EU treaties should unambiguously show which decisions could be made by EU institutions under the common commercial policy and which decisions can be made only following the EU national security policy implementation procedure.

The support of national leaders to ensure EU economic security

The analysis of the discussions on EU Economic Security shows the efforts of the largest Member States (Germany and France) to push the European Commission toward the more coherent authorization of concentrations creating national leaders. In essence, this means that the EU should facilitate the creation of mega-conglomerates. The arguments of some authors indicate that today, it is already a reality that some industries belong to conglomerates. For example, Hasik (2020, p. 189) states that "the largest defence contractors today are practical conglomerates; more commercially oriented firms do not often span industries from automotive to aerospace to shipbuilding." Witt presents the case where, over the relatively short course of their existence, the five biggest US tech companies, Alphabet (formerly Google), Amazon, Meta (formerly Facebook), Apple, and Microsoft, have collectively acquired in excess of 800 businesses. The targets of these acquisitions are frequently not competitors, but innovative start-ups that have developed technologies complementary to the acquiring tech giant. This type of transaction is traditionally referred to as a conglomerate acquisition (Witt, 2022, p. 1).

The research of various authors shows that conglomerates can be beneficial to industry but can also have detrimental effects not only on the market but also on the political situation in different countries.

According to Cheng's in-depth analysis, conglomerates benefit from economies

of scale and scope. They also provide opportunities for internal transactions, which reduces reliance on external parties and minimizes legal and contract enforcement issues. Conglomerates have access to superior financial resources, making market entry and risk sharing easier. By combining the financial resources of their different parts, they can enter markets that might be too costly for independent competitors. Diversified operations allow them to spread operational risks. In addition to offering an internal capital market, conglomerates can also provide an internal market for labor and managerial talent. They also have good access to international capital markets (Cheng, 2016, pp. 41–49).

Cheng also shows that conglomerates have various negative effects, aside from the impact on competition, which is discussed in part 3 of this paper. These include high agency costs, the crowding out of SMEs and entrepreneurs, the distortion of access to financial markets, overall welfare effects, and political economy concerns. The high agency costs of conglomerates are due to their pyramidal structure, which involves a holding company owning subsidiary companies, which in turn own stakes in other companies. This structure can lead to issues such as tunneling, where assets and income are diverted to higher-tiered firms, and entrenchment, which allows the controlling shareholder to enjoy private benefits without fear of a takeover. Additionally, conglomerates can distort the allocation of capital economy-wide due to their internal capital market (Cheng, 2016, pp. 49–55).

In addition, Lande and Vaheesan (2019, p. 87) explain that corporate size often translates to political power. They say that an extensive body of research has found that firm size is correlated with political activity, and larger firms make larger contributions to political campaigns (Gilens & Page and Salamon & Siegfried in Lande & Vaheesan, 2019, p. 87). Campaign contributions may increase the likelihood that the member's votes and other actions are aligned with their interests (Hill et al. in Lande & Vaheesan, 2019, p. 87). Large firms can also wield

political power through lobbying (Chen et al. in Lande & Vaheesan, 2019, p. 89). Lande and Vaheesan even state that US antitrust institutions have shown reluctance and unwillingness to challenge some huge mergers, which could, in part, be caused by the considerable influence those companies have over them and the political environment (p. 89). In addition, conglomerates leverage their power to finance favorable media coverage and academic research (Baum & Zhukov and Fabbri et al. in Lande & Vaheesan, 2019, p. 87), and can even shape the parameters of public debate through a variety of means (p. 89). In such a way, "at a large corporation, a handful of individuals – executives and directors – make decisions that affect entire cities, regions, and even the nation" (p. 90).

Considering the positive and negative effects of large conglomerates, antitrust authorities should be very careful when deciding whether to authorize a proposed concentration. Assessment should be based on considering not only economic issues but also non-economic impacts.

The Regulation of Concentrations for Ensuring EU Economic Security

As the above analysis shows, regulating concentrations contributes to implementing the Economic Security Policy. The practice of both EU and non-EU countries confirms this. For example, the merger control regimes in the US and the UK acknowledge that both competition-economics-based criteria and the public interest (including national security interests) ought to be considered when accepting, conditionally approving, or rejecting takeovers involving a foreign acquirer (Mudzamiri & Osode, 2021, p. 6).

China has developed a three-layer protection framework across foreign investment law and anti-monopoly law, which consists of market access control, national security review, and anti-monopoly merger control. The market access control mechanism is set up as the first layer of protection, which preserves national security by prohibiting and restricting foreign investments' access to

security-sensitive industries. In the next layer, the national security review, a screening mechanism is involved, which allows the prohibition of the transaction on national security grounds and preserves national security by identifying, remedying, and prohibiting foreign investments that affect or may affect China's national security. The third layer is anti-monopoly merger control, which allows the distinction between pseudo-overseas mergers and actual overseas mergers. The prohibition of pseudo-overseas mergers that are de jure between two foreign enterprises but de facto lead to the transfer of actual control over a Chinese domestic enterprise to a foreign enterprise allows the protection of indigenous brands from being controlled by foreign investors, and allows the protection of sensitive industries from inappropriate levels of foreign control (Meirong & Qian, 2023, pp. 496, 506).

Currently, the implementation of the EU's economic security policy can be seen through the application of the principle of extraterritoriality when making decisions on the authorization or prohibition of concentrations and the application of Article 21 of Regulation 139/2004.

Extraterritoriality of the Jurisdiction

Article 1(1) of Regulation 139/2004 clearly shows that it applies to all concentrations with a Community dimension. Article 1(1) explains which concentrations are considered a "Community dimension." The Community dimension is defined by considering undertakings' worldwide and community-wide aggregate turnover, as well as national aggregate turnover in at least three Member States. Article 5(1) explains that aggregate turnover means the annual amounts derived by the undertakings in the concentration from the sale of products and the provision of services to undertakings or consumers in the EU or a Member State.

In addition, § 10 of the Preamble of Regulation 139/2004 clarifies that undertakings in the concentration do not have to have their seat or their principal fields

of activity in the EU. It is enough that they have substantial operations there. The Regulation does not provide any further explanations regarding the meaning of "substantial operations."

Such regulation shows that even concentrations involving undertakings outside the EU must have ex-ante approval from the European Commission when their annual aggregate turnover derived from the EU market reaches the thresholds defined in Article 1. Scott (2014, p. 1343) labelled such a legislative technique "territorial extension."

The European Commission has not once declared that EU merger regulation rules should apply to third-country undertakings when the annual turnover of such undertakings established outside the EU or European Community in planned transactions reaches the thresholds defined in Regulation 139/2004. The EU turnover threshold is met when the undertakings sell the defined amount of goods or provide services within the EU.

For example, the European Commission assessed the concentration of two US corporations in the case of *Boeing/McDonnell Douglas* (1997) based on "territorial extension." Boeing operated in two principal areas: commercial aircraft, and defense and space. McDonnell Douglas operated in four principal areas: military aircraft; missiles, space, and electronic systems; commercial aircraft; and financial services. Under the agreement, McDonnell Douglas would become a wholly owned subsidiary of Boeing. In such a way, the world's largest aerospace company would be established. The European Commission found that the annual aggregate turnover of Boeing and McDonnell Douglas in the common market exceeded threshold levels; therefore, the planned concentration was considered in the Community dimension, and the Commission had jurisdiction to assess such a concentration.

At first, the European Commission did not allow the concentration, despite the US Federal Trade Commission not opposing the merger. The Commission

concluded that "Boeing already enjoys a dominant position on the overall market for large commercial aircraft as well as on the markets for narrow-body and wide-body aircraft," and the "proposed concentration would lead to the strengthening of a dominant position through which effective competition would be significantly impeded in the common market." The European Commission approved this concentration only after a series of commitments undertaken by Boeing.

Ikejiaku and Dayao (2021, p. 84) analyzed discussions on this merger issue in various sources and indicated that "[t]he US suspected that the Commission's criticism of the merger had more to do with general industrial policy fears and an impulse to protect Airbus, so it regarded the European hostility to this venture as little more than knee-jerk protectionism."

The case of *MCI WorldCom/Sprint* (2000) was the first in which the European Commission prohibited the merger of global communications companies MCI WorldCom and Sprint, which were not established in the European Community. In the same way as in the *Boeing/McDonnell Douglas* (1997) case, the Commission found that both companies' aggregate turnover in the European Community indicated that the planned transaction was related to the Community dimension, and found it incompatible with the common market because it would lead to either the creation of a dominant position or the reinforcement of a dominant position in different markets.

In another case, *General Electric/Honeywell* (2001), the European Commission declared the concentration by which General Electric Company of the USA had agreed to merge with Honeywell International Inc. of the USA incompatible with the common market because the proposed merger would create or strengthen a dominant position in several product markets. Schmitz argued that the Commission's decision reflected the goal of EU competition law to protect small and medium enterprises from dominant competitors (Schmitz, 2002, p. 543).

In Gencor v. Commission (1999, § 90), the CFI not only explained the

territorial scope of Regulation 139/2004 but also assessed the compatibility of the European Commission's right to prohibit concentrations of non-EU undertakings with public international law.

In this case, a group of companies incorporated in South Africa (except one parent company incorporated under English law) operating mainly in the mineral resources (platinum and rhodium markets) and metals industries decided to form a concentration. Gencor, which was participating in the concentration, contested the applicability of Regulation 139/2004 on the grounds that the concentration was related to economic activities conducted within the territory of the Republic of South Africa, and had been approved by the authorities of that country (the transaction did not give rise to any concerns under South African competition law).

The court explained the territorial scope of Regulation 139/2004 by stating that in "order for a concentration to be regarded as having a Community dimension, the undertakings in question must be established in the Community or that the production activities covered by the concentration must be carried out within Community territory." Similarly to the European Commission, the court determined that the annual turnover within the EU of the undertakings concerned reached the thresholds defined in Regulation 139/2004, and decided that Regulation 139/2004 was applicable to such concentrations.

As per the court's opinion, the term "substantial operations" mentioned in the Preamble of Regulation 139/2004 does not prioritize production operations over sales operations when defining its territorial scope. Instead, it gives more weight to sales operations within the common market as a factor connecting the concentration to the European Community. This requirement can be met simply by making sales within the European Community, regardless of where the sources of supply and production are located.

The court indicated that undertakings in the concentration "carried out sales

in the Community before the concentration and would have continued to do so thereafter," and concluded that Regulation 139/2004 is applicable to concentrations which, "while relating to mining and/or production activities outside the Community, have the effect of creating or strengthening a dominant position as a result of which effective competition in the common market is significantly impeded."

Commenting on the compatibility of the contested Commission decision with public international law, the CFI pointed out that the application of Regulation 139/2004 "is justified under public international law when it is foreseeable that a proposed concentration will have an immediate and substantial effect in the Community." The court found that three immediate, substantial, and foreseeable effect criteria were satisfied.

In addition, the CFI indicated that the Community violated the principle of non-interference or proportionality in exercising Community jurisdiction, not considering that the concentration was allowed by the Republic of South Africa authorities.

Following that, the CFI concluded that the application of Regulation 139/2004 to the proposed concentration was consistent with public international law.

EU law, practice, and decisions show that, due to the exterritoriality of jurisdiction in regulating concentrations with an EU dimension, the European Commission and EU courts' decisions contribute to ensuring European economic security by protecting the EU internal market. In the *Boeing/McDonnell Douglas* (1997) and *General Electric/Honeywell* (2001) decisions, some experts argue that the EU discriminated against foreign firms to protect or promote domestic firms (Ikejiaku & Dayao, 2021, p. 83).

Article 21 of Regulation 139/2004

One significant provision of Regulation 139/2004 that is often linked to

protectionism is Article 21, which allows Member States to take measures to protect legitimate interests other than those considered by this Regulation. Such measures must be appropriate and compatible with the general principles and other provisions of EU law. Considering the proportionality principle, explained by the ECJ in the *Fromançais SA v. FORMA* (1983) case, such measures should correspond to the importance of the aim and be necessary to achieve those aims. This recognizes that Member States may have a legitimate interest in investigating a merger beyond harm to competition (Whish & Bailey, 2018, 836).

Article 21 also provides a list of reasons – legitimate interests – indicating suitable grounds for involving Article 21 to justify national measures. Such interests include public security, plurality of the media, and prudential rules. These reasons are considered "recognized interests" (prima facia legitimate) (Kokkoris, 2023, p. 190).

This list is not exhaustive. Other interests can also be legitimate grounds for involving specific measures, but they require ex-ante review by the Commission (Kokkoris, 2023, p. 190). Article 21 indicates that any other public interest must be communicated to the Commission and can be implemented after the Commission's approval. The Commission makes its decision after an assessment of the compatibility of the measures with the general principles and other provisions of EU law.

Ikejiaku and Dayao (2021) state that the provisions of Article 21 can be described as a double-edged sword. Although this article is a powerful tool against the threat of protectionism, it is also a loophole that presents an opportunity to exploit it for protectionist ends. Significant government interventions on the ground of legitimate interest in merger cases illustrate Member States' attempts to use merger regulation to pursue protectionism (p. 83).

Kokkoris (2023) indicates that there has been an increasing trend of making concentration assessments based on factors that are not merger-specific per se.

A concentration's competitive impact was assessed by considering public interest, national security, and other factors. Concentration control has been used to introduce or complement wider industrial policy or other priorities unrelated to the economic impact of the mergers in question (p. 177).

The Commission's Proposal for a Regulation on Foreign Subsidies Distorting the Internal Market

The European Commission's (2021) Proposal for a Regulation on Foreign Subsidies Distorting the Internal Market, also foresees protectionist measures for safeguarding EU economic security.

Article 1 of the Draft Regulation indicates that the Regulation lays down rules and procedures for investigating foreign subsidies that distort the internal market and for redressing such distortions. Such distortions may arise with respect to any economic activity, including concentrations. It also addresses foreign subsidies granted to an undertaking engaging in an economic activity in the internal market. An undertaking acquiring control or merging with an undertaking established in the Union or an undertaking participating in a public procurement procedure is considered to be engaging in economic activity in the internal market.

The meaning of a concentration in the Draft Regulation is similar to the meaning defined in Regulation 139/2004. Article 18(1) of the Draft Regulation indicates that a concentration is considered to represent changes in control on a lasting basis as a result of "a merger of two or more previously independent undertakings or parts of undertakings," or as a result of an "acquisition, by one or more persons already controlling at least one undertaking, or by one or more undertakings, whether by purchase of securities or assets, by contract or by any other means, of direct or indirect control of the whole or parts of one or more other undertakings."

This Draft Regulation requires the European Commission to approve the

concentration ex-ante when at least one of the merging undertakings is established in the EU and generates an aggregate turnover in the EU of at least €500 million, and the undertakings received from third countries an aggregate financial contribution in the 3 calendar years before notification of more than €50 million. The smaller concentrations are subject to an ex officio procedure.

Following Article 3 of the Draft Regulation, the European Commission, under an ex-ante or ex officio assessment procedure, assesses the degree of distortion of the internal market. A distortion on the internal market is considered to exist where a foreign subsidy is liable to improve the competitive position of the undertaking concerned in the internal market and where, in doing so, it actually or potentially detrimentally affects competition in the internal market. A foreign subsidy directly facilitating a concentration is considered most likely to distort the internal market. However, a subsidy whose total turnover is below €5 million over a 3-year period is unlikely to distort the internal market.

9.1.3. The assessment of non-horizontal concentrations

Since making decisions under Regulation 139/2004, the European Commission has scrutinized vertical and conglomerate mergers. Already in the first Commission Regulation 3384/94, implementing the first Council Regulation on concentration control No. 4064/89, three (vertical, horizontal, and conglomerate) effects on the market, and, accordingly, types of concentrations, were distinguished.

In the currently valid Commission Regulation 2023/914 implementing Regulation 139/2004, the participants in the concentration are also requested to provide the European Commission with information on the markets on which the concentration will have an impact (including the main affected markets) (CO form, § 1.1). In Section 6, the CO form requires, in addition to detailed information about the horizontally related affected markets and vertically related upstream and downstream affected markets, information about any other markets

in which the notified concentration may have a significant impact.

The analysis shows that, unlike vertical impact, conglomerate impact is assessed not in "affected" markets, but in those "in which the notified concentration may have a significant impact." The notified concentration is considered regarding whether it may have a significant impact on product and geographic markets, where such markets include the whole or a part of the EEA and:

> a. any of the parties to the concentration has a market share larger than 25% and any other party to the concentration is a potential competitor in that market.
>
> b. any of the parties to the concentration is present in a product market, which is a neighbouring market closely related to a product market in which any other party to the concentration is engaged, and the individual or combined market shares of the parties in any one of these markets is 30% or more (CO form, Section 6).

The analysis of Section 6 of the CO form allows us to state that the European Commission assesses conglomerate concentrations formed by market participants located in closely related neighboring markets and non-parallel product markets. However, in the case of a merger with a market participant located in a non-parallel market, the concentration is considered to have a significant effect only if the concentration involves a considered potential competitor – that is, if one of the participants in the concentration "has plans to enter a market, or has developed or pursued such plans in the past three years."

The European Commission confirms its approach to concentrations in the *Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings* (2008), stating that in practice, it focuses "on mergers between companies that are active in closely

related markets, e.g. mergers involving suppliers of complementary products or of products which belong to a range of products that are generally purchased by the same set of customers for the same end use."

The European Commission should limit itself only to paying attention to concentrations in which the undertakings forming the transaction are located in neighboring and closely related markets. Due to the merger, the undertakings, with the power gained in one market, can, for example, foreclose the market through predatory pricing, even in those markets that are not adjacent or closely related. There are also many concentrations of economic entities located in unrelated markets. The harm to competition from such concentrations is also no less significant than the harm caused by other concentrations. Large undertakings operating in several unrelated markets can cover losses in one business with profits earned in another market without disruption. By doing so, they can eliminate competitors from their chosen market. Smaller companies that can operate in only one product market are usually unable to compete and withstand the actions of powerful competitors in that market. It is understandable that other market protection measures, such as those prohibiting the abuse of a dominant position, can be used. However, it is not necessary to dominate the market to force a competitor out of the market. Until a dominant position is achieved by subsidizing losses with profits gained in other product markets, some competitors will be weakened or excluded from the market. As a result, the possibility that entire industries may be transferred to the control of several undertakings cannot be ruled out. Large market participants can determine the development of a state's economy and influence the political situation. Such power acquired by one undertaking is not useful for either the consumer or the state.

Article 2(3) of Regulation 139/2004 establishes the assessment rule of "significant impediment of effective competition" (hereinafter - SIEC), which reads as follows: "A concentration which would significantly impede effective competition,

in the common market or in a substantial part of it, in particular as a result of the creation or strengthening of a dominant position, shall be declared incompatible with the common market." This allows the evaluation of all types of concentrations: horizontal and non-horizontal (vertical and conglomerate).

Briefly discussing this rule, it can be said that its main focus is not on determining a dominant position and the resulting harm, but directly on the possible anti-competitive effects. The central question of the rule is whether sufficient competition will remain after the concentration (Varona et al., 2005, p. 145). Damages resulting from the creation of a dominant position, although considered the most important (Regulation 139/2004, Preamble, § 26) or exemplary (Vickers, 2004, p. 460; Völcker, 2004, p. 403), are not the only possible form of damage. In contrast to the former rule under Regulation 4064/89, the new rule does not require the establishment of a dominant position during the assessment of concentrations, but allows for a direct assessment of the impact on competition and allows an immediate decision to prohibit or allow a specific concentration.

When harm to competition is established, a transaction cannot be justified on the grounds that a dominant position is not created. When assessing the consequences of a concentration, the focus is not on determining dominance, but on determining the impact on competitors, buyers, and consumers (Colley, 2004, p. 343; Monti, 2004a) .

The conditions for assessing concentrations provided for in the assessment rule require it to be applied dynamically (European Commission, 2004, p. 12), assessing not only the situation of the economic entities participating in the concentration, but also the competition in the market itself. The SIEC rule is flexible enough to adapt to all possible situations. It allows all types of concentrations and all types of damage that occur to be evaluated (Monti, 2004b, p. 3).

The assessment rule does not raise any concerns regarding its applicability to vertical and conglomerate concentrations, where the power acquired in one

market is used in another market where the undertaking does not have significant market power. In the case of a power transfer from one market to another, it is not always easy to prove that the transaction creates or strengthens a dominant position, as the impact essentially arises in the market to which the power is transferred. Impact results may not appear immediately after the transaction, but may instead manifest later. They can also appear without the creation or strengthening of a dominant position.

It is important to note that the assessment rule allows the prohibition of a transaction that creates or strengthens a dominant position not of the parties to the concentration, but of other competitors who are not involved in the transaction. The rule also allows the assessment of the acquisition of the "disobedient" competitor and transactions in an oligopolistic market. In an oligopolistic market, if the concentration significantly impedes effective competition, it may be prohibited even if the company is not dominant (Regulation 139/2004, Preamble, § 25).

Some authors posit that the SIEC rule establishes more rigorous economic analysis, a higher level of analytical evidence (Ridley & Ysewyn, 2004), and new economic professionalism (Schmidt, 2004, p. 1567) in assessing EU mergers. Applying the SIEC rule requires focusing not on the legal, but on the economic assessment of the impact of a concentration. Such an economic analysis reduces the likelihood of errors, leading to the prohibition of concentrations, which does not significantly impede effective competition.

An economic, analytical assessment allows for the consideration of both competition-damaging and competition-enhancing impacts. If the concentration brings more benefits than harm to the market, it is more easily authorized under an economic assessment (Varona et al., 2005, p. 144; Schmidt, 2004, p. 1568). Understandably, such an economics- and impact-based analysis results in a more complex assessment of concentrations. Therefore, both lawyers and economists

should participate in the assessment.

The analysis shows that concentrations are assessed by applying the universally known causation rule, which requires establishing a causal connection between the action and the loss suffered. The only difference is that in the European Commission's authorization, it is not the performed activity and the existing damage, but the planned activity and the estimated damage that are assessed. In concentration regulation, the action is a proposed concentration, and the loss is expected to have a detrimental effect on competition. The following parts of this paper present an analysis of concentration regulation following the causation rule.

9.2. Action: concentration

In § 20 of its Preamble, Regulation 139/2004 defines concentrations as "operations bringing about a lasting change in the control of the undertakings concerned and therefore in the structure of the market." Article 3(1) explains which transactions in the change of control bring lasting results. It can be clearly seen that the definition of a concentration in Regulation 139/2004 emphasizes not so much the change in the structure of undertakings, but the impact on the market structure arising due to the change in the control of economic entities.

Article 3(1) of Regulation 139/2004 states that a concentration arises when a change of control on a lasting basis results from:

- the merger of two or more previously independent undertakings or parts of undertakings; or
- the acquisition, by one or more persons already controlling at least one undertaking, or by one or more undertakings, whether by the purchase of securities or assets, by contract or by any other means, of direct or indirect control of the whole or parts of one or more other undertakings.

The analysis of Article 3(1) of Regulation 139/2004 allows two ways of formation of concentrations to be distinguished:

- merging of undertakings or their parts;
- acquiring the right to control another undertaking or its part.

Accordingly, the definition of the content of the concentration transaction depends on the specific ways in which concentrations are formed, which are discussed below.

9.2.1. Concentration due to the merger of undertakings

Article 3(1)(a) of Regulation 139/2004 shows that a concentration may arise as a result of the merger of two or more previously independent undertakings or parts of undertakings. Analysis of this statement indicates that a concentration under Article 3(1)(a) arises when:

- independent undertakings participate in the transaction; and
- changes arise due to the merger of undertakings

Undertakings participating in the merger

The concept of an "undertaking" is not provided in the TEU, TFEU, or Regulation 139/2004. In the practice of applying EU competition law norms, EU institutions, based on economics, interpret the concept of an "undertaking" broadly (Craig & Burca, 1998, p. 888). In the decisions of the CJEU and the European Commission and the acts adopted by EU institutions, when defining the concept, not legal but economic criteria are put forward; that is, an undertaking is understood not as a registered economic unit, established and operating in accordance with the law, but as an economic market unit, not necessarily registered and not necessarily composed of one legal or natural person (Lasok, 2004, pp. 383–385). In the regulation of concentrations, an undertaking is considered to be any natural or legal person, regardless of its legal status and funding, which engages in economic activities of a certain regularity and continuity for which a fee is paid. For example, in *Polypropylene* (1986), the Commission indicated that the term

"undertaking " is not limited to legal entities; it also includes entities that do not have such rights.

Funding forms, legal status, or possible state ownership do not limit the concept of an undertaking. Business associations and government agencies can also be recognized as undertakings. Moreover, the business entity does not need to seek profit constantly. It does not matter whether the business entity aims to gain profit; it is sufficient that it carries out economic and commercial activities (Bellamy & Child, 2001, p. 39). For example, in the *Job Centre* (1997) and *Klaus Höfner and Fritz Elser v. Macrotron GmbH* (1991) cases, the ECJ indicated that public employment agencies are economic entities because employment has always been an economic activity carried out on a commercial basis, although no profit is gained in this particular case.

Following Article 3(1)(a) of Regulation 139/2004, two or more previously independent undertakings should participate in the transaction. This article applies not only when previously independent undertakings are merged, but also when only parts of undertakings are merged. However, such parts must be able to function as independent economic units capable of making independent decisions.

The words "previously independent" seem redundant in this definition, but they are intended to exclude a transaction involving undertakings that are already "concentrated" among themselves. This situation is likely to be rare, although it does occur in practice. For example, in *Ernst & Young France/Andersen France* (2002, *§ 11–17),* the Commission recognized the operation of five legally separate entities in a common network called Ernst & Young as a single undertaking. Following the Commission's assessment, the basis for the successful operation of five companies using one brand in an international network is in compliance with common professional rules and standards of service provision, which are set and controlled centrally for network members. Also, the network was recognized as a de facto single undertaking due to uniform behavior in the market. The members

of the network were vitally dependent on the centralized organization of network activities, opportunities to work with their international partners, and the reputation of individual network members. Although there was no common profit sharing among its members, a strong common financial interest manifested itself in the constant transfer of customers from one network unit to another. In addition, it should be noted that the failure of one member firm to comply with professional standards would have condemned other members of the network to the risk of loss, which also had an impact. In this way, the risk created by one member is shared among all members of the network. This sharing of risk also manifested itself in the fact that all the companies belonging to the network were covered by the same business risk insurance.

An essential condition for the independence of an undertaking is the ability to make economic and commercial decisions unilaterally. Therefore, a group of related economic entities that do not have a separate, independent business strategy are considered to constitute one undertaking. For example, in the ECJ case of *Imperial Chemicals Industries Ltd. v. Commission* (1972), the question of whether the parent and subsidiary companies should be considered as separate undertakings was decided. Although the subsidiary company was legally an independent entity, taking into account the fact that the subsidiary company did not actually carry out an independent policy in the market but obeyed the instructions of the parent company (§§ 132–136) and that the parent company had a decisive influence on the price policy of the subsidiary company (§§ 137–140), the ECJ came to the conclusion that the parent company and the subsidiary company formed one joint undertaking.

In another case, *Corinne Bodson v. SA Pompes funèbres des régions libérées* (1988), the ECJ noted that an agent acting on behalf of their principal is not considered a separate economic entity, even if they have separate legal subjectivity. However, following the decision of the CFI in *VIHO Europe BV v. Commission*

(1995), it cannot be completely ruled out that the members of a clearly decentralized group may be recognized as separate independent economic entities.

Furthermore, § 52 of the Commission Consolidated Jurisdictional Notice under Council Regulation No 139/2004 on the control of concentrations between undertakings (2004; hereinafter – Consolidated Notice) indicates that the situation is more complicated when both the acquiring and the acquired undertakings are managed by the state's one state institution or municipality. The fact that the state controls two undertakings does not necessarily mean that they cannot be considered independent. For example, in the Commission's decision in *CEA Industrie/France Telecom/Finmeccanica/SGS-Thomson* (1993), the enterprises SGS-Thomson, France Telecom, and CEA-Industrie were considered independent undertakings, although the owner of all entities was the French state.

In such a situation, it is essential to determine whether the transaction means internal restructuring or a concentration. If both economic entities were parts of the same undertaking before the transaction, unable to make decisions independently, then changes in the structure of the undertakings would not be considered a concentration, but internal restructuring. The opposite is also true: if they were not part of the same undertaking and could make decisions independently, the transaction would be regarded as a concentration. When undertakings can independently decide on their strategic issues after a legal transaction, the transaction will be considered a restructuring, even though the management of the shares of these undertakings would be transferred to one undertaking (Consolidated Notice, 2004, § 52).

Changes arising due to the merging of undertakings

Article 3(1)(a) of Regulation 139/2004 does not provide the meaning of the concept of "merger." In the Consolidated Notice, the Commission explained the meaning of this concept, distinguishing two types of "mergers": de jure

amalgamations or *absorptions* and de facto *amalgamations*.

De jure amalgamations occur "when two or more independent undertakings amalgamate into a new undertaking and cease to exist as separate legal entities" (Consolidated Notice, 2004, § 9). *De jure absorptions* occur when "an undertaking is absorbed by another, the latter retaining its legal identity while the former ceases to exist as a legal entity" (Consolidated Notice, 2004, § 9). An example of *de jure absorption* can be the *World Com/MCI* merger authorized by the Commission in 1998. In this case, the concentration involved the merger of MCI into TC Investments Corp, a Delaware corporation and a direct wholly-owned subsidiary of WorldCom. As a result of the transaction, only TC Investments Corp continued to exist as the surviving corporation under the name MCI Communications Corporation (EC case *World Com/MCI*, 1998, § 6).

In such a case, all the rights and obligations of one or more undertakings are transferred to another, which may be created for that purpose. After transferring assets and rights, the amalgamated or absorbed undertakings usually no longer legally exist or operate in a particular market segment, leaving this market segment to the newly created undertaking. A well-known example of the merger is the 1996 amalgamation of Ciba-Geigy and Sandoz, making the large pharmaceutical and chemical company Novartis (EC case *Ciba-Geigy/Sandoz*, 1996). Another example would be the amalgamation of Glaxo Wellcome and SmithKlein-Beecham and the creation of GlaxoSmithKlein in 2000 (EC case *Glaxo Wellcome/SmithKleinBeecham*, 2000).

De facto amalgamations do not change the legal personalities of the entities. This may arise when the activities of previously independent undertakings are combined in such a way that results in the creation of a single economic unit. The "existence of a permanent, single economic management" is needed to establish a single economic unit (Consolidated Notice, 2004, § 10). Examples of *de facto amalgamations* could be Commission cases *Ernst & Young France/*

Andersen France (2002) and *Price Waterhouse/Coopers & Lybrand* (1998) mergers scrutinized by the Commission. In *Ernst & Young France/ Andersen France* (2002, §§ 23–25), the Commission concluded that already at the co-operation stage, under the cooperation contract without changing legal personalities, Ernst & Young and Andersen France shared the same permanent economic management and financial interests conferring to them the character of a single economic entity. Meanwhile, in *Price Waterhouse/Coopers & Lybrand* (1998), a de facto *amalgamation*, the Commission recognized the alignment of the activities of two market networks performing audits and financial analyses. According to the Commission, when considering the question of whether a transaction constitutes a merger, it is necessary to determine whether the coordination of the activities of previously independent economic entities constitutes or does not constitute one single economic unit. Since the new entity, Price Waterhouse, had the characteristics of a single economic unit – that is, it had sufficient influence in decision-making and the coordination of activities, it had a financial interest in recognizing and adhering to this coordination, it distributed profits and losses among group members, and it had joint external responsibility – the actions were recognized as a de facto amalgamation.

9.2.2. Concentration due to acquisition of control

Article 3(1)(b) of Regulation 139/2004 clarifies that a concentration may also occur if a person controlling one or more economic entities or an economic entity acquires control of another economic entity. The analysis of this article allows us to distinguish several basic conditions that must exist for a specific transaction to be recognized as a concentration. A transaction will be recognized as a concentration if:

1. At least two participants are involved in the transaction:
    - acquirer of control – a person who controls one or more undertakings

or an undertaking;
- undertakings transferring control.

2. Changes will result from an acquisition of control or a change in control.

The paper now further analyzes conditions for transactions to be considered a concentration.

Undertakings participating in the acquisition

As mentioned, a concentration in which one of its participants acquires control over another must involve at least two participants: the acquirer and the transferor.

The acquirer of control

The analysis of Article 3(1)(b) of Regulation 139/2004 shows that an "undertaking," the meaning of which is the same as in the case of a merger of economic entities, can be the acquirer of control. When the undertaking acquires control of another undertaking, it is clear that a concentration exists. For example, in the Commission case of *Bridgepoint/Nexity Lamy And Oralia Partenaires* (2024), the Bridgepoint Group acquired ultimate and indirect sole control over Nexity Lamy and Oralia Partenaires and its subsidiaries. The concentration was established by acquiring the entire share capital and voting rights of Nexity Lamy and Oralia Partenaires through new holding companies, which, in turn, would be indirectly controlled by Bridgepoint.

The analysis of Article 3(1)(b) of Regulation 139/2004 shows that next to the concept of an "undertaking," the concept of a "person" is presented. The question is: is the concept of a "person" the same as the concept of an "undertaking" under Article 3(1)(a)? Is it reasonable to assume that "persons" can also include natural persons? Since the explanation of this concept is not provided in Regulation 139/2004, to determine its content, it is necessary to study the practice of the Commission and the courts and refer to the guidelines issued by the Commission.

Examining Article 3(1)(b) of Regulation 139/2004, it can be observed that if a natural person or their group does not engage in economic activity and does not have company shares or control, the acquisition of an undertaking or its shares during the transaction will not result in a concentration.

However, when a person or related persons already carry out economic activities or control one or more undertakings, acquiring an undertaking or shares may constitute a concentration. The Commission's practice also confirms this. For example, in *Asko/Jacobs/Adia* (1991), the Commission recognized that the German holding company Asko and the private Swiss investor Jacobs had jointly acquired control of the Swiss company Adia. Jacobs was recognized as a related person because he had shares in other businesses trading in chocolate, candy, and coffee. In another case, *Allied Lyons/HWE-Pedro Domecq* (1994), Mora-Figueroa was recognized as a "person" because he was the owner and president of the company HWE, and the executive director of the company Pedro Domecq.

Following Article 3(5)(a) of Regulation 139/2004, a transaction will not be recognized as a concentration if, upon its occurrence, control would be gained by entities such as credit institutions, other financial institutions, or insurance companies, whose regular activity is transactions or dealing in securities, if they only temporarily acquire the securities of the undertaking to resell them. In such a case, it is required that their activities do not affect the competitive behavior of the undertaking, and they vote in the undertaking's activities only on matters of the transfer of the undertaking's assets or its securities. Resale of securities must take place within 1 year from the date of purchase, unless the Commission extends the deadline on reasonable grounds. Article 3(5)(c) of the Regulation indicates that a concentration also does not occur when the holding companies acquire the shares of the undertaking. However, the holding companies must use voting rights only to protect their investments and not to directly or indirectly influence the competitive behavior of the economic entity.

Article 3(5)(b) of Regulation 139/2004 shows that there would also be no concentration if control of an economic entity was acquired by an official, following the procedures provided for in the legislation of the Member State related to the liquidation of the company, insolvency, the conclusion of compromise agreements and the like.

The transferor of control

Following Article 3(1)(b) of Regulation 139/2004, it can be stressed that only the control of the undertaking can be transferred. Control can be transferred over the entire undertaking or only part of it. The concept of an "undertaking" in this article coincides with the concept of an "undertaking" provided in Article 3(1)(a) of Regulation 139/2004. When considering the transfer of control of an undertaking, the main question should be in what situation it is recognized that the transfer of control to another undertaking or person has occurred or will occur. This issue is addressed below.

Changes which arise due to the acquisition of control

Reference to when control is acquired under Article 3(1)(b) of Regulation 139/2004 can be found in the Regulation itself. Following this article, transactions are evaluated, which, upon conclusion, transfer previously independent undertakings to permanent sole or joint control, retaining their individual legal personality (Snelders, 1997, p. 96).

The Regulation clearly states that control can be transferred not only by purchasing shares (EC cases *Barclays/Computerlinks*, 2008; *Klepierre/ABP/Steen & Ström*, 2008; *Goldman Sachs/Deutsche Bank/Befraco*, 2008), but also by transferring all or part of the assets of the undertaking (Regulation 139/2004, Article 3(2)(a); EC case *Phoenix/Cerp Lorraine–Repartition France*, 2008).

The transfer of intangible assets such as registered trademarks or licenses can also constitute a concentration. In practice, it is quite difficult to distinguish the

transfer of assets from the transfer of assets equivalent to the transfer of control of an undertaking or its part. This depends only on whether the acquired property can operate on the market as a separate independent economic unit to which the market turnover can be clearly attributed (EC case *Vattenfall/Elsam and E2 Assets*, 2005). If the answer to this question is yes, then the transfer of assets is considered a concentration. For example, in the decision *Blokker/Toys'R'Us* (1997, §§ 12–16), the Commission concluded that the transfer of facilities, together with the right to sell the toys under the franchise agreement, constituted a concentration. However, it should be noted that the transfer of registered trademarks, licenses, patents, or copyrights, if no other assets are transferred, can constitute a concentration only if the licenses are exclusive and long-term (Consolidated Notice, 2004, § 24).

Article 3(2) of Regulation 139/2004 also notes that control can be acquired by concluding various agreements. The agreement will transfer control when its conclusion creates a similar influence on another business entity as when acquiring shares or transferring assets (Consolidated Notice, 2004, § 18). Control can be transferred not only by transferring ownership of the property, but also by granting the right to use it only. For example, in *GE/Agfa NDT* (2003, §§ 7–12), the Commission indicated that GE, through its wholly owned subsidiary, GE Aircraft Engines Inc. (GEAE), acquired sole control of Agfas NDT Business by way of a stock and asset purchase agreement. Control of business resources, management, and risk was acquired through contracts.

It should also be noted that some outsourcing may lead to concentration issues. In outsourcing, the service provider provides services to the client that the client previously performed themselves, such as cleaning services, organizational maintenance services, assembly of parts, etc. Generally, the service providers do not transfer the client's assets or employees, nor does the client retain the assets and employees. However, it can also be the other way around; the client's tools

and employees may be transferred to the service provider's organization, and the former employees would provide services to the client using the client's tools.

In outsourcing, a concentration may be established when these services can be provided not only to the client, but also to third parties immediately or soon after the property transfer (Consolidated Notice, 2004, §§ 25–27). According to the Commission, condition one is that the transferred property must provide conditions for market operation; that is, it must allow the undertaking acquiring the property to start operating in the market at least during the period corresponding to the start-up period of the joint operation (§ 26).

Control can be acquired simply because of the economic relationship between the parties (Consolidated Notice, 2004, § 20). It can also be created during not one, but several transactions. For example, in the Commission case *Royal Bank Private Equity/CINVEN/Chelwood Group* (2002, *§§ 1–3), the merger Commission noted that* within the framework of the planned operation, RBPE and Cinven were going to create a new company, Galileo, which the two parent companies would control. As a second step, RBPE's current stake in Ambion, as well as Cinven's current stake in Chelwood, would be transferred to Galileo, and therefore, RBPE and Cinven would acquire, through this newly incorporated joint venture, ultimate control over the target companies.

It is clear that when evaluating concentrations and examining possible cases of acquisition (transfer) of control, the Commission does not look into the form of a specific transaction, but into its essence and likely influence on the undertaking's behavior. In addition, it should be said that the Regulation on Concentrations does not consider a situation where existing control is strengthened as a concentration (Cook & Kerse, 2000, p.27). This is understandable because control either exists or it does not.

Following Article 3(3)(a) of Regulation 139/2004, control is usually acquired by persons or undertakings who directly acquire a majority of shares or are entitled

to rights under contracts. However, Article 3(3)(b) of Regulation 139/2004 indicates that there may be cases when undertakings or persons, without directly having legal rights, can, in fact, have a decisive influence on an undertaking. In the mentioned situations, indirect control is acquired, as indicated in Article 3(1)(b) of Regulation 139/2004. For example, a majority of shares may be owned by one person, but another may exercise the rights granted by the shares. Such a situation can arise when the rights granted by the shares are used not directly, but through another person or company. In such situations, the shareholder is only a theoretical intermediary, practically used as a tool by another company. Then, it is considered that a company that does not legally participate in the transaction but, in fact, acquires the power to control another business entity acquires control (Consolidated Notice, 2004, § 13). Such a relationship would occur where a subsidiary is involved in the transaction but the parent acquires effective control, or where the transactions involve an undertaking created to concentrate the shares or voting rights of the beneficial owners and to represent common interests or use their votes in unison (Cook & Kerse, 2000, p. 34). Indirect control can also be created in the presence of certain contractual relationships, financing, family ties, and other factors. For example, an investment company, by controlling an investment fund that finances an undertaking, may, in certain circumstances, indirectly acquire control of that entity (Consolidated Notice, 2004, § 15). It should be noted that not all circumstances must be present at the same time; each is important depending on the specific situation.

The fact that control can be gained indirectly is of great importance in practice. Undertaking (A) directly purchasing shares or assets may be controlled by one or more other undertakings (B), so the person controlling undertaking (B) may indirectly acquire control of undertaking (A). For example, in *PTT Post/TNT-GD Net* (1996) the Commission found that five postal companies and TNT acquired control of the company JVC. Five postal companies owned 50% of the

shares, with TNT holding the remaining 50%. Five postal companies established GD as a joint venture and transferred their shares to it for joint management. Given that GD was merely a means for coordinating the actions of the five postal companies, it was recognized that the five postal companies had indirect control over JVC. In another case, *Medeol/Elosua* (1994), the Commission found that Medeol acquired control of Elosua because it indirectly held 37% of Elosua's shares through its subsidiary Koipe, and then directly acquired an additional 20% of Elosua's shares.

Finally, it should be said that there will be no control if, to protect the public interest, the state acquires shares but does not intend nor have the opportunity to exercise decisive influence in that undertaking (Consolidated Notice, 2004, § 53).

The analysis of Article 3(2) of Regulation 139/2004 allows us to distinguish the main conditions under which control of an undertaking is acquired:

- a transaction must confer the possibility of exercising **decisive influence** on an undertaking;
- decisive influence enough to **be possible**;
- decisive influence must be on a **lasting basis**.

In further sections, the paper details the importance of determining decisive influence, ways of acquiring influence, and the significance of the ability to influence an undertaking's activities.

9.2.3. "Decisive influence" and control

Concentration occurs in the presence of influence, determining the activity of the undertaking. Article 3(2) of Regulation 139/2004 indicates those who could have the possibility of exercising decisive influence on an undertaking – that is, the "ownership or the right to use all or part of the assets of an undertaking," or "rights or contracts which confer decisive influence on the composition, voting or decisions of the organs of an undertaking."

Following Article 3(2) of Regulation 139/2004, it can be argued that legal control is unnecessary for "decisive influence" to occur. For example, in *Arjomari-Prioux SA/Wiggins Teape Appleton plc*. (1990), the Commission found that a transaction in which Arjomari acquired 39% of Wiggins Teape gave Arjomari sole de facto control over Wiggins Teape, as no single shareholder held more than 4% of Wiggins Teape. This means that "decisive influence" can be acquired with less than 50% of the voting shares.

However, the influence must be of some "weight" (Broberg, 2004, p. 742). The rights granted under national company law to protect the interests of minority shareholders are not sufficient to recognize influence. For example, in *Skanska Sverige/Posten/HOOC* (2001, § 9), the Commission indicated that one shareholder's rights were restricted to the power to block proposals concerning changes in the strategy and direction of HOOC. Thus, this person essentially enjoyed a minority protection right and not a decisive influence over the company.

Having a majority share in the undertaking is also not enough (Varona et al., 2005, p. 15). It is not the number of shares that is important, but the majority of votes, allowing influence on the business strategy of the undertaking and the decisions of the management bodies. There is also no "decisive influence" when agreements are only related to the day-to-day management of the undertaking. In contrast, undertakings and persons with veto rights in making strategic business decisions can acquire decisive influence. Business policy control is more important than day-to-day operations (Cook & Kerse, 2000, p. 39).

When assessing a concentration, the Commission examines the voting and other rights that the shareholders have and the influence they provide according to the statutes and regulations of the undertaking (Cook & Kerse, 2000, p. 36). When a qualified majority of shareholders' votes is required when deciding strategic issues, minority shareholders with sufficient votes can have the decisive influence. However, when a qualified majority of votes is only needed for decisions

on the protection of the rights of minority shareholders, then the veto right in making decisions on such issues will be considered insufficient to recognize decisive influence. For example, when the approval of a qualified majority is needed to change the undertaking's statute or significantly increase the share capital, the minority shareholders will not have a decisive influence because such issues are usually not considered issues of business strategy. For example, in *Eridania/ISI* (1991) the Commission recognized that the minority shareholders' veto rights, when dealing with matters of merging, liquidation, capital structure, or changes in the number of shareholders, are not sufficient to have a decisive influence on the undertaking's business decisions.

The influence conferred by "contracts or any other means" depends on national law. For example, national laws may foresee the right of particular persons or their associations (e.g., trade unions) to decide on undertaking control issues, even though they are not shareholders. In *Anglo-American Corporation/Lonrho* (1997) the Commission recognized that Anglo-American acquired decisive influence over Lonrho because a representative of Anglo-American on Lonrho's board, although not an executive member and having only one decision-making vote, was able to influence business decisions because he was the only one on the board who had the necessary business and mining experience.

Differences in national law may result in complicated legal situations, as shareholders may have broader rights in some countries and narrower ones in others.

The European Commission is given broad discretion to assess whether decisive influence is obtained in a particular case. Summarizing the decision-making practice of the Commission when examining the occurrence of decisive influence, it can be said that decisive influence exists when an undertaking or person has the right to decide on the following issues (Cook & Kerse, 2000, p. 41; Broberg, 2004, p. 743):

- *Making decisions on appointing members of management bodies with*

executive powers (general director, deputies, executive director) (e.g., CFI cases *Endemol v. Commission*, 1999, *§§* 159–164, and *Gencor v. Commission*, 1999, *§§ 169–194).*

- *Making decisions related to the approval of financial plans.* The approval of the budget is an important event because it summarizes the goals of all departments of the undertaking (sales, production, distribution, finance, etc.) (e.g., EC case *Reuters/Equant-Project Proton*, 2000; CFI cases *Endemol v. Commission*, 1999, §§ 159–164, and *Gencor v. Commission*, 1999, *§§ 169–194).*
- *Making decisions related to the approval of business plans* (e.g., CFI cases *Endemol v. Commission*, 1999, §§ 159–164, and *Gencor v. Commission*, 1999, §§ 169–194). The Commission considers this issue particularly important, as the right of veto when approving a business plan provides an opportunity for control. According to the Commission, a business plan is a document that sets out the undertaking's objectives and the means to be implemented to achieve them. On the contrary, if an undertaking or a person does not have the veto right on this matter, their influence may be recognized as insufficient. For example, in *NB/Ardian/Mediolanum/Neopharmed* (2023, §§ 7–10), the Commission found that the merger undertakings' co-investment and shareholders' agreement foresaw a number of veto rights for Mediolanum, which were equivalent to veto rights over the annual budget or the business plan. These veto rights would enable Mediolanum to exercise decisive influence in relation to the strategic business behavior of the merged group.

> Mediolanum will enjoy veto rights over the concrete actions that are necessary to implement the business plan's set goals. ... In particular, Mediolanum will have veto rights over any acquisition of companies, going concerns, licenses, rights to market and/or IP rights (including patents and trademarks) or joint-venture agreements relating to any of the [merged groups'] products, regardless of their value. ... Mediolanum

> will have veto rights over the start, change or interruption of business lines of the merged groups that contribute more than EUR 1 million. (§§ 8–9)

However, it should be noted that the business plan for the approval of which a controlling undertaking or person can use the right of veto must present the undertaking's strategic plans in sufficient detail, determining the undertaking's behavior in the market (e.g., issues related to pricing and investments) and establishing qualitative and quantitative goals and the means of achieving these goals, based on which action plans are drawn up (e.g., EC case *Saab Ericsson Space*, 1992). Influence on approving business plans will not be sufficient if the plan contains only a general declaration of aspirations (Consolidated Notice, 2004, § 70).

- *Making decisions related to investment*. The importance of this question depends on the amount of investment that requires approval and the importance of the investment in the market in which the undertaking operates. If approval is needed only for very large investments, then the available veto rights will not be enough to control the economic entity (Consolidated Notice, 2004, § 71). If the company's activity depends on large, long-term investments, then the veto right in this matter is considered relatively significant. However, the conclusion may be the opposite if the company's activity does not depend on long-term investments.
- *Making decisions related to the choice of technologies*. The importance of this question depends on the particularities of an undertaking. When technology is essential to the company's operations, the influence on the question of what technology the entity should use will be considered to be a decisive influence when determining control.
- *Making decisions related to product improvement*. In businesses that operate in markets characterized by product diversity and high innovation, the influence of decision-making related to the production and introduction of new products can be considered significant (e.g., EC case *Conagra/Idea*, 1991, §§ 11–14).

Having the right of veto in all of the matters mentioned above is unnecessary. Depending on the type of business in which a particular undertaking operates, the influence on decisions on at least one of the issues discussed above can be recognized as decisive. However, influence unrelated to strategic trade policy, the appointment of top management, or the approval of budgets or business plans will not be considered sufficient to establish control over the undertaking.

Sole and joint control

According to the Regulation on Concentrations, control can be acquired by one undertaking acting alone (e.g., EC case *Phoenix/Cerp Lorraine–Repartition France*, 2008) or by several undertakings collaborating (e.g., EC cases *GMR Infrastructure (Malta)/Ontario Teachers' Pension Plan/Intergen*, 2008; *Goldman Sachs/Deutsche Bank/Befraco*, 2008). As a result, when evaluating the transaction, the Commission assesses whether the contract or other legal or factual agreement, separately or in combination, provides sole or joint control. Control can be both positive and negative. In the case of positive control, one or more persons or undertakings may actively participate in making decisions related to the strategic business issues of another undertaking. In negative control, one shareholder cannot make decisions but can veto them. The right of veto usually means the minimum number of affirmative votes required to pass decisions in the shareholders' meetings and management bodies (Consolidated Notice, 2004, § 54).

Sole control occurs when one person or undertaking determines the activities of another undertaking (Broberg, 2004, pp. 743–744). In the case of positive control, a person or undertaking acquires sole control of a company by acquiring a controlling stake in the undertaking and the majority of votes required to make strategic decisions (e.g., sell and transfer to MMB 100% of the shares of the Air Bank Group in the EC case of *PPF/MMB*, 2022). In the case of negative control, one shareholder has the right to "block" strategic business decisions (e.g., EC case

Costa Crociere/Chargeurs/Accor, 1993). A shareholder with the right of veto does not necessarily have to cooperate with other shareholders when making decisions. Solely because of the shareholder's ability to influence decisions so that the company can reach a dead end, they are considered to have a decisive influence in decision-making and, accordingly, control of the undertaking.

In the case of joint control, two or more undertakings jointly decide on issues of the undertaking's business policy (Whish, 2001, p. 747; Jones & Sufrin, 2004, p. 868). That is, not one person or undertaking, but several have a decisive influence on another undertaking (Consolidated Notice, 2004, § 62). In this case, decisive influence results from the ability to use the veto power to block a decision. In the simplest case of joint control, joint control will likely be formed if two participants acquire equal voting rights, each acquiring 50% of shares and giving equal voting rights in making every decision. For example, in *SCA/Graninge/Scaninge Timber* (2000, § 4), the Commission found that SCA and Graninge would each hold 50% of the voting rights in Scaninge Timber, with veto rights on certain matters, including the determination of the business plan and budget. Establishing such control does not require a formal agreement between the concentration partners (Consolidated Notice, 2004, § 64). However, in case of agreement, the agreement must not violate the principle of the equal rights of the participants. The voting rights set out in it must be equal; none of the participants shall have a casting vote.

An equal number of shares held by shareholders may not be sufficient to establish joint control if they do not provide adequate veto rights. For example, a company with three shareholders, each holding one-third of the share capital and each of whom can elect one-third of the board of directors, may not have joint control if a simple majority vote is sufficient to make important decisions (Consolidated Notice, 2004, § 80). In this case, the control would not be sustainable because the majority of shareholders could regroup at any moment. The

Commission would recognize joint control only when there is no possibility that a merging alliance could replace the controlling group of shareholders (Arnull et al., 2000, pp. 653–654). For example, in *Paribas/MTH/MBU* (1991) the Commission found that Paribas and MTH each owned 40% of MBU's shares. Each of them did not have a majority of the company's shares, but they had the right of veto at the shareholders' meeting. Although the Commission recognized that the joint management of Paribas and MTH could theoretically be changed by at least one party unifying with other shareholders, their veto power made their joint management relatively stable.

Joint control can also be acquired through "negative control," where minority shareholders have the power to veto important decisions related to the undertaking's strategic commercial activities. This means that even without equal rights, joint control can be established (Jones & Sufrin, 2004, p. 868; Consolidated Notice, 2004, §§ 65–73; Arnull et al., 2000, pp. 653–654). For instance, in the case of *Thomas Cook/LTU/West LB* (1992), the Commission found that LTU and West LB, holding 90% and 10% of Thomas Cook's shares, respectively, had entered into an agreement. This agreement stipulated that the approval of both shareholders was required for crucial strategic decisions, such as the approval of the 5-year business plan. As a result, the Commission concluded that both shareholders had joint control. Without such an agreement, it would be considered that West LB had no influence.

However, if the right of veto is only intended to protect the financial interests of minority shareholders (e.g., change of statutes of undertaking, increase or decrease of capital, liquidation of the company), then joint control is not formed (Consolidated Notice, 2004, § 66). For example, in *Pepsico/General Mills* (1992), the Commission found that General Mills owned 40.5% of the shares and Pepsico 59.5%. However, it concluded that they did not acquire joint control because the shareholders' agreement contained only terms designed to protect the

shareholders' financial investments.

Following the Commission's decisions, it is unclear how many participants can jointly control an undertaking. The Commission has recognized that five (*TNT/GD Sofinim/KBC Invest/Mercator & Noordstar/VIV/Tournesoleon/de Clerck/NIB/FOC*, 2001), seven (*The Airine Group/NATS*, 2001), and eight (*Kelt/American Express*, 1991) undertakings acquired indirect control. In *GTS Hermes Inc/HIT Rail BV* (1996), the Commission found eleven, and in *Archer Daniels Midland Company/Alfred C. Toepfer International GmbH/InTrade NV* and *ADM/ACTI* (2002) thirteen shareholders had joint control.

The question is: How real is this control? It seems the Commission has not decided how many participants could be included in joint control. Such a situation makes the position of persons or undertakings acquiring shares unclear and difficult to predict because they cannot clearly predict whether control has already been acquired according to Regulation 139/2004. This question is important because in cases where control is established, the transaction is recognized as a concentration, and there is an obligation to notify the European Commission about it and obtain its permission to purchase shares.

Both sole and joint control can be acquired de jure or de facto. In the simplest case, one undertaking can become the owner of another undertaking by acquiring a controlling stake, which provides the majority of votes necessary for making strategic business decisions (e.g., EC case *PPF/MMB*, 2022). As already mentioned, a majority of voting rights does not necessarily coincide with a majority of the share capital, just as a majority of voting rights does not necessarily confer sole control, as, for example, a minority shareholder may exercise joint control with a large one because it has veto power.

The situation is less predictable when no shareholder has an absolute majority of votes. In this case, positive sole de jure control can arise in the presence of certain shareholder agreements. For example, for making strategic business

decisions, there may be a requirement to collect a certain number of votes in preferred shares, or other rights may be granted by agreement, allowing a person or undertaking with a minority of shares to influence the strategic business decisions of another undertaking. Such rights for shareholders may be provided for in the undertaking's statutes or contracts. For example, in *CCIE/GTE* (1992), the Commission recognized that CCIE acquired control of EDIL, even though CCIE acquired only 19% of EDIL's voting rights. This allowed CCIE to gain a permanent seat on EDIL's board and granted it the right to appoint the chairman and executive director. Also, the designated director of CCIE was given veto power over all significant decisions of EDIL. In another case, *Saint Gobain/Poliet* (1996), the Commission concluded that Saint Gobain acquired sole control by acquiring 47% of Poliet's shares, even though another company, Paribas, held 51.9% of Poliet's shares. This decision was influenced by the fact that there was a mutual agreement that Saint Gobain would appoint the majority of the board members, and Paribas would vote according to Saint Gobain's instructions.

Negative sole control can be created when one shareholder acquires 50% of the shares and two or more other shareholders acquire the other 50% , or if only one shareholder has veto power in making strategic business decisions (e.g., EC case *BBVA/BNL*, 2005, § 3).

Joint de jure control is created when the undertaking's shareholders enter into a legally binding agreement that provides for the joint exercise of voting rights. For example, in *Thomson/Banco Zaragozano/Caja Madrid/Indra* (1999), the Commission found that a group of shareholders with less than 25% of shares had joint control because they had agreed to coordinate voting at the shareholders' meeting.

The agreement can provide information on how to vote and what policy to follow in the meetings of the undertaking's management bodies. For example, in *Cable I Televisió de Catalunya* (1998), the Commission found that each of the

two groups of shareholders had joint control, as each group could prevent the company from making strategic decisions – each of the members of those groups was obliged to support the group's unified position when voting on the company's activities.

Due to the undertaking's economic dependence, de facto control may be acquired in exceptional circumstances. Control can arise from necessary long-term supply contracts, a loan granted by a supplier or buyer, or structural interconnections. For example, in *Lockheed Martin Corporation/Loral Corporation* (1996, § 6), the Commission found a merger between LMC and Loral due to LMC's connections with Loral. After the indicated transaction, LMC would guarantee up to $250 million of indebtedness of Loral, would license extensive intellectual property rights to Loral, and would hold non-voting preferred stock in Loral without the right to increase its shareholding for 7 years after the merger transaction.

However, the fact that the undertaking has a pre-emptive right to acquire a major shareholding in the undertaking in the future does not constitute control (CFI case *Air France v. Commission*, 1994, §§ 70–72). This conclusion would be different if, among other circumstances, there was a binding agreement to implement this right in the near future (Consolidated Notice, 2004, § 60). For example, in *Ford/Hertz* (1994) the Commission found that before the transaction, Ford held 49% of the voting rights and had the power to appoint four directors out of a total of 9 members of Hertz's Board, whose decisions were taken by a simple majority. Ford also had veto rights on matters aimed at protecting Ford's financial investment in Hertz. The Commission noted that Ford's voting and veto rights in Hertz did not confer upon it a de jure right of control of Hertz. However, in addition, Ford was also granted by the Stockholders' Agreement between Ford and all other shareholders in Hertz the power to convert, at its sole discretion and at any time, part of its Class C shares into Class B shares, and by this operation to increase its representation on Hertz's Board with the addition of two other

directors. The Commission concluded that Ford's unconditional right to obtain a majority on the Hertz Board at any time meant Ford's de facto sole control of Hertz.

De facto control can occur when minority shareholders really hold a majority of votes at a general meeting of shareholders. When a minority shareholder, considering the number of shares held by them, previous voting practices at the shareholders' meeting, and the strength of other shareholders (Varona et al., 2005, p. 22), is likely to have a permanent majority of votes at the shareholders' meeting, then such a minority shareholder is considered to have sole control.

For example, in *Coca-Cola Enterprises/Amalgamated Beverages Great Britain*, the Commission – considering that the votes of the Coca-Cola Company at the shareholders' meeting always determined the decisions taken, the business of Coca-Cola Enterprises was highly dependent on the products produced by the Coca-Cola Company, and other shareholders of Coca-Cola Enterprises, taking care regarding their financial interest, consider the potential harm to the long-term goals of Coca-Cola Enterprises when voting against the decisions proposed by the Coca-Cola Company – concluded that the Coca-Cola Company had de facto control over Coca-Cola Enterprises. However, it did not have de jure sole control. The Coca-Cola Company owned 45% of the shares of Coca-Cola Enterprises and 49% of the voting rights at shareholder meetings. The Commission concluded that if the Coca-Cola Company did not have a decisive influence, it could buy an additional 2% of the shares on the stock exchange and acquire an effective majority.

When assessing the possible formation of de facto control, the following are important: the number of votes that are constantly participating in general meetings of shareholders; the number of votes required to make decisions; permanent votes given by various shareholders to support the decisions of one of the shareholder groups; the use of the veto right in practice when making important

decisions; the distribution of remaining shares; the structural, economic, or kinship ties of other major shareholders with the minor shareholder; and other shareholders' interests (strategic or financial) in the acquired company. For example, in *Arjomari-Prioux/Wiggins Teape* (1990), the Commission recognized that Arjomari's acquisition of 39% of Wiggins Teape's shares gave him sole control of Wiggins Teape, as the other shares were widely dispersed among 100,000 shareholders, none of whom had more than 4% of the share capital. In *Jefferson Smurfit Group plc/Munksjo AB* (1995), the Commission recognized that 29.04% of owning a share gave control, as in practice, this share accounted for more than 70% of the votes at the general meeting of shareholders.

Joint control can also occur de facto, when minority shareholders, after mobilizing small shares and the corresponding number of votes, can jointly control the acquired undertaking by acting together (Consolidated Notice, 2004, § 74). Control does not require an explicit binding agreement on how to vote at a general meetings or what policy to follow at board meetings. A common written desire to act jointly may be sufficient, without establishing a pattern of cooperation.

De facto control can also occur when shareholders have common interests that are so important that they do not act against each other (Consolidated Notice, 2004, § 76); when the minority shareholder has a unique technology, know-how, exclusive supply, or sales arrangements; or when the majority shareholder is highly dependent on a minority shareholder because, for example, the minor shareholder has the necessary practical experience. In contrast, a large shareholder is only an investor. For example, in *Arcelor/Oyak/Erdemir Arcelor* (2006, § 6) the Commission found that after the transaction, Arcelor would own a 41% stake in the Special Purpose Vehicle, and Oyak would own the remaining 59%. The Commission concluded that joint control by Oyak and Arcelor of Erdemir could not be established on a legal basis. However, the Commission found that there were strong common interests between Oyak and Arcelor, to the effect that

it could be expected that they would not act against each other in exercising their rights in relation to Erdemir. Considering this, the Commission concluded that Oyak and Arcelor jointly controlled Erdemir on a de facto basis.

When no important common interests exist, and the majority of shareholders do not change, the Commission recognizes sole control. When the majority shareholder changes when making decisions, the Commission recognizes that minority shareholders (or a particular group) jointly control the undertaking (e.g., EC case *Ericsson/Nokia/Psion/Motorola*, 1998).

The analysis shows that joint de facto control is more significant than de jure control. If the Commission had relied only on de jure control, then in the previously mentioned situations, it would probably have identified the sole control of the major shareholder (Consolidated Notice, 2004, § 78).

The possibility of exercising decisive influence

Following Article 3(2) of Regulation 139/2004, when assessing the acquisition of control, the essential question is whether the rights that one undertaking or person acquires concerning another undertaking are sufficient to recognize that it acquires the "possibility of exercising decisive influence on an undertaking." Control, according to Regulation 139/2004, only requires the possibility to exercise decisive influence, so if it is determined that such a possibility exists, it does not matter whether it is used in practice (Broberg, 2004, p. 744; Arnull et al., 2000, pp. 653–654; Verloop & Landes, 2003, p. 30); it is not necessary to provide evidence that the possibility will be used in the future. However, the possibility of using decisive influence must be real. In *Cementbouw Handel v. Commission* (2006, *§ 1),* the CFI noted that "while decisive influence ... need not necessarily be exercised in order to exist, the existence of control ... requires that the possibility of exercising that influence be effective."

Whether the undertaking sought to acquire control is irrelevant to the

determination of the acquisition of control. Control can be acquired even if the undertakings acquiring another undertaking claim that they did not seek control at all (Consolidated Notice, 2004, § 21) or do not plan to use their power.

For example, in *McCormick/CPC/Rabobank/Osmann* (1993) the Commission found that the voting procedure, which requires the approval of all three shareholders for decisions affecting the company's management or commercial policy, gave each of the shareholders a specific right of veto, enabling them to exercise decisive influence. Although Rabobank only invested and said that it would not take part in making the most important business decisions, the Commission noted that although Rabobank had a small share of the total stake and the agreement provided for a fixed percentage of the profits, this could not negate the fact that Rabobank had the legal possibility to exercise decisive influence in joint activities.

This provides an ambitious answer to the question of whether the possibility of gaining influence in the future is relevant for assessing a concentration. In this regard, the Commission and the ECJ's interpretations are not uniform. According to the ECJ, if, at the time of assessment, the owner of the rights has not used them and there is no evidence that they intend to use them, it would be correct not to consider this when determining the emergence of control (CFI case *Air France v. Commission*, 1994, §§ 71–72). Some competition law experts also support this; they argue that the impact should be at the moment of evaluation, not at some point in the future (Cook & Kerse, 2000, p. 32; Broberg, 2004, p. 745). The Commission has not made up its mind clearly on this matter because, in one case, it stated that the possibility of gaining influence in the future (for example, the priority right to purchase shares) is not enough for control; in another case, it stated that the possibility of gaining influence at any moment in the future constitutes de facto control, already at the moment of assessment.

In particular, in *Ascott Group/Goldman Sachs/Oriville* (2003, *§ 7), the Commission concluded that the joint control exercised by Ascott and Goldman Sachs over*

Oriville could not be put into question just because of the existence of a Share Purchase Agreement under which Goldman Sachs would transfer 50% of the outstanding shares and voting rights in Oriville to Ascott if Ascott requested it. Whereas, in *Ford/Hertz*, the Commission found that the shareholders' agreement provided a right (which they did not exercise) for the minority shareholder, Ford, to convert a portion of their Class C shares into Class B shares at any time without any additional charge. Such a right allowed Ford to nominate two additional Hertz board members to form a majority. Considering this, the Commission concluded that such right constituted de facto control of Hertz. In its decision, the Commission also noted that the likely use of such a right may be an additional circumstance that, together with other circumstances, may indicate the emergence of control.

It can be stated that when deciding whether a concentration exists, it is essential to consider the potential for future control if a clear cause-and-effect relationship can be established between the transaction and the possibility of gaining influence in the future. When such a connection cannot be clearly established, it is subjective to consider such influence, as it may arise in the future not solely due to the transaction, but for other reasons, such as gaining experience. The direct appearance of influence immediately after an agreement is concluded is important when determining if a transaction should be recognized as a concentration.

Changing the quality of decisive influence

Regulation 139/2004 applies not only to the acquisition of control of another undertaking, but also to a change in the quality of control of the undertaking (Cook & Kerse, 2000, pp. 34–43; Broberg, 2004, pp. 743–744; Arnull et al., 2000, pp. 653–654). For example, in *ICI/Tioxide* (1990, § 4), the Commission found "changing the quality of decisive influence" to be a factual circumstance indicating the formation of a concentration.

In § 83 of its Consolidated Notice (2004), the Commission explains what

changes in the quality of control lead to the formation of a concentration. A change in the quality of control resulting in a concentration occurs: when an undertaking that previously had sole control in another undertaking accepts a partner in joint control; when joint control changes to sole because one of the joint control partners buys another partner's share; and when the number of shareholders increases, or the identity of the controlling shareholder is changed. However, if positive control replaces sole negative control, it is assumed that the form of control has not changed and the concentration has not been formed.

Furthermore, § 51 of the Consolidated Notice indicates that such control changes obligate the transaction participants to notify the Commission. As noted in Regulation 139/2004, a concentration only means a change of control. Therefore, internal restructuring within a group of companies is not considered a concentration.

Change of joint control to sole control

Reducing the number of shareholders who were partners in the joint control of an undertaking may result in a concentration (Jones & Sufrin, 2004, p. 868). For example, in *ABB/BREL* (1992), the Commission recognized a transaction in which ABB, having 40% of BREL's shares, bought an additional 40% of ABB's shares from another shareholder, Trafalgar House, as a concentration. This is because joint control by BREL and Trafalgar House was changed to sole control by only BREL.

The transition from joint to sole control is considered a concentration (Arnull et al., 2000, pp. 653–654) because a single undertaking's decisive influence fundamentally differs from influence exercised jointly (Whish, 2001, p. 748). The Commission has often stated that joint decisive influence is very different from that of sole influence because, in joint control, shareholders have to consider each other's interests, which may differ among shareholders. For example, in *ICI/Tioxide* (1990), the Commission found a concentration in a transaction in which ICI,

having a 50% stake in Tioxide, acquired an additional 50% from Cookson. In this decision, the Commission, emphasizing the differences between joint and sole decisive influence, noted that "Decisive influence exercised singly is substantially different to the decisive influence exercised jointly since the latter has to take into account the potentially different interest of the other party or parties concerned" (§ 2). In § 4 Commission continued:

> "By changing the quality of decisive influence exercised by ICI on Tioxide, the transaction will bring about a durable change of the structure of the concerned parties. Tioxide will become a wholly owned subsidiary of ICI; and by acquiring the ownership of all assets of Tioxide as well as the uncontested influence on the composition and decisions, etc. of Tioxide, ICI will obtain full control of Tioxide" (§ 4).

It is not necessary that all of the shares were bought from another shareholder with joint control. As mentioned, it is enough that during the transaction, the sole decisive influence on the strategic decisions of the business entity is acquired. For example, in *Eridania/ISI* (1991), the Commission found that ISI, with a 50% stake in Eridania, acquired a further 15% from another shareholder, Finbieticola, which was left with a 35% stake. Thus, ICI increased its stake to 65%. Before the share purchase, ISI jointly controlled Eridania with Finbieticola. After the transaction, ISI gained sole control, meaning a concentration occurred.

In § 90 of the Consolidated Notice (2004), the Commission stated that, in most cases, there will be no concentration if, after the number of controlling shareholders decreases, collective control does not change to sole control. However, in practice, this assessment is ambiguous. There have been cases where a transaction in which control by three undertakings was changed to two was recognized as a concentration (EC case *Bertelsmann/Kirch/Premiere*, 1998).

Change of sole control to joint control

Following Regulation 139/2004, a concentration can also occur when a person or undertaking which previously had sole control over the activities of another undertaking accepts a partner and replaces sole control with joint control. Due to the appearance of a new partner, the position of the controlling partner has fundamentally changed, as in the future, it will be necessary to take into account the interests of other partners, cooperate with them, and coordinate actions.

Changes in joint control members

When one of the control participants is replaced by another in the case of joint control, this also results in a concentration. In *James River/Rayne* (1992, § 3), the Commission found that under the agreements made by the parties, Rayne would replace Montedison as one of the two parent companies of the holdings by acquiring Montedison's 50% share. It concluded that this operation constituted a concentration. It is irrelevant that the economic entity was under collective control before and after the transaction (EC case *ENI/EDP/GDP*, 2004, §§ 9–10).

In § 21 of the Consolidated Notice (2004), the Commission indicated that in most cases, undertakings or individuals intentionally acquire control of another undertaking. However, sometimes, control can be gained without actively seeking it: it can be acquired because of the actions of third parties. Such control, according to Article 3(1)(b) of Regulation 139/2004, is considered to be acquired by "other means." For example, in *Avesta (II)* (1994), the Commission found that the four major shareholders of Avesta agreed, according to which major decisions related to the activities of Avesta require the prior written consent of two of the four major and at least one of the two minor shareholders (but not necessarily both). When one of the two minority shareholders sold Avesta shares, the contract was not changed. As a result, the two major shareholders and the remaining minor shareholders always had to agree in writing before making important decisions. Before the sale, two shareholders had the veto right. After the sale, three

shareholders already had the veto right. In other words, the remaining minority shareholder gained collective control of Avesta (§ 13).

Control may arise due to external circumstances that may not be known, and therefore, it may not be known that a concentration has occurred (Broberg, 2004, p. 750). Assume that A owns 35% of X's shares. Other smaller shareholders each have 10%–15% of the shares. The shareholders split over time, so A increasingly holds between 55% and 90% of X's votes in the last ten general meetings. In this way, A acquires de facto sole control over X. However, it is not possible to say precisely when this control arose.

Changes of control due to the break-up of the undertaking

The break-up of an undertaking's business may also constitute a concentration. For example, in *Solvay/Laporte/Interox* (1992), the Commission found that Solvay and Laporte wanted to break up the Interox joint venture. Solvay wanted to take Interox's "non-initiator business" (mainly H_2O_2 and persalts) and Laporte's "initiator business" (organic peroxides and persulphates). The Commission recognized that Solvay and Laporte had collective control of Interox before the break-up and that Solvay and Laporte would gain sole control of a part of the business after the break-up. This resulted in two concentrations.

9.2.4. Long-lasting change

Article 3(1) and § 20 of the Preamble of Regulation 139/2004 indicate that a concentration means a transaction that results in long-lasting changes in the structure of the undertakings participating in the concentration and market structure. Accordingly, the change in control must be on a "lasting basis."

Sometimes, one undertaking acquires control of another undertaking only temporarily, until it is transferred to another undertaking or person. Theoretically, there are two concentrations in this situation: acquisition and transfer. However, in practice, such a situation is considered a single concentration evaluated

according to the last transmission. Although the intermediate entity acquires control, according to the Commission, external circumstances quickly remove this control (EC case *OM Group/DMC 2*, 2001, § 5).

When several undertakings acquire another undertaking to break up that undertaking's assets, the answer as to whether both acquisition and break-up transactions should be considered concentrations depends on whether a legally binding break-up plan is drawn up. When such a plan exists and is implemented, regardless of whether the same entities or different entities participate in the acquisition and break-up, the acquisition will not be considered a concentration if the break-up occurs within 1 year at the most. For example, in *Fortune Brands/Allied Domecq* (2005, § 7), the merger transaction provided for the division of assets within 6 months of acquisition.

Following §§ 29–33 of the Consolidated Notice (2004), concentrations would be regarded as only break-up transactions. When there is no plan, especially when it is unclear whether the break-up will happen soon after the acquisition, when the second deal can be carried out independently of the first (EC case *Norske Skog/Parenco/Walsum*, 2001, § 7), the acquisition will also be considered a concentration.

It is uncertain how long a change must last for a change in control to be considered long-lasting. The Commission did not provide a clear answer in its decisions, which is understandable considering the complexity of the transactions. The duration of activity has a different meaning in various economic sectors; therefore, depending on the specific business branch, the period after which the change will be recognized as long-lasting may be different.

The Commission's decisions show that structural changes need not last for an exceptionally long time. However, it is reasonable to argue that a 1-to-3-year period is too short (EC case *Lehman Brothers/SCG/Starwood/Le Meridien*, 2005). In its decisions, the Commission considered five (*Gas Trading Ltd/Group 4 Utility*

Services, 1996) to 10-year (*Voest Alpine Industrieanlagenbau GmbH/Davy International*, 1995) periods of activity long enough for changes to be recognized as long-lasting.

9.3. Harm: detrimental effect on competition

The concentration of undertakings is not prohibited in itself, but is forbidden when it is incompatible with the common market, i.e., when it detrimentally affects the market. It should be observed that the effects of conglomerate concentration and firm dominance are not limited to markets in which firms sell products to consumers. Those effects can extend to markets in which firms have market power as buyers or monopsony power, including markets of employers as buyers of labor services (Hafiz, 2022, p. 1499).

Following Article 2 of Regulation 139/2004, a detrimental effect manifests itself as a significant impediment to effective competition. The term "significant" is vague and gives the European Commission too much discretion in assessing concentrations. However, § 26 of the Preamble of Regulation 139/2004 provides some clarifications, indicating that competition is primarily significantly restricted when a dominant position of the undertaking is created or strengthened. This is the primary form of harm to competition.

The analysis shows that to prohibit a concentration, it is necessary to establish that it harms competition, as would creating or strengthening a dominant position. Therefore, concentration will not be prohibited if there is only a tiny or insignificant restriction on competition (CFI case *General Electric*, § 543).

In the case of non-horizontal concentrations, it is difficult to say what kind of impact arising from the concentration should be considered significant damage to effective competition. Considering the objectives of EU competition regulation and the practice of both the Commission and the EC courts, it can be assumed that changes in the market structure which enable concentration participants to

harm both competition and consumers should be considered as harmful impacts. Harmful impacts that may occur in the event of vertical or conglomerate concentration are presented in Table 1.

Table 1. Detrimental effects of non-horizontal concentrations

Type of concentration	Impact	Actions	Damages to competition	Damages to consumers
Vertical	The upstream market is closed	Refusal to sell	Competitors in the downstream market are pushed out of the market or weakened	Prices of products have increased; the portfolio of products has decreased
	The downstream market is closed	Refusal to buy	Competitors in the upstream market are pushed out of the market or weakened	
	Market transparency is increased: an information transmission channel is created	Business-sensitive information is acquired or used	Competitors are pushed out of the market or weakened	
Conglomerate Vertical	Leveraging power from one market into another	Product tying, pure bundling, technical tying, mixed bundling, full-line forcing, cross-subsidization, predatory pricing	Competitors are eliminated or weakened in the market in which the power is leveraged	In the longer period, the prices of goods increased, and product portfolio or product quality decreased
Conglomerate	The power of an undertaking is increased	Abuse of power	Competitors are eliminated or weakened in the market; potential competition is reduced	
Conglomerate Vertical	Increases market transparency: facilitates coordination of actions of undertakings	Coordinated actions between competitors	Non-competitive market	Prices of goods have increased

Individual actions by undertakings can significantly restrict effective competition in the market when the occurrence of a non-horizontal concentration removes significant competitive constraints from one or more market participants and creates the ability and incentive to close upstream and downstream markets, increase market power and use market power in a market where such power is not available, and use information sensitive to competitors. As a result of the concentration of undertakings, the goods of other producers may become weaker substitutes (due to lower quality, higher price, the elimination of competitors, and the restriction of new entry into the market); therefore, the market power of the merged undertakings may increase (Church, 2006, p. ii). A concentration may also create opportunities for competitors to coordinate their activities. Eventually, this may lead to competitors being removed from the market or weakened, and as a result, the supply of goods to consumers and the quality of goods could decrease, or the price of goods could increase.

When determining harmful effects, it is necessary to consider both the incentives of the merged entity to perform anti-competitive actions and its ability to do so. An undertaking may intend to take anti-competitive actions. Still, it may not be able to do so due to the structure of the market, the undertaking's market position and power, the response of competitors and consumers, or the entry of new competitors into the market. On the other hand, although capable of restricting competition, an undertaking may not do so for objective or subjective reasons.

Whether the merged group, in the event of a non-horizontal concentration, intends and is able to restrict competition has been examined in many Commission decisions. For example, in *Johnson & Johnson/Guidant* (2005, § 339), the Commission, assessing likely market foreclosure, analyzed "whether the merging entity has the ability and the incentive to engage in bundling practices, and if so, whether such a strategy could give rise to foreclosure effects." Such an assessment is compatible with ECJ decisions. For example, in *Tetra Laval BV v. Commission*

(2002), the Court assessed the merged group's ability to leverage (§§ 192–199), its incentive to engage in the leverage (§§ 200–216), the methods the merged group may use in the leverage (§§ 217–224), and the foreseeable consequences of leveraging on the markets (§§ 225–307).

The incentives of an undertaking to coordinate, to foreclose a market, or to exercise power are not the same as the objectives of an undertaking. It does not matter whether the parties to the concentration plan to take anti-competitive actions; it is enough that the undertaking acquires "the ability and economic incentive to foreclosure competition" (EC case *GE/Amersham*, 2004, § 31) or that they "have the economic power to implement different strategic options" (EC case *CVC/Lenzing*, 2001, § 168).

An incentive should be understood as a need to act, not an aim to engage in such an activity. In non-horizontal concentrations, the incentive of merged undertakings should be understood as an economic need to close the market, use power, or coordinate mutual actions. Therefore, the undertaking's assertion that it has no incentive to restrict competition should not be considered. It is enough to create an economic incentive to do so. This means that it is necessary to determine whether actions "would have been in the merged entity's commercial interests" (CFI case *General Electric Company v. Commission*, 2005, § 333). Therefore, the assessment is carried out on the basis of objective economic criteria and not on the undertaking's subjective goals. The incentives of the merged group can be determined by analyzing the company's internal documents, which describe the planned goals of the board of directors or an "economic assessment showing that such behaviour would objectively have been in the merged entity's commercial interests" (§ 333).

Following ECJ and European Commission practice, when assessing whether undertakings intend to restrict competition, commitments regarding the undertaking's conduct or the question of whether actions are considered illegal under

the law are not considered. This is insufficient to prevent harm to competition. However, according to EU courts, when evaluating cases where the impact of a concentration does not appear immediately but at a later date (transfer of power, market closure), the assumed behavioral obligations (*Tetra Laval BV v. Commission*, 2002, *§ 161)* or legal regulation of activities (*General Electric Company v. Commission*, 2005, § 73) must also be considered. For example, following the opinion of the CFI in *Tetra Laval BV v. Commission* (2002, § 159), when market closure or power transfer actions violate Article 101 or 102 of the TFEU, the Commission, when assessing such behavior, has "to assess whether, despite the prohibition of such conduct, it is none the less likely that the entity resulting from the merger will act in such a manner or whether, on the contrary, the illegal nature of the conduct and/or the risk of detection will make such a strategy unlikely." It must also consider the extent to which incentives could be reduced or eliminated "owing to the illegality of the conduct in question, the likelihood of its detection, action taken by the competent authorities, both at Community and national level, and the financial penalties which could ensue."

In addition, EU courts have clarified examination requirements, opining that the analysis must be pragmatic, considering the Commission's short period for assessment. In *General Electric Company v. Commission* (2005, § 73), the CFI indicated that in the assessment, the Commission must, in principle, consider "the potentially unlawful, and thus sanctionable, nature of certain conduct as a factor which might diminish, or even eliminate, incentives for an undertaking to engage in particular conduct." However, the assessment does not "require an exhaustive and detailed examination of the rules of the various legal orders which might be applicable and of the enforcement policy practised within them, given that an assessment intended to establish whether an infringement is likely." Therefore, the Commission's assessment considers "the likelihood that this conduct would be clearly, or highly probably, unlawful under Community law," "the likelihood

that this illegal conduct could be detected," and "the penalties which could be imposed" (Guidelines for non-horizontal mergers, § 46).

Next, the paper presents a detailed examination of the damages that may occur in the event of a non-horizontal concentration, assessing the conditions of the undertaking's incentives and ability to perform such actions.

9.3.1. Market foreclosure due to vertical concentration

Firstly, § 18 and § 29 of the Guidelines for non-horizontal mergers indicate that to foreclose a market means to hamper or eliminate actual or potential rivals' access to supplies or markets and, at the same time, to reduce their ability and/or incentive to compete. New market participants cannot enter the closed market. Competitors cannot expand their activities in it, or may be forced to leave it (Abbamonte & Rabassa, 2001, pp. 214–226). This is especially true in emerging markets where new technologies are being developed. Vertical concentration with a weak early-stage buyer or seller can hinder technology development (Nouel, 2001, p. 6).

Actions that can close the market include refusing to have business relations, refusing to grant licenses or access to critical raw materials, discriminatory practices, cross-subsidization, predatory pricing (Nouel, 2001, p.21), exclusive distribution of goods (Lindsay, 2006, p. 420), etc. Therefore, market foreclosure can be expected in a vertical concentration when the undertaking has exceptional advantages, such as access to critical raw materials or occupying a dominant market position (Nouel, 2001, p.20).

Additionally, § 18 and § 29 of the Guidelines for non-horizontal mergers indicate that when the market is successfully closed, it is a merged undertaking, and likely, the remaining market participants can profitably raise prices for buyers in one or both vertically related markets. Competitors do not need to be forced out of the market; it is enough that they compete less.

The Commission often assesses the results of the expected vertical foreclosure of the market, obliging the concentration participants to open access to these markets. For example, in *Alcatel/Telettra* (1991), the Commission recognized that a vertical relationship between a telecoms operator and its supplier may distort competition, as suppliers that do not have such a relationship may find themselves in a weaker position. It does not matter that the income derived from the transactions with the vertically related undertaking constitutes only a small part of the total income (§ 34). The Commission authorized the concentration only after the parties to the concentration undertook to eliminate vertical ties.

One of the most widely commented on (Varona et al., 2005, pp. 143, 279–280; Lofaro & Ridyard, 2002, pp. 151–153; OECD, 1998, p. 7) Commission decisions dealing with the vertical ties of a concentration was *Boeing/McDonnell Douglas* (1997). Since the planned concentration would have impacted the US and EU markets, the US and EU competition authorities assessed Boeing's bid to acquire McDonnell Douglas. Their opinions differed on evaluating aspects of the concentration's vertical ties. Boeing's long-term (up to 20 years) exclusive supply contracts concluded with various airline companies even before the merger were evaluated differently. Considering that these agreements existed before the concentration, the US authorities recognized that their existence was not a result of the merger. Furthermore, in their view, these exclusive supply agreements did not create a risk of foreclosure, as they represented only a small part of global market turnover (less than 25% of annual global market sales). Therefore, considering the limited viability of McDonnell Douglas and the benefits created by the concentration, they decided to allow Boeing to buy McDonnell Douglas.

The European Commission came to a different conclusion. In its view, the exclusive supply agreements confirmed that Boeing had a dominant position in the commercial aircraft market even before the concentration, as Boeing had been able to impose exclusive sales conditions on its customers for a long time.

According to the Commission, setting exceptional conditions aims to limit competitors' access to the upstream and downstream product markets and restrict their ability to compete with the dominant undertaking. Acquiring McDonnell Douglas would strengthen Boeing's dominant position by making it easier for Boeing to find new customers and access US military programs funded by the budget. The commission allowed Boeing to buy McDonnell Douglas after it agreed to cancel existing exclusive supply contracts with airlines and not to enter into new ones.

Following the Commission's view in *Telia/Sonera* (2002), when assessing vertical concentrations, it is essential to determine whether the merged entity will have the ability and incentive to foreclose upstream or downstream markets, and whether this has any significant effect on competition in a particular market. The undertaking's incentive to close markets upstream or downstream depends on the profitability and usefulness of such conduct (Lindsay, 2006, p. 384). The assessment considers the circumstances that increase the incentive to act this way and those that decrease it (Guidelines for non-horizontal mergers, § 46).

For example, in *Boeing/Hughes* (2000), when assessing whether the merger between the satellite manufacturer HSC and the satellite launcher manufacturer Boeing would encourage the merging parties to produce products that are incompatible with competitors' products (satellites incompatible with competitors' launchers), the Commission considered whether they would gain more than suffer by doing so (§ 82). The Commission stated that it was "necessary to examine whether the merged entity would gain more through additional launch service contracts than it would lose through lost satellite contracts" (§ 83). After analyzing the situation, the Commission concluded that such behavior was unreasonable since, should the parties engage in such behavior, they would meet with resistance from customers, it would not be profitable to try to persuade customers to switch to Boeing launchers through higher integration costs for other launchers,

and finally, customers indicated that they would prefer to use the products of several launcher manufacturers (§ 87).

Finally, § 40 of the Guidelines for non-horizontal mergers indicates that the influence of a concentration on the profitability of undertakings in upstream and downstream markets is examined in determining the most profitable available choice. Increased profits in one vertically related market must offset losses in another market. For example, in *Johnson & Johnson/Pfizer Consumer Healthcare* (2006, §§ 131–132), the Commission found that the closing of the market for NiQuitin nicotine replacement increased the profitability of the Nicorette nicotine replacement market.

In assessing the overall profitability of the foreclosure, the impact of the vertical foreclosure on the combined group's revenues and costs (Lindsay, 2006, p. 385), and profits obtained in the upstream and downstream markets (*Sony/BMG*, 2004, §§ 163, 174; *Independent Music Publishers and Labels Association v. Commission*, 2006), the increased efficiency of the undertaking's activities due to the concentration are important.

Foreclosure of the upstream market

Figure 1 demonstrates that the vertical upstream market may be closed because producer B merges with raw material supplier A. For this reason, A may refuse to supply raw materials to B's competitors, C and D.

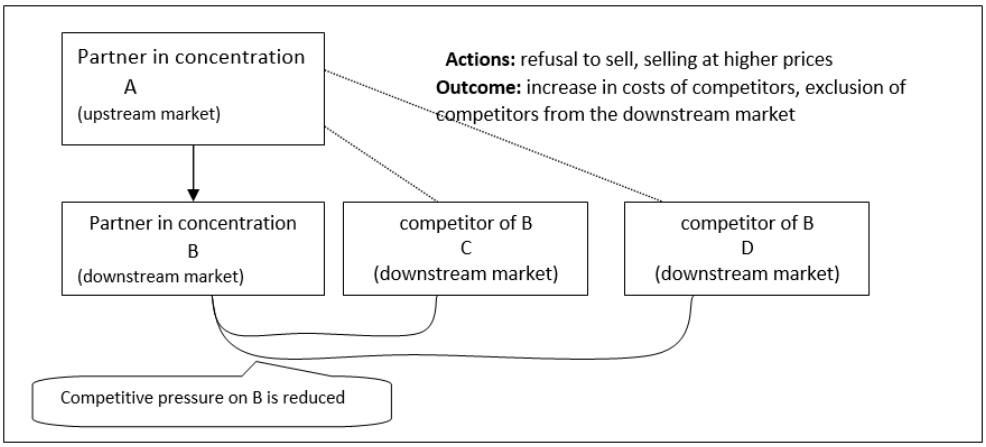


Figure 1. Foreclosure of the upstream market

In a short period, the profit of entity A, if it refuses to supply raw materials, would likely decrease. Still, if C and D do not have other raw material suppliers in the long term, this behavior may be beneficial because competitors C and D may be pushed out of the market. New companies cannot enter the market because competitors cannot purchase raw materials or other materials to produce goods. Alternatively, the costs of C and D may be increased to such an extent that their goods become uncompetitive on the market, or the AB merged undertaking may raise prices for the consumer without any risk (Guidelines for non-horizontal mergers, § 47). Establishing a restriction of competition is enough to demonstrate that there is only a possibility that the merged undertaking may attempt to foreclose the market and that this may have a significant detrimental effect on effective competition.

Considering the previously mentioned conditions for determining the impact of vertical concentrations, it should be noted that when assessing the foreclosure of the upstream market, it is necessary to determine whether the merged undertaking would *be able* to substantially limit access to sales from the upstream market, whether it would *have an incentive* to do so, and whether the foreclosure would have a *significant detrimental effect* on competition in the downstream

market (Guidelines for non-horizontal mergers, § 32).

The ability to foreclose the market can be reasonably foreseen when there is a possibility that the merged undertaking could restrict competitors from purchasing raw materials, components and the like in the upstream market, or where they could only purchase them under worse conditions (Bishop et al., 2005, p. 12; Craig & Burca, 2003, p. 1035; Abbamonte & Rabassa, 2001, p. 214). For example, in *GE/Smiths Aerospace* (2007, *§§ 7–8),* the Commission examined whether competitors would be able to acquire aircraft components and the latest research results of an engine under development in the event of a merger. In another case, *Thales/Finmeccanica/Alcatel Alenia Space & Telespazio* (2007), the Commission, while analyzing the planned concentration, examined whether the new entity would be in a position to adopt various subtle cost-raising strategies which:

> consist in not reacting in time to the integrator's or the satellite manufacturer's requests for price quotations and technical information, offering an unfavourable price, offering a less favourable delivery schedule for [competitors], or offering a less favourable compliance list for the technical performance. (§ 256)

Market foreclosure can occur not only by restricting access to raw materials, but also by reducing their quality or by producing components that are technologically incompatible with competitors' products (Guidelines for non-horizontal mergers, § 33). For example, in *Axalto/Gemplus* (2006, § 75), a significant number of competitors raised strong concerns about the ability of the parties in the concentration to undermine or degrade the activity of other card manufacturers by making their cards incompatible with cell phone operators' platforms or delaying accreditation.

Whether the foreclosure benefits A depends on A's share in the raw material market, the number of competitors in both upstream and downstream markets,

and the level of buyer awareness of competitors. Significant harm to effective competition requires that the foreclosed firms play a sufficiently important role in the competitive process in the downstream market. The greater the number of competitors deprived of access to the upstream market, "the more likely the merger can be expected to result in a significant price increase in the downstream market and, therefore, to significantly impede effective competition therein" (Guidelines for non-horizontal mergers, § 48). For example, in *Skanska/Scancem* (2001), the Commission prevented Swedish construction company Skanska from acquiring Swedish company Scancem because it owned 90% of the Swedish cement supply market, and the merger would reduce competitors' access to the cement market.

Following § 33 of the Guidelines for non-horizontal mergers, the Commission analyzes "a series of alternative or complementary possible strategies" when assessing the possibility of closing access to the upstream market. The possibility to close an upside market is likely to occur when:

- *The concentration involves undertakings supplying critical raw materials or materials for products.* Raw materials or other materials are considered significant when the product cannot be produced without them, when their price significantly influences the price of the final product, when it is much more challenging to sell the final product profitably without their use, or when the choice of these raw materials is one of the essential options (Guidelines for non-horizontal mergers, § 34). For example, in *GE/ Smiths Aerospace* (2007, §§ 48–50), the Commission acknowledged that the merger of an engine manufacturer with a material supplier would not create the possibility of a foreclosure of the upstream market because the contact welding rings used in the engine did not constitute more than 5% of the price of the engine, they were not intellectual property, and they were not a necessary part of the final product, but only one of several options. In another case, *Ineos/ BP Dormagen* (2006, § 183), the Commission acknowledged that the price of raw materials significantly influenced the price of the final product, as their price accounted for 40%–60% of the price of the

final product.

- *The merged entity would occupy a significant position in the upstream market.* The possibility of closing the market would arise only when the merged economic entity is able to significantly impact the conditions of competition in the vertically upward market; that is, it would be able to influence the price of goods or the conditions of sale of goods (Guidelines for non-horizontal mergers, § 35). The market power of the merged entity largely depends on the market structure (EC case *RTL/Veronica/Endemol*, 1995, §§ 37–40), its market share (EC case *Ahlström Capital/Capman/Nordkalk*, 2003, § 36), the vertical integration of competitors, and their ability to restrict the functioning of the market (Lindsay, 2006, p. 388).
- *The merged undertaking acting in the upstream market refuses to sell products or provide services to competitors in the downstream market, and as a result the availability of raw materials or services, their quality, and price would be detrimentally affected.* When the activities of other sellers are less efficient, the goods they sell are of lower quality, they do not have the ability to expand production volumes in the face of higher demand, and they have long-term contracts with the undertakings involved in the concentration (Guidelines for non-horizontal mergers, § 36), then the merged undertaking has a greater ability to affect the market detrimentally. When assessing the situation, the Commission analyzes the possibilities and abilities of the competitors in the upstream market, as well as the prices of their goods or services. The merged undertaking cannot foreclose the upstream market when other competitors could quickly increase supply, in case demand would increase, at the same market price as if there was no concentration. However, a detrimental effect on competition would occur when competitors, considering the prices of the merged undertaking, also raise the prices of their goods or services. Market foreclosure is also unlikely when, before concentration, buyers buy goods from the merged group's competitors in the upstream market and not from the concentration participants because they would still be able to purchase goods from other sellers in the event of a concentration. However, the ability to do so may change when the merged undertaking is so big that it could significantly change the market

structure (Lindsay, 2006, p. 388), and other sellers would not be able to meet the growing needs of competitors.

- *Competitors in the downstream market do not take effective and timely countermeasures against the actions of the merged undertaking.* Producers located in the downstream market can change their production process to reduce dependence on raw materials and services sold by the merged undertaking or to support the emergence of a new seller in the market (Guidelines for non-horizontal mergers, § 39). The buyer may also have the purchasing power to prevent foreclosure. For example, in *Finmeccanica /BAES Avionics & Communications* (2005) and *Finmeccanica/AMS* (2005), the Commission concluded that companies producing aviation equipment had sufficient power to resist attempts by merged undertakings to limit their purchases, as they could start buying products sold by competitors or demand that the merged undertakings organize an open and transparent competition to select avionics sub-contracts.
- *There are no regulatory restrictions on business practices.* National or EU laws may set restrictions.

This analysis allows us to state that the merged entity intends to foreclose an upstream market when this eliminates downstream competitors and increases its market power and profits. This is likely to happen where competitors would be prevented from benefiting from economies of scale, marginal costs or production costs would be increased, and, accordingly, the prices of products would be raised. This can eliminate competitors from the market or enable merged undertakings to raise the prices of their products without risk (Lindsay, 2006, pp. 385–386).

The merged entity would not intend to close the upstream market if it could not increase the prices of products in the downstream market, and the result of the foreclosure would not benefit the merged undertaking. It also would not intend to close the upstream market if the merger partner in the upstream market could not sell all volume of the products it produces when it only sells them to the merger participants for internal needs (Lindsay, 2006, pp. 386, 388). When

partners in a concentration need to sell most of their goods to competitors, there is little chance that the foreclosure would be profitable. For example, in *GE/Agfa NDT* (2003), the Commission found that GE's purchases accounted for less than 5% of Agfa's sales. As a result, it concluded that any anti-competitive behavior by Agfa would be detrimental to its operations and, therefore, unlikely.

Foreclosure of the downstream market

Figure 2 shows that not only the upstream market can be closed to competitors: the downstream market can also be closed when the seller merges with an important buyer. The downstream market would be closed when the merged group refused to buy goods from competitors in the upstream market. As a result, competition in the upstream market may be significantly restricted.

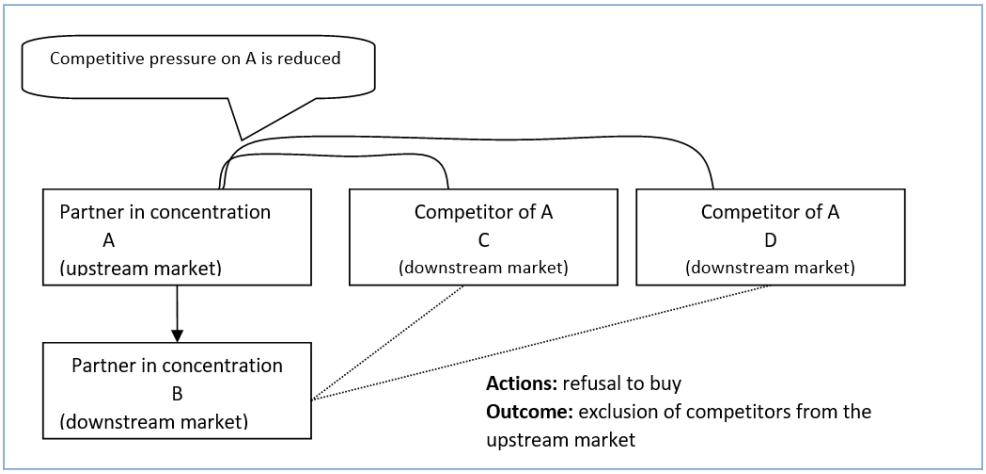


Figure 2. Foreclosure of the downstream market

Following § 60 of the Guidelines for non-horizontal mergers, due to a vertical concentration, competitors in the upstream market may incur higher costs of maintaining ties with consumers or lose these ties altogether. Competitors' position in the upstream market can be infringed in various ways. A partner in a concentration in the downstream market can refuse to buy from competitors and

buy only from concentration members. It may buy a smaller quantity from competitors or buy on terms significantly worse than those that would have existed without the concentration of undertakings. Also, the costs of competitors' products entering the distribution network may increase (Bishop et al., 2005, p. 12).

Closing sales for competitors in the upstream market to a buyer in the downstream market may negatively affect the consumer. As a result, a product range may decrease, or product prices may increase (Guidelines for non-horizontal mergers, § 72). The foreclosure of significant sales from the upstream market would significantly restrict effective competition. If there was a sufficient number of free buyers in the market, then market-closing actions would not be effective (Faull & Nikpay, 1999, § 4157). Harm to competition due to foreclosure occurs not only when competitors are forced to reduce their available sales volumes, but also when their sales expansion is restricted (Guidelines for non-horizontal mergers, § 74).

A considerable number of Commission decisions have addressed the issue of closing the downstream market. For example, in *Bombardier/ADtranz* (2001), the Commission examined the potential foreclosure of the downstream market by mergers between undertakings operating in the regional train and wagon manufacturing markets. It was feared that the other three suppliers in Germany may face the closure of the vertical downstream market. In another decision, *Promodes/Dirsa* (1990), the Commission examined the possibility of the foreclosure of the Spanish food and non-food distribution market, as Promodes gained access to the important Spanish food and non-food retail distribution market through its subsidiary DIA.

Following § 59 of the Guidelines for non-horizontal mergers and the analysis discussed above, it should be noted that the Commission, in assessing the likelihood of an anticompetitive customer foreclosure, examines whether the merged entity would have the ability to foreclose access to downstream markets

by reducing its purchases from its upstream rivals, whether it would have the incentive to reduce its purchases upstream, and whether a foreclosure strategy would have a significant detrimental effect on competition and consumers in the downstream market. An ability to close a vertical downstream market is likely to exist when:

- *Due to the concentration, actual or potential competitors in the upstream market would be deprived of economically viable opportunities to sell their products in the downstream market* (Guidelines for non-horizontal mergers, § 61). Such a situation would likely arise if a concentration member was a buyer with significant power in a downstream market. However, when a sufficient number of buyers start to buy goods from sellers who are not participating in the concentration immediately after the concentration or shortly, it is likely that undertakings in the concentration will not close the market.
- *The scope of activities of actual or potential competitors in the upstream market may be reduced or restricted due to the concentration* (Guidelines for non-horizontal mergers, § 62). When the production volume and income of the competitors in the upstream market depend on the scale of economies of production (Guidelines for non-horizontal mergers, § 63; Areeda et al., 1998, § 1008), then when the sales volume decreases, the competitors will be forced to increase the prices of their goods or services. For this reason, competition would be affected in the upstream and downstream markets, as other buyers in the downstream market would have to buy more expensive goods and services. If, due to the position of the merged entity in the upstream market, potential competitors did not want to enter the upstream market, prices in the market would remain higher in the future compared to those without the concentration. For these reasons, competitors may not make long-term investments to reduce costs, introduce new technologies, and improve product quality. This could weaken their ability to compete and force them out of the market (Guidelines for non-horizontal mergers, §§ 64–65).
- *There are no alternative or secondary markets where competitors can sell*

their products (Guidelines for non-horizontal mergers, § 66). When a concentration closes the market but competitors can sell their goods in alternative or secondary markets, the foreclosure would not harm buyers because the prices of the goods would not increase.

- *Competitors in the upstream market do not take effective and timely countermeasures* (Guidelines for non-horizontal mergers, § 67). When the merged entity engages in foreclosure, competitors may adopt more aggressive pricing policies or support the entry of new buyers.
- *There are no legal restrictions on business practices.* There may be legal restrictions on activity that prohibit foreclosure actions. Legal restrictions may be provided by both national and EU law. For example, in *Sovion/HMG* (2004, §§ 116–117), the Commission found that the parties to the concentration were obliged by law to collect and process slaughterhouse waste, so it was recognized that they could not foreclose the market by refusing to collect and process competitors' slaughterhouse waste.

The analysis allows us to say that the merged entity intends to foreclose a downstream market when buying internally from a vertically upstream unit, which would be more profitable than from competitors. The more units of the merged entity that would benefit from the foreclosure, the more likely the foreclosure would be intended. Incentives to close the market would also arise when the cessation of purchases would result in an economic benefit due to increased prices in the upstream market (Guidelines for non-horizontal mergers, §§ 68–70).

The merged entity would not intend to foreclose a vertically downstream market if it was more profitable to buy goods from competitors than internally from the merged entity, if the unit of the merged entity located in the upstream market had limited production and sales capabilities and could not meet the entire demand of the merged undertaking, or if competitors could offer a greater volume of goods (Guidelines for non-horizontal mergers, § 70).

Finally, it should be noted that complex concentrations sometimes occur in practice, which can simultaneously close upstream and downstream markets. For

example, in *WLR/BST* (2006) the Commission examined the potential of buyer-to-seller and seller-to-buyer ties restrictions.

9.3.2. Leveraging into another market

In conglomerate (mergers) and sometimes vertical concentrations, competition can also be significantly restricted when the merged undertaking, exploiting its power in one market, can impact another market where it does not have such power. As a result of that impact, it can also gain power in that market in the future (Howarth, 2005, pp. 369–372). The CFI, in *Tetra Laval v. Commission* (2002, § 151), noted that "capacities brought together by the transaction may immediately create conditions allowing the merged entity to leverage its way to acquire, in the relatively near future, a dominant position on the other market." For example, in *Tetra Laval/Sidel* (2001), the Commission examined the bid of Tetra Laval, the world leader in carton packaging, which also produces small quantities of plastic packaging (PET), to acquire 95% of the shares of Sidel SA, producing packaging equipment and systems and a global leader in the production and supply of blow-molding machines. The Commission prohibited the concentration because it would create a dominant position in the market for PET packaging equipment and strengthen Tetra Laval's dominant position in the market for carton packaging through leveraging – that is, by allowing it to transfer the power it held in the market for carton packaging to the market for PET packaging equipment.

The CFI, in *Tetra Laval v. Commission* (2002), and the ECJ, in *Commission v. Tetra Laval* (2005), confirmed that the changes that occurred as a result of the concentration, allowing leveraging from one market into another, were reasonably considered to be harmful to the competition. Although the courts annulled the Commission's decision prohibiting the concentration because the Commission could not prove its conclusions convincingly, they confirmed that leverage as harm should be analyzed in assessing conglomerate concentrations. Since the

courts did not elaborate on this issue in their decisions, they left much room for academic discussion.

The impact of leveraging from one market to another differs from changes emerging due to horizontal or vertical concentrations. This does not result in a price increase for consumers. In contrast to a vertical concentration, competitors' prices also do not increase. Often, the opposite situation occurs – prices are reduced. According to Völcker (2003, p. 587), the merged group, acting intelligently, lowers the prices of the jointly sold products because there may not be enough consumers to buy the product, and there would be significant market foreclosure.

However, this behavior is short-term since the merged entity, having pushed competitors out of the market, can increase prices for buyers. The expulsion of competitors from the market succeeds because consumer demand is directed towards the products of the merged entity, and competitors' ability and intention to compete decrease as competitors' profits decrease. The merger may increase the probability that the merged entity will refuse to have business relations with competitors or will support products with lower demand (Bishop & Walker, 1999, pp. 159–160). Therefore, it can be concluded that the merged undertaking can gain or strengthen its power in the market (Guidelines for non-horizontal mergers, § 111).

The merged group can use its market or financial power to exclude competitors from the market.

Leveraging market power

In leveraging from one product market into another, an undertaking can engage in "product tying," "pure bundling," the production of goods that are technically incompatible with competitors' goods ("technical tying"), "mixed bundling," or selling goods in groups ("full-line forcing").

In product tying, the buyer can purchase product A only when combined with

a different product B (Lindsay, 2006, p. 419). For example, in *Tetra Laval/Sidel* (2001, § 367), the Commission, while prohibiting the concentration, noted that the merged entity selling products could optionally "tie" them, requiring buyers who use carton packaging and SBM machines to buy Sidel SBM machines. Otherwise, they would not be equipped with Tetra Pak carton packaging machines and carton reels.

In pure bundling, two products – A and B – are sold as one set, and items A and B are not sold separately (Lindsay, 2006, p. 419; Burnside, 2001, pp. 107–110). For example, a restaurant offers set menus and does not sell dishes separately. "Pure bundling" may also be a form of "technical tying," in which individual devices work correctly only when they are part of a unified system, and are incompatible with competitors' devices.

In mixed bundling, the seller offers both a set of products and individual products (Lindsay, 2006, p. 419). For example, a restaurant engaged in "mixed binding" offers both set menus and individual dishes from the menu. The price of the set is lower than the sum of the individual dishes in the set because otherwise, the consumer would not want to buy the set.

In full-line forcing, the seller forces the buyer to buy the entire group of products, refusing to sell individual products that the buyer needs or wants to buy (Lindsay, 2006, p. 419). For example, in *Tetra Laval/SIG* (2005, § 71), the Commission analyzed whether the situation showed a clear trend towards in-line sales (sales encompassing several machines). In another case, *Gillette/Duracell* (1996), the Commission found that combining Gillette's personal care products, stationery, and small electrical appliances businesses with Duracell's battery manufacturing business would create an opportunity to force the buyer to buy the entire product group.

Economic theory recognizes that the bundling or tying of products can, under certain circumstances, weaken competitors and harm competition. However, it

should be noted that economic theory does not state that the tying or bundling of products is always harmful to competition, and the power gained in one market is always transferred to another market using tying or bundling (Bishop & Walker, 1999, pp. 159–160). Therefore, a merger that makes the bundling or tying of goods more likely does not necessarily harm competition.

Leveraging financial power

In leveraging financial power from one market into another, the merged group can engage in the "cross-subsidization of products" and "predatory pricing," and use financial resources under better conditions.

The merged group can use the revenue accumulated from selling products in one market with weak competition to subsidize its secondary products that face stronger competition. For example, the reduced price of a razor can be offset by the price of the blades used. This is called "cross-subsidization." In *General Electric/Honeywell* (2001, § 353), the Commission analyzed merged entities' financial capability "to cross-subsidize discounts across the products composing the packaged deal." In another decision, *Danish Crown/Vestjyske Slagterier* (1999, *§ 196*), the Commission found that the merged group would be the only slaughterhouse selling fresh beef and pork on the Danish market, and would therefore be able to apply rebates by subsidizing the sale of pork at the expense of the price of beef and vice versa. In *Boeing/McDonnell Douglas* (1997, § 78), the Commission found that the merger would allow Boeing to set prices equal to cost in a more competitive market, offset by higher prices in other markets.

It should be noted that cross-subsidization is likely only when, as a result of such actions, competitors would be excluded from the market and merged group members could recover lost income by raising the prices of goods.

Concentration can also increase the probability of excluding undertakings from the market when the concentration creates conditions for using "predatory

pricing." In particular, in *Aérospatiale-Alenia/de Havilland* (1991, § 69), two competitors of the merger undertakings notified the Commission that they could not withstand a price war with the merged entity. Consequently, both would leave the market. In evaluating these statements, the Commission noted that such conduct of a merged undertaking could be rational since the proposed concentration would mean that ATR/de Havilland would exceed the market share threshold, making such a pricing policy likely given that it would be the optimal profit-maximizing strategy.

The merged entity would discourage potential competitors from entering the market if it lowered prices to a level where competitors could not survive. When it is necessary to enter several markets simultaneously to compete effectively, the ability of the merged entity to prevent access to at least one of the markets can significantly restrict effective competition (Guidelines for non-horizontal mergers, § 112). As in the case of cross-subsidization, predatory pricing is likely when such behavior will force competitors to leave the market and allow them to recover lost income by raising the prices of goods. For example, in *P&O Stena Line (Holding) Ltd* (2002, *§§ 19–20),* the Commission examined whether P&O, using its monopoly power in one market, could use predatory pricing in another market with competition. After the analysis, the Commission decided that such an option was not likely, as predatory pricing would have to be applied to several competitors; some competitors have significant financial support from banks and/or are vertically integrated with them, and there are low barriers to entry into the market.

A concentration may also significantly restrict effective competition in a market where the merger removes capital constraints on the merged undertakings (Church, 2006, p. 260; Völcker, 2003, p. 583). When an undertaking is connected to another with financial power, it can use internally accumulated funds. It does not need to use the capital market, or can do so on significantly more favorable terms than its competitors.

Assessing the leverage of financial power in another market poses various issues because there is no clear methodology for evaluating the use of such financial power. Competition law experts debate whether it is necessary to consider the leverage of financial power as a harmful impact on effective competition. In the opinion of the author, when assessing concentrations, it is necessary to consider the fact that capital constraints may be removed when this allows the undertaking to engage in the cross-subsidization or predatory pricing of products, and such behavior is likely to exclude competitors from the market or prevent the entry of new competitors.

Conditions for leveraging

The undertaking can apply leverage when it, having power in one or several markets, acquires an undertaking operating in one or several adjacent markets. In *GE/Amersham* (2004, § 37), the Commission, discussing the conditions for commercial bundling to result in the foreclosure of competition, indicated that for this to be successful, "it is necessary that the merged entity [would] be able to leverage its pre-merger dominance in one product to another complementary product." In this case, the acquired undertaking's market power is increased not by combining the undertakings' positions in the market, but by enabling it to use the power the merged entity has in one market in another where it does not have such power (Völcker, 2003, p. 583). Some factors can be identified which facilitate the merged entity's ability to implement leverage practice:

- *The bundling or tying of goods could be involved when a buyer wants to buy together goods that are usually sold separately, or when a group of buyers wants to buy different goods.* For example, a buyer may prefer to purchase all items from one source instead of several to save money (Guidelines for non-horizontal mergers, §§ 98, 100, 104). Tied or bundled goods should be bought by a significant number of buyers. The more buyers who need both products, the better the opportunity to link products. Otherwise, buyers

would likely refuse to buy tied or bundled goods (Lindsay, 2006, p. 416). For example, in *Tetra Laval/SIG* (2005, *§ 74), the Commission ruled out tying because there was no evidence that customers would buy several different products together*. The Commission decision in *Procter & Gamble/Gillette* (2005, § 117), shows that when goods complement each other, the probability that goods will be tied or bundled is higher.

- *When the merged undertaking would have a significant degree of market power, which would not necessarily amount to dominance* (Guidelines for non-horizontal mergers, § 99; *GE/Amersham*, 2004, §§ 21, 31, 37–38). It may be enough that at least one of the linked goods is necessary for the buyer to decide that the seller holds significant market power – for example, when there are no other options in the market, or the possibilities are minimal. Competition law experts consider whether power should be held in the pre- or post-merger area, or both. Under the SIEC rule, it is sufficient to show that the merger would strengthen power in the pre-merger market. However, a concentration may also be prohibited where the merger would create or strengthen market power in the market acquired after the merger. Following the EU court's decisions in *Tetra Laval v. Commission* (2002, § 197), and *Commission v. Tetra Laval* (2005) it could be concluded that when, before the concentration, the market power of the undertaking is greater than the power held by the competitors, there is a possibility that the merged group involving that undertaking will be able and intend to use the available power in the future. The use of financial power would be unlikely where the merged undertaking has insufficient financial power or market conditions are such that the use of financial power is unattractive and such conduct would be unlikely (Völcker, 2003, pp. 590, 595). In cases where the undertaking does not have power in the market, the Commission will determine that the merged undertaking does not have the ability to apply leverage strategy. For example, in *Tetra Laval/SIG* (2005, *§ 76),* The Commission did not establish that the merged undertaking had the ability to exercise power, as the merged group did not have power (dominant position) in any of the markets.
- *When buyers or competitors do not take timely and effective countermeasures*

(Guidelines for non-horizontal mergers, § 103). In *GE/Amersham* (2004, *§ 37)*, the Commission noted that for a leverage strategy to be profitable, "there must be a reasonable expectation that rivals will not be able to propose a competitive response and that their resulting marginalisation will force them to exit the market." Once rivals have exited the market, "the merged firm must be able to implement unilateral price increases, and such increases need to be sustainable in the long term, without being challenged by the likelihood of new rivals entering the market or previously marginalised ones re-entering the market." Where there are strong competitors and/or buyers in the market, the merged group may not be able to successfully use the power it has in one market in another market. For example, in *Tetra Laval v. Commission* (2002, *§ 245),* the CFI, considering the level of competition in the market where the merger entity intended to exercise market power, acknowledged that the Commission had not demonstrated that "sales could reach a level which could threaten the strong competition prevailing on the market." In another decision, *Procter & Gamble/Gillette* (2005, *§§ 120–130),* the Commission – examining whether the market conditions resulting from the concentration of the merged undertaking would allow the application of bundling, thereby forcing buyers to buy necessary or known goods together with unknown ones, limiting the participation of competitors in the distribution network or preventing potential competitors from entering the market – concluded that such behavior would likely not be anti-competitive as competitors also sell similar products and retailers can use existing buyer power. In *GE/Amersham* (2004, *§* 39), the Commission indicated that when competitors do not have all the goods needed by the buyer, which a merged group have, several sellers can combine their goods in one group and be more attractive to the buyer. For example, in *BC Funds/Sanitec* (2001, *§ 19)*, the Commission found that the merged group would be able to "mix bundle" ceramic sanitary ware, water taps, and faucets. It allowed the concentration because such actions "could not squeeze competitors out of the market," since competitors could offer the same group of goods to the buyer. It should be noted that competitors may use a more aggressive pricing policy in response to the merged entity's

anti-competitive actions (Guidelines for non-horizontal mergers, § 104). In the case of *Air Liquide/Messer Targets* (2004, § 66), the Commission noted that the merged group would be unable to exercise market power when buyers, even in long-term relationships, could switch to other sellers. It is likely that competitors, in response to the merged undertaking's anti-competitive actions, may use more aggressive pricing.

According to the EU courts, the Commission, when proving the possible use of the merged undertaking's power, must not only establish that the merged undertaking will be able to leverage power from one market to another, but must also provide "convincing evidence" to substantiate that it intends to do so. In *General Electric Company v. Commission* (2005, § 327), the CFI noted that "the Commission [must] establish not only that the merged entity had the ability to transfer those practices to the markets for avionics and non-avionics products but also, on the basis of convincing evidence, that it was likely that the merged entity would engage in such conduct." In the court's opinion, the fact that the combined undertaking would be able to make strategic decisions regarding leverage was not sufficient to prove that it would act this way in practice.

Whether the merged undertaking intends to leverage market power from one product market into another depends on whether such behavior would be profitable (Guidelines for non-horizontal mergers, § 105). Some conditions could facilitate a merged undertaking's intention to use its power in one market in another. Such conditions are as follows:

- *When losses incurred in the market to which the merged entity's power would be transferred would be offset by profits and/or future profits in the market where the power is already held*. When assessing a merger group's intentions to exercise power, it is necessary to determine how much profit would decrease in one market and increase in another if such intentions were to be carried out. In the case of *General Electric Company v. Commission* (2005), the CFI criticized the Commission for not properly verifying this when

assessing the merged group's intention to leverage its power from one market to another. Regarding leverage practice, the court noted that such practice:

> would have been rational commercial behaviour following the merger only in so far as the revenues which the merged entity was likely to derive from those practices would have offset that potential cost. … the Commission was not entitled to regard it as logical or inevitable that the merged entity would extend those practices to the markets for avionics and non-avionics products. (§ 338)

The combined group would intend to use the power it has in one market in another when such actions could increase the profitability of its activity by selling the goods necessary for the buyer, forcing competitors to leave the market, limiting the entry of potential competitors to the market, or increasing the prices of competitors (due to the elimination of economies of scale).

- *When a benefit obtained by bundling or tying goods offsets the losses incurred*. Some buyers may refuse to buy bundled or tied products when they need one product. They can buy a single item, even though it would be more expensive than buying it as a group. Buyers may purchase goods from competitors or not buy them at all when the seller bundles or ties the goods (Guidelines for non-horizontal mergers, §§ 105–106).
- *When the market in which the power is intended to be used is not mature, turnover is relatively small, and profits are modest* (Guidelines for non-horizontal mergers, § 107). An undertaking operating and having power in a highly profitable market is unlikely to exercise power in a market with low profitability.
- *When leverage increases profits by gaining market power in the tied goods market, protecting market power in the tying goods market, or combining the two* (Guidelines for non-horizontal mergers, § 108).
- When determining the intention to leverage market power from one market to another, the Commission considers the circumstances that

encourage such behavior and those that reduce or eliminate such an intention (Guidelines for non-horizontal mergers, § 110). The Commission also considers the pre-concentration behavior of the undertakings when determining intent (*GE/Amersham*, 2004, § 35). When merger undertakings or their competitors have used market power leverage practice before the concentration, the Commission analyzes the impact of this practice on competition. When such a practice has not been carried out, the Commission assesses whether the concentration creates the conditions for such a practice (Lindsay, 2006, p. 416).

9.3.3. Increased market power

If market power increases because of a concentration, creating conditions for restricting competition, it can be recognized as a harmful effect of the concentration. As indicated in § 10 of the Guidelines for non-horizontal mergers, "[a]n 'increase in market power' means the ability of one or more undertakings to increase prices profitably, reduce output, choice or quality of goods and services, diminish innovation, or otherwise negatively influence parameters of competition." A concentration can increase undertakings' power by expanding the portfolio of goods produced and/or sold, eliminating potential competition, or increasing their ability to implement countermeasures.

In *Coca-Cola Company/Carlsberg* (1997), *Guinness/GrandMetropolitan* (1997), and *Coca-Cola/Amalgamated Beverages* (1997), the Commission recognized that the expansion of the undertaking's portfolio of goods as a result of the concentration might result in the emergence or strengthening of the undertaking's market power. The expansion of the product portfolio creates or strengthens the undertaking's market power when the sum of the market power in the individual product groups is less than the power of the combined product group (Church, 2006; Nalebuff, 2003, p. 11). For example, in *Coca-Cola Company/Carlsberg* (1997, *§ 67), the Commission noted that* "the inclusion of strong beer and packaged water

brands, such as those of Carlsberg, in the beverage portfolio gives each of the brands in the portfolio greater market power than if they were sold on a 'stand-alone' basis." The expansion of the product portfolio is significant in markets where buyers (wholesalers, large retailers) usually buy goods in groups (Bishop & Walker, 1999, pp. 159; EC case *Guinness/GrandMetropolitan*, 1997, *§ 46*).

An example of such market power strengthening can be found in *Guinness/GrandMetropolitan* (1997). In this case, the Commission examined the influence of a concentration on the markets of individual types of alcohol. It allowed the concentration only when its participants undertook to terminate the existing long-term distribution contract for Bacardi rum in Greece. This decision is significant in that it confirmed that the expansion of the offered portfolio of the world's leading alcohol types during the concentration might create a dominant position of a particular kind of alcohol (whiskey) on the Greek market (separate geographic market) and strengthen the dominance of the position of other sorts of alcohol (gin, rum and brandy) in the market. However, the market shares occupied by each participant did not increase (§§ 114–118).

This decision was criticized because it did not clearly state the damage caused by the widening of the product portfolio. The decision states that the market power would be strengthened because merger undertakings would: increase their ability to involve "bundling sales or increasing the sales volume of one category by tying it to the sale of another category" (*Guinness/GrandMetropolitan*, 1997, § 100); gain the ability to provide a portfolio of products and account for a more significant proportion of business (§ 40); gain greater flexibility to structure its prices, promotions, and discounts (§ 40); be able to realize economies of scale and scope in their sales and marketing activities (§ 40); be able to afford to make substantial offers, discounts, and credits or organize and finance promotional events (§ 101); be able to influence which products are stocked or displayed in the limited space available behind a bar (the so-called back-bar) (§ 101); be shielded

from market pressures due to increased ability to cross-subsidize goods in lower demand (§ 99); be able to use its strength in leading brands, such as Johnnie Walker Red Label, Gordon's gin, and Bacardi rum, in order to induce bars to list brands in the same or another category (§ 101); and increase attractiveness for one-stop-shopping considerations (§ 101).

It cannot be accepted that, in all the cases mentioned in the decision, competitors would be weakened or removed from the market, and competition would be damaged. Buying products from a single source or exploiting economies of scale and scope usually does not restrict competition. Even the opposite – in such cases, competition is strengthened, and this is beneficial to consumers.

Such an attitude of the Commission raises doubts as to whether it has too wide a discretionary right to prohibit concentrations when assessing the increase in the power of merger undertakings due to improved efficiency. The *Guinness/Grand-Metropolitan* (1997) decision is highly questionable, as it treats efficiency gains as harmful because they increase or strengthen the merger undertakings' market power. Considering this approach of the Commission, it can be concluded that there is a possibility that concentrations beneficial to the market may be prohibited. It is necessary to establish clear criteria under which the expansion of the product portfolio could be recognized as harmful to competition.

Harm to competition could also occur when, after expanding the product portfolio**,** the possibility of bundling or tying products would increase. For example, in *General Electric/Honeywell* (2001, *§§ 443*–444), the Commission decided that such a situation would detrimentally affect competition in the engine and aviation equipment markets in the long term because the acquisition of a broad product portfolio would increase merger undertakings' ability to sell them in various bundling scenarios, and would enable more efficient pricing than competitors.

The Commission decision in *Guinness/GrandMetropolitan* (1997) raises

doubts. It can be agreed that expanding the product portfolio may restrict competition, but it is unclear whether the advantages mentioned in the decision would affect competition detrimentally. In the decision, competition is equated with competitors' position in the market, as it examines the possible negative impact on competitors due to merger undertakings gaining advantages. The decision does not determine whether the merger undertakings' advantages would push out one or more competitors from the market. Nor does it explain why competitors could not obtain the same benefits through collusion or otherwise. It is unclear whether harm to competition from bundling goods outweighs its economic benefits.

Understanding that a concentration that makes the tying or bundling of goods more likely is not necessarily harmful to competition is important. When assessing the impact of the concentration, it is necessary to convincingly prove that the expanded product portfolio strengthens the ability to apply leverage from one market to another to such an extent that competitors can no longer operate in the market (Bishop & Walker, 1999, pp. 159–160). The harmfulness of the impact on competition due to an expanded product portfolio depends on the number of existing product leaders in the product portfolio, their importance, and the market share occupied by the undertaking in separate product markets, compared to the number of markets in which competitors occupy a significant market share, the importance of those markets, and the available product portfolio (*Guinness/GrandMetropolitan*, 1997, § 41–42).

As a result of the concentration, damage to the competition could also occur when an expanded product portfolio strengthens the purchasing power of the merger undertakings. For example, in *Boeing/McDonnell Douglas* (1997), the Commission was concerned that by increasing the buyer's share of the fleet servicing market from 60% to 84%, the merged group would have greater leverage in negotiating exclusive distribution agreements with airlines. According to

the Commission, the merger of the civil and military aviation businesses would strengthen the negotiating position of the merged group when negotiating with suppliers.

In addition to the harm that can occur when the product portfolio is expanded, other detrimental impacts can also appear. One such negative result would be the elimination of potential competition (Verloop & Landes, 2003, pp. 52–53). Following the Commission's opinion, a merger of undertakings occupying a dominant position in different geographic markets would be considered harmful to competition when there is a possibility that they would come to each other's market in the future due to expanded activities. For example, in *Air Liquide/BOC* (2000) and *EDF/EnBW* (2001), the Commission concluded that both concentrations were of concern, even though the parties to the concentration operated in different geographic markets. In *EDF/EnBW* (2001, § 64), the Commission found that EDF intended to enter the French market and was the best prepared of all the undertakings. Therefore, the competition was harmed by the elimination of a potential competitor during the merger between EDF and the French company EnBW. In *Air Liquide/BOC* (2000, *§§ 201–204),* the Commission identified Air Liquide as the most likely potential competitor of BOC. According to the Commission, it was not important that Air Liquide did not, in practice, try to enter the UK market, as this could only be considered a tactical behavior that can be changed at any time.

Concentrations can also increase merger undertakings' ability to implement countermeasures against competitors. As a result of a concentration, an enlarged group that includes undertakings operating in different geographic markets could be able to react more effectively to competitors' actions. For example, in *EDF/EnBW* (2001, *§§ 69–71),* the Commission noted that before the concentration, EDF was less able to resist the entry of German companies into the French market, as it was unable to retaliate in the German electricity market due to its lack of

a representative there. The Commission concluded that the merger of the French company EDF with the German company EnBW would create better abilities for the merged entity to resist the aggressive actions of competitors RWE, E.ON, and HEW in France.

9.3.4. Access to competitively sensitive information

Controlling competitively sensitive information can also eliminate or weaken competitors (Lindsay, 2006, p. 420). A vertical concentration can make the market more transparent. This can facilitate the transfer of information from a unit in a downstream market to a unit in an upstream market, and vice versa (Church, 2006, p. 250). As a result of a vertical concentration, merger undertakings can obtain information about competitors in upstream or downstream markets, which is significant for competing in the market.

In particular, in a vertical concentration, an undertaking in the upstream market may become a seller to an undertaking in the downstream market, which was, until the merger, its competitor. Because of this, it could receive information, allowing it to implement a less aggressive price policy in the downstream market. This may result in harm to the consumer. For example, in *ENI/EDP/GDP* (2004, §§ 368–379), the Commission, recognizing the concentration as incompatible with the common market, took into account the fact that after the concentration, the merged entity could easily obtain confidential information about the costs or sources of raw materials available to existing and potential competitors.

The control of competitively sensitive information can worsen competitors' positions in the market. They may abandon their intention to enter, or be forced out of, the market (Guidelines for non-horizontal mergers, § 78). Using competitively sensitive information, merger undertakings can not only refuse to buy and sell goods or sell them under anti-competitive conditions, but also perform other actions harmful to competition. With competitively sensitive information, the

vertically merged undertaking can more easily coordinate actions with competitors in upstream or downstream markets.

Regarding access to competitively sensitive information, it should also be noted that a vertical concentration can create a "disobedient" undertaking whose presence in the market would benefit competition, as it would hinder the coordination of actions with competitors. This could appear when a concentration creates an asymmetry between undertakings in upstream or downstream markets. Such an undertaking could more easily hide information from its competitors through its territorial units, and, as a result, the transparency of the market would decrease (Church, 2006, p. 252).

In *Boeing/Hughes* (2000, *§ 82),* the Commission singled out six potentially adverse effects of the concentration, which increased merger undertakings' access to business-sensitive information. According to the Commission, such a concentration increases the ability of the merger undertakings to:

- increase the incompatibility of their products with competitors' products;
- develop products that competitors' installation equipment cannot install;
- refuse to allow time to adapt equipment to competitors who install products;
- refuse to provide information to competitors, which is necessary for adapting products;
- use competitively sensitive information to eliminate competitors from upstream or downstream markets;
- design new products compatible only with the products of members of the merger group.

9.3.5. Easier coordination with competitors

In some markets, the structure may be such that competitors would consider it possible and economically rational, and hence preferable, to coordinate their behavior, aiming to sell products at increased prices (Guidelines for non-horizontal

mergers, § 79; Guidelines for horizontal mergers, § 39).

Coordination may take various forms. "In some markets, ... coordination may involve keeping prices above the competitive level. In other markets, coordination may aim at limiting production or the amount of new capacity brought to the market ... dividing the market ... allocating contracts in bidding markets" (Guidelines for horizontal mergers, § 40).

In the event of a non-horizontal concentration, the merged group would gain the ability to coordinate actions with competitors in markets where it is relatively easy to identify the terms of coordination and where such coordination is sustainable (Guidelines for non-horizontal mergers, § 119). In *Airtours v. Commission* (2002, § 62), the CFI provided three conditions that make coordination of action sustainable:

1. *Actions coordinating undertakings must be able to monitor how the other undertakings behave to ensure that they adopt the common policy.* Market participants not only need to be aware of the benefits of coordinated behavior for everyone, but must also able to quickly check whether other market participants are consistent with the coordinated behavior. Therefore, there must be sufficient market transparency.
2. *Adequate deterrents must ensure a long-term incentive to adhere to the common policy.* Market participants must realize that deviations from coordinated behavior will result in retaliatory actions by other market participants to nullify the benefits expected from non-coordinated behavior.
3. *The foreseeable reaction of current and future competitors and consumers should not jeopardize the results expected from the common policy.*

Damage to competition would occur when a non-horizontal concentration changes the nature of competition so that firms that were previously not coordinating their behavior are significantly more likely to coordinate and raise prices or otherwise harm effective competition. Undertakings that have already

coordinated actions before the concentration would find it easier to do so. The coordination of actions would be more stable or more effective (Guidelines for non-horizontal mergers, §§ 19, 79; Guidelines for horizontal mergers, § 22(b)); it may also facilitate the collective use of market power (Church, 2006, p. 242).

A vertical concentration can simplify understanding the conditions for coordinating the actions of undertakings, both in upstream and downstream markets. As mentioned above, vertically merged undertakings can close any vertically related markets, reduce the number of competitors, and increase market transparency (Guidelines for non-horizontal mergers, § 84). The transparency of the market will also increase when the manufacturer: gains control of the distributor, who also distributes the goods of other sellers (competitors); gains control of the buyer with purchasing power, allowing them to encourage the competitor to deviate from coordinated practice (Guidelines for non-horizontal mergers, § 90); or gains control of a disobedient buyer. Actions to remove a disobedient buyer are taken when (Church, 2006, pp. 247–249):

- the upstream market is sufficiently concentrated and has suitable conditions for coordinating actions;
- an economy of scale is important for the seller (a certain amount of goods sold is necessary to maintain profitability);
- there is evidence that the buyer may impede coordination.

Market transparency, increased by vertical integration, can simplify control of compliance with coordinated practices, making identifying deviations easier. A vertically integrated undertaking can respond more efficiently to competitors' attempts to deviate from concerted practice. As a result of a vertical concentration, the pressure of external undertakings may be reduced, as barriers to entry may be increased, or other restrictions could be implemented to prevent newcomers from entering the market (Guidelines for non-horizontal mergers, §§ 86–89).

Conglomerate concentrations may also, under certain circumstances, facilitate the coordination of practices between undertakings that harm competition. The number of effective competitors in the market can be reduced to the point where there is a real possibility of coordination without any collusion. It is not necessary to exclude competitors from the market; it is enough to weaken them so that they do not oppose coordination and stick to the set prices. A conglomerate merger can reduce competition in several markets and strengthen the disciplinary mechanism in order to ensure coordinated practices (Guidelines for non-horizontal mergers, §§ 119–121).

Finally, it could be said that the intention to coordinate actions would appear or would be strengthened if, due to concentration in the market, a situation arose in which the profit that firms could make by competing aggressively in the short term (deviating) was less than the expected reduction in revenues that this behavior would entail in the longer term due to competitors' responses (punishment) (Guidelines for non-horizontal mergers, § 80).

9.3.6. Harm vs. benefits to competition

Concentrations can have both harmful and beneficial effects on the market. The same concentration is often harmful to competition in one aspect and beneficial in another. Accordingly, determining the likelihood of an anticompetitive merger should involve comparing the likelihood and magnitude of these competitive benefits and harms to determine if consumers and competition are injured on balance (Salop, 2018, p. 1981).

Therefore, it is necessary to determine whether efficiency improvements are considered by the Commission when assessing concentrations according to Regulation 139/2004. Some authors argue that it weighs all the anti-competitive and countervailing factors and is decided holistically (Cress, 2012). It is also necessary to answer the question of how significant the benefits arising from improved

efficiency should be so that they can be used to justify a concentration that is harmful in other aspects.

In economic theory, the improvement of the efficiency of the undertaking means the benefits obtained from the improvement of the business activity, which results in the reduction of the prices of goods and production costs, the increase of production capacities or the volume of services, and the improvement of the quality of goods and innovations. Efficiency can arise from optimizing production, the distribution of goods, investments, or management, using economies of scale or scope, increasing purchasing power, innovations, etc. (Ivaldi et al., 2003, p. 63). In some of these situations, the buyer also benefits because the price of goods may decrease, new goods may appear, or the quality of existing ones may improve. In other cases, only the undertaking would benefit. For example, reducing fixed costs due to economies of scale would typically only increase the undertaking's profits.

Both vertical and conglomerate concentrations can provide conditions for improving pricing and planning, increasing operational efficiency, and reducing losses and problems when executing contracts with partners (Bishop et al., 2005, pp. 107, 108–112, 113–118).

As a result of a vertical concentration, operational costs can be reduced, and the supply of goods can be improved because the costs of supplying goods, due to the internal connections of the merger undertakings, are lower than the costs incurred when purchasing goods in the market (Lindsay, 2006, p. 380). The costs of negotiating the purchase of goods with independent undertakings may be reduced (Korah, 2004, p. 353). Vertical mergers may align the incentives of the parties regarding investments in new products, production processes, and product marketing (Guidelines for non-horizontal mergers, § 57). Eliminating the double markup can reduce the price of the final product (Lindsay, 2006, p. 380). Because the goods in vertically related markets are complementary, the merger of

undertakings operating in these markets may increase the undertakings' intentions to reduce the final prices of the goods. Such intentions may arise because the increase in the demand for goods in the downstream market also increases the demand for goods in the upstream market (Guidelines for non-horizontal mergers, § 13). As a result, reducing the price of one product can increase the sales volume of both products (Korah, 2004, p. 353). However, it should also be kept in mind that when an undertaking with market power in the production or sales markets is created through a vertical concentration, competitors may be pushed out of these markets, the entry of new potential competitors could be restricted, and prices for the final consumer may be increased.

A conglomerate concentration can decrease the price of complementary goods and the cost of sales of jointly sold goods and improve the compatibility of goods and their services. The consumer can also benefit from being able to purchase goods from one seller (Guidelines for non-horizontal mergers, §§ 14, 117–118). However, it should be noted that price reductions or product range expansion can be short-term, lasting only until competitors are removed from the market (Völcker, 2003, p. 587).

In response to the question of which efficiency improvements due to a concentration should be considered when assessing the harmfulness of concentrations, it should be emphasized that there are three main approaches among experts in competition law (Hovenkamp, 1994, pp. 446, 450–451).

The first is the "integrated approach" (Lowe, 2002, p. 7), where the same assessment takes into account both the harm and benefits of a concentration. The concentration is evaluated by considering the overall impact on the market. It may be found that the increased efficiency resulting from the concentration has such a positive effect on competition that, in an overall assessment, it will be recognized that the concentration does not significantly restrict competition.

In the second approach, efficiency gains and harm to competition are

determined separately. Once they are identified, they are compared. The concentration is justified when the increase in efficiency outweighs or nullifies the harm.

In the third approach, efficiency improvement is not considered a positive, but an adverse effect of a concentration. Improved efficiency is said to increase the undertaking's competitiveness and only indicate the emergence or increase of the undertaking's market power (Kenny, 2002, p. 168).

Considering the peculiarities of non-horizontal concentrations, it can be concluded that the first approach is the most appropriate when assessing non-horizontal concentrations because it is difficult to separate the benefits created in vertical or conglomerate concentrations from harm. As mentioned earlier, the origin of both the resulting damage and the resulting benefit is often the same. The third approach is the most questionable: in the opinion of the author, it is entirely unsuitable for assessing non-horizontal concentrations.

In assessing non-horizontal concentrations, combining the quantitative and qualitative research methods, the efficiency increased by the concentration should always be evaluated and considered. Quantitative analysis determines the minimum generated efficiency required to outweigh the harm (Röller et al., 2000, pp. 10, 92). Qualitative analysis is applied when quantitative data is not enough. This approach examines whether the efficiency is sufficient to prevent the concentration from significantly restricting effective competition (Lindsay, 2006, p. 529).

Understandably, it is difficult to determine the outcome of the concentration in a prospective evaluation. At the time of assessment, efficiency has not yet increased. Therefore, it would be appropriate to implement an ex-post concentration assessment to correct possible errors in authorizing concentrations. However, some may claim that an ex-post evaluation is not possible in some cases because only undertakings manage and present information publicly (Ivaldi et al., 2003, p. 63). As a result, evaluators usually do not have accurate information. Inaccurate information provided by undertakings could reduce the reliability of the

assessment. However, the same problems arise when evaluating concentrations that are already in place. The reliability of the data during the preliminary evaluation of concentrations is even lower because the impact of the concentration is not known at that time. Outcomes are only predicted using various methods.

The objectives of concentration control and assessment rules determine whose benefit is suitable to justify the damage caused. As mentioned in the first part of this paper, the general benefit or only consumers' benefit can be considered. According to experts who claim that only the benefits received by the consumer should be considered, if the general benefit were to be evaluated, then the losses suffered by the consumer could be justified by any slight reduction in operating costs (Lowe, 2002, p. 10). Such an opinion cannot be accepted because such a view is too narrow. In markets where technical and economic progress is essential and it is important to ensure resources for research and product development and know-how, a strong focus on the final product and the consumer's interests may negatively impact the competition. Thus, the benefits provided to the consumer and the benefits related to improving competition should be considered.

The "significant impediment of effective competition" rule of Regulation 139/2004 mainly focuses on effect, not dominance, so when evaluating concentrations, the increase in efficiency that neutralizes the adverse effects of a concentration can be considered; §§ 77 and 115 of the Guidelines for non-horizontal mergers confirm this conclusion. They state that "the effect on competition needs to be assessed in light of the efficiencies substantiated by the merging parties."

Article 2 of Regulation 139/2004 provides three possibilities to consider the improvement of efficiency when evaluating concentrations:

- applying the "significant impediment of effective competition" rule (Regulation 139/2004, Article 2(3));
- considering "the need to maintain and develop effective competition within the common market" (Regulation 139/2004, Article 2(1)(a));
- considering "the development of technical and economic progress provided

that it is to consumers' advantage and does not form an obstacle to competition" (Regulation 139/2004, Article 2(1)(b)).

In addition, the preamble of Regulation 139/2004, which provides the goals and principles of the Regulation, also guides this issue: § 4 states that concentrations in the EU "are to be welcomed to the extent that they are in line with the requirements of dynamic competition and capable of increasing the competitiveness of European industry, improving the conditions of growth and raising the standard of living in the Community"; § 29 acknowledges that it is appropriate to consider "any substantiated and likely efficiencies put forward by the undertakings concerned" and indicates that it is possible that "the efficiencies brought about by the concentration counteract the effects on competition and in particular the potential harm to consumers."

Moreover, § 52 of the Guidelines for non-horizontal mergers indicates that "the effect on competition needs to be assessed in light of efficiencies substantiated by the merging parties." The Guidelines show that the Commission "may decide that, as a consequence of the efficiencies that the merger brings about, there are no grounds for declaring the merger incompatible with the common market." When merger undertakings provide "sufficient evidence that the efficiencies generated by the merger are likely to enhance the ability and incentive of the merged entity to act pro-competitively for the benefit of consumers, thereby counteracting the adverse effects on competition," the Commission may authorize the concentration.

The analysis shows that the justification of efficiency improvement is clearly provided in the legal regulation mechanism surrounding EU concentrations. However, it should be noted that not all efficiency is valuable: § 53 of the Guidelines for non-horizontal mergers indicates that an increase in efficiency is recognized as valuable only if it satisfies three cumulative conditions. It must benefit consumers, be merger-specific, and be verifiable.

Benefits to consumers and competition

Some experts argue that the Commission takes the view that the purpose of competition regulation is to ensure only the welfare of consumers (Luescher, 2004, pp. 77–79, 82–83, 86) and not general welfare, so efficiency gains that benefit market participants but not consumers cannot be considered (Korah, 2004, p. 352). Such a position seems to correspond with the Commission's opinion. Following § 21 of the Guidelines for non-horizontal mergers, in its assessment the Commission considers "the possible pro-competitive effects stemming from substantiated efficiencies benefiting consumers." Additionally, § 79 of the Guidelines for horizontal mergers specifies that efficiencies "should, in principle, benefit consumers in those relevant markets where it is otherwise likely that competition concerns would occur."

However, the author believes that paying so much attention to the consumer is not appropriate. If the focus were exclusively on the consumer, the benefits to the manufacturer and other competitors would be completely insignificant. It can hardly be expected that the merged undertakings would transfer all the benefits obtained from enhancing efficiency to the consumer. If this were the case, undertakings would have no incentive to merge. Therefore, the requirement to consider only consumer benefits would make evaluating efficiency improvement meaningless.

The text of Regulation 139/2004, which focuses on both the consumer and the competition, supports such an approach. The Preamble (§ 4) specifies that in the EU those concentrations which are "in line with the requirements of dynamic competition and capable of increasing the competitiveness of European industry" are welcomed. Moreover, § 29 of the Preamble indicates that "i] is possible that the efficiencies brought about by the concentration counteract the effects on competition." Article 2(1)(a) of the Regulation provides for the need to maintain and develop "effective competition," while Article 2(1)(b) of the Regulation states

that the development of technical and economic progress must not only be to consumers' advantage, but must also "not form an obstacle to competition." Article 2(3) of the Regulation indicates that concentration assessment is based on the establishment of whether concentration would "significantly impede effective competition."

This leads to the conclusion that when evaluating the efficiency gained from a concentration, not only the benefit to the consumer, but also the benefit to the competition should be taken into account.

Merger-specific benefits

Although there was a debate at the time of the adoption of Regulation 139/2004 as to whether the benefits obtained from improving efficiency must necessarily be merger-specific (Monti, 2022c, p.6), it was decided that only those benefits that are gained directly from the concentration and cannot be achieved to a similar extent by other, less competition-restrictive means can be taken into account (Guidelines for non-horizontal mergers, § 85). Such a requirement is justified because it establishes the application of the principle of proportionality, which is widely used in EU law. Following the principle of proportionality, a concentration should not be allowed if efficiency can be increased by other means that are less restrictive on competition.

The time during which the efficiency must appear is also important for the assessment. The shorter the time, the more likely the Commission will consider the resulting efficiencies when assessing concentrations (Guidelines for non-horizontal mergers, § 21). Because of this, it is easier to demonstrate the efficiency gains resulting from reduced production costs. Manufacturing process costs can be reduced by pooling assets, facilities, or technology. The benefits of this pooling appear immediately after the concentration is completed. The dynamic improvement in efficiency resulting from changes in the management of the merged undertaking is more difficult to demonstrate because the results appear later.

Verifiable benefits

It is difficult to objectively assess the benefits of improving operational efficiency, as only the participants in the concentration have all the information about the potential increase in efficiency. The assessment of concentrations is prospective, so the concentration results are not yet known exactly at the time of judgement. In addition, a significant number of concentrations remain unimplemented (Lindsay, 2006, p. 528). Such issues make it difficult to ensure verifiability.

According to § 86 of the Guidelines for horizontal mergers, verifiable efficiency means that:

- the Commission should be reasonably sure that the efficiencies are likely to materialize; and
- the efficiency should be substantial enough to counteract a merger's potential consumer harm.

The Guidelines clearly show that increasing efficiency should benefit not just a single consumer, but many of them.

EU law regulating the formation of concentrations does not clearly state how much benefit must be received due to improved efficiency to be considered "verifiable," which allows for the claim that the harmful impact of the concentration has been eliminated. Neither Regulation 139/2004 nor the Commission's guidelines clearly indicate what this benefit should be. In this vein, § 52 of the Guidelines for non-horizontal mergers states that "on the basis of sufficient evidence," it can be concluded that due to a vertical concentration, "the efficiencies generated by the merger are likely to enhance the ability and incentive of the merged entity to act pro-competitively for the benefit of consumers, thereby counteracting the adverse effects on competition." Additionally, § 76 of the Guidelines for horizontal mergers specifies that "it is possible that efficiencies brought about by a merger counteract the effects on competition and in particular the potential harm to

consumers that it might otherwise have." This can include situations where improved efficiencies "are likely to enhance the ability and incentive of the merged entity to act pro-competitively" (Guidelines for non-horizontal mergers, § 77). However, nowhere is it explained when this amount of efficiency will be sufficient to eliminate the negative effects of the concentration. This shows that the Commission has wide discretion when assessing the impacts of concentrations. As a result, merger undertakings can never be sure whether a concentration will be permitted if they intend to justify their actions by potential efficiency gains.

The Commission states that assessing efficiencies has been included in concentration analysis (European Commission, 2014, § 23). For example, in *UPS/TNT Express* (2013), the Commission acknowledged some of the cost savings claimed by the merging companies, specifically in the European air network and related to ground handling. It could measure these efficiencies and predict the expected price increase. By taking these efficiencies into account, the Commission was able to determine that the merger would not have detrimental effects on competition in certain countries. Nevertheless, the acknowledged efficiencies were not enough to counteract the expected negative impacts in all countries.

Efficiency evaluation can be performed in two stages: in the first stage, the harm and benefits caused by the concentration are determined; in the second stage, comparisons are made. However, this can be done when harm can be separated from benefit and harm and benefit can be directly compared. In non-horizontal concentrations, especially vertical ones, it is not always possible to distinguish the effects harmful to competition from the beneficial impacts on competition and the consumer because the reason for both positive and negative effects of the concentration is the same. Efficiency improvement in non-horizontal concentrations is often manifested in marginal cost savings so that such benefits can be easily identified and separated from harm. Other types of significant efficiency improvements result from the combination of means of production and/

or distribution rather than from direct cost reduction.

In non-horizontal mergers, harm to competition often results from merger-specific efficiency improvement (Bishop et al., 2005, p.106). In particular, the ability to apply the bundling of products resulting from a non-horizontal concentration can be assessed positively or negatively, because the undertaking's ability to bundle goods can increase or decrease market competition. Merging weaker undertakings in the market and giving them the ability to engage in the bundling of goods can strengthen their position in the market, and their activities can enhance competition in the market. However, if other weaker undertakings in the market cannot or would not be able to bundle their goods, they could be weakened and pushed out of the market. This would weaken competition in the market. This allows us to state that in non-horizontal concentrations, the evaluation of most types of efficiency should be included in the concentration's overall integrated impact assessment. The final decision should determine whether the concentration, considering both its positive and negative effects, will benefit competition and the consumer and, therefore, should be permitted; or will be harmful to competition, and therefore should be prohibited.

9.3.7. The market and power therein

In the event of a non-horizontal concentration, whether the merger undertaking will have the ability and incentive to significantly restrict effective competition in the market by closing vertically related markets, leveraging market power from one market to another, controlling business-relevant information, or coordinating actions with competitors depends on the size and structure of the specific market and the merged group's market power.

Defining the market

A market refers to certain boundaries within which the effects of a

concentration on competition are examined. Following § 6 of the Commission Notice on the definition of the relevant market for the purposes of Union competition law (Communication from the Commission, 2024), by defining the market, the Commission aims to identify and define the boundaries of competition between undertakings. Market identification enables the gathering of information about the market share and acquired market power of the merger undertakings and the assessment of the competition in the market. The Commission states in § 8 of the Notice that it defines a market when "there is a need to assess the relative competitive strength of undertakings as part of the competitive assessment and, most notably, to assess whether an undertaking holds market power."

The decisions of EU courts have repeatedly noted that the assessment of a concentration must begin with defining the relevant market (CFI case *Air France v. Commission*, 1994, *§ 80)*. The ECJ in *French Republic and SCPA and EMC v. Commission* (1998, § 143), and the CFI in *Airtours v. Commission* (2002, *§ 19)*, noted that "a proper definition of the relevant market is a necessary precondition for any assessment of the effect of a concentration on competition."

Following section 6 of Annex I of Regulation 2023/914, both relevant markets where the parties to the concentration are actual or potential competitors and neighboring markets are considered for the assessment. The CO form specifies that when the concentration involves potential competitors, the parties to the concentration must provide data on markets where they have a market share larger than 25%. For other concentrations involving undertakings acting in a neighboring market closely related to a product market, the parties to the concentration must notify the European Commission when the individual or combined market shares of the parties in any one of these markets makes up 30% or more.

Following the ECJ's reasoning in *United Brands Company and United Brands Continental BV v. Commission* (1978, § 10), the relevant market within which the Commission appraises competition dynamics comprises a product and a

geographic dimension.

According to § 25(b) of Annex I of Regulation 2023/914, a relevant product market comprises all those products or services, or both, that the consumer regards as interchangeable or substitutable because of their characteristics, prices, and intended use. Moreover, § 12(a) of the Commission Notice (Communication from the Commission, 2024) specifies that product market identification should take into consideration the conditions of competition and the structure of supply and demand on the market.

When determining the product's market, the products that compete with the products of the parties to the concentration during the evaluation are identified. As a result, the product market must be narrow enough to exclude non-substitutes and broad enough to include all of the product's substitutes (Whish, 2001, p. 6; Areeda et al., 1998, § 929). When the market for a product is determined to be too narrow, a concentration that does not cause harmful effects on competition could be prohibited because the parties to the concentration would be considered to have an unreasonably large market share and high power in the market. For example, the Commission has been criticized for defining the market too narrowly in *Aerospatiale-Alenial/de Havilland* (1991). However, it should also be noted that when the product market is too broad, a concentration with harmful effects on competition may be allowed.

A geographic market is a geographic area where producers or sellers of substitute goods affect each other's economic activities. According to Epstein and Rubinfeld, the definition of a geographic market is essentially no different from that of a product market, as the product's geographic location is only one of many characteristics that make up the product. Therefore, goods with the same physical characteristics can be considered different products when they are located in different geographical areas (Epstein & Rubinfeld, 2004, part III).

In *French Republic and SCPA and EMC v. Commission* (1998, §143), the ECJ

indicated that "the relevant geographical market is a defined geographical area in which the product concerned is marketed and where the conditions of competition are sufficiently homogeneous for all economic operators so that the effect on competition of the concentration notified can be evaluated rationally." Similarly, in *Nederlandse Vakbond Varkenshouders* (2009), the CFI said that:

> the relevant geographic market comprises the area in which the undertakings concerned are involved in the supply of the products or services in question; in which the conditions of competition are sufficiently homogeneous; and which can be distinguished from neighbouring areas because the conditions of competition are appreciably different in those areas. (§ 52)

In addition, in the same case the same court noted that a number of factors – such as the nature and characteristics of the products or services concerned; the existence of entry barriers; consumer preferences; the existence in the area concerned, as compared with neighboring areas, of appreciable differences in the market share of undertakings; or price differences – must be considered when defining the geographic market.

It should also be said that, considering the fact that concentration assessment is a forward-looking assessment, the market assessment should include an analysis not only of the existing situation in the market, but "also sufficiently foreseeable changes in such constraints" (Communication from the Commission, 2024, § 8). In the Commission Notice, the Commission indicated that it may "take into account expected transitions in the structure of a market when the case calls for a forward-looking assessment" (Communication from the Commission, 2024, § 21).

The analysis of defining the product and geographic markets shows the importance of market definition accuracy when considering the economic security issues of the EU and its Member States. A too-broad or too-narrow definition of

the market for concentrations involving non-EU undertakings that impact the EU market from one side could strengthen its power in the EU market, thereby creating an unjustified burden on EU undertakings. On the other hand, it could lead to the unjustified prohibition of such undertakings, thereby diminishing effective competition in the market. Similarly, an improper definition of the market for concentrations involving undertakings acting in the EU could lead to unjustified prohibition, thereby reducing such undertakings' ability to compete effectively against global giants.

Identifying power in the market

Power means the ability to control people or things (Hornby & Ashby, 2000, p. 988). Accordingly, market power refers to the ability to influence the functioning of the market. When evaluating the potential impact of non-horizontal concentrations on effective competition, it is necessary to determine the undertaking's ability and intention to harm the market through its behavior, as discussed above in this paper.

As mentioned earlier, in the case of vertical concentrations, the undertaking must be able to close the upstream or downstream market to have a harmful impact on competition. As a result, it is important to determine the extent to which market power is relevant to this ability.

Under economic theory, when merged undertakings do not have significant market power in the upstream market, they would be considered unable to close the market because buyers would likely start buying goods from other sellers. Therefore, it can be argued that significant market power in the upstream market is necessary to reasonably foresee the foreclosure of the upstream market and the restriction of competition in the downstream market. The same reasoning is applicable to the foreclosure of the upstream market.

Commission practice shows how significant the market power should be and

whether this power is even needed in the assessment of vertical concentrations. However, the practice of the Commission's decisions on this matter is not consistent.

In *AOL/Time Warner* (2000, § 25), the Commission, having regard to the undertaking's dominant position in the upstream market, recognized that it would be able to dictate the terms of sales in the downstream market by refusing to issue permits or threatening to withdraw the rights granted. In *Hilton/Accor/Forte/Travel Services JV* (2001, § 31), the Commission also noted that there was a risk of restriction of competition in the downstream market if the parent company was found to have sufficient market power in the upstream market. However, in *Vivendi/Canal+/Seagram* (2000, §§ 43–50), the Commission argued that it is sufficient to restrict competition in a downstream market if one of the seven permitting entities not in a dominant position refused to grant permits to downstream competitors. According to the Commission, this would strengthen the dominant position of the concentration partner in the downstream market. Such arguments are not clear and valid, as it remains unclear why competitors would not be able to obtain permits from the other six issuing entities.

Considering the practice of the Commission's decisions, it can also be stated that it is not always necessary for the merged group to acquire significant market power in the downstream market in order to be able to close the downstream market and limit competition in the upstream market. For example, in *Alcan/Pechiney (II)* (2003, *§§ 40–44),* the Commission found that the concentration would not result in the acquisition of a dominant position in the downstream market, but still concluded that competition in the upstream market could be restricted because the harmful effect could increase competitors' costs. In another decision, *BP/E.ON* (2001, *§ 89),* the Commission stated that the issue of whether the merging parties would acquire a dominant position in the downstream market was not relevant, and examined whether the concentration would create or strengthen the

undertaking's dominant position in the upstream market.

In assessing conglomerate concentrations, it can be said that harmful effects may occur when the power available in one market is leveraged in another. Therefore, it is clear that the merged undertakings should have power in the primary market. However, it is not clear whether it is necessary to investigate whether the concentration may result in the acquisition of power in the market in which power is leveraged. For example, in *Tetra Laval v. Commission* (2002, *§§ 148, 153, 154, 251, 254, 281, 291),* the CFI focused on examining whether the merged group could leverage its power from the original market to another market to such an extent that it allowed the creation or strengthening of the dominant position in that market. It is doubtful whether the exclusive attention of the court to the market to which market power was leveraged from another market is justified. Competition can be restricted without creating or strengthening the undertaking's dominant position. Such a decision could perhaps be explained by the fact that the assessment was made on the basis of the dominance rule, according to which the Commission had to determine whether a concentration in any of the markets would create or strengthen a dominant position.

Power is no less important in the occurrence of other harmful impacts. The increase in the power of the merged group can be recognized as a detrimental effect of the concentration in itself. For example, undertakings that have acquired a collective dominant position can more easily coordinate actions or control business-relevant information.

The identification and assessment of the power possessed by an undertaking or acquired through a concentration is different from the identification and assessment of power in the investigation of abuse of a dominant position by an undertaking. In the assessment of the concentration, determining the power means making a prediction not only about the concentration partners, but also about the behavior of their competitors, buyers, or consumers after the concentration.

In practice, competitors may start producing a different product, or buyers may choose a different seller. When studying the situation, possible market development trends must be considered. The CFI noted in *Airtours v. Commission* (2002), that:

> the prospective analysis of the market ... must not only view that position statically at a fixed point in time – the point when the transaction takes place and the structure of competition is altered – but must also assess it dynamically, with regard in particular to its internal equilibrium, stability, and the question as to whether any parallel anti-competitive conduct to which it might give rise is sustainable over time. (§ 192)

An undertaking's market power depends on many factors, each of which alone does not necessarily determine the decision (ECJ case *United Brands Company and United Brands Continental BV v. Commission*, 1978, § 66). Following Article 2 of Regulation 139/2004, along with EU courts and Commission practice, the merged group's market power depends on the group's market share, competitors' market share, exclusive advantages of the merger group, market characteristics, potential competition, the merger group's buying power, and the countervailing power of the buyer.

Merged group's market share

The main and clearest forms of merger undertaking power are individual and collective dominance. Thus, § 26 of the Preamble of Regulation 139/2004 acknowledges that "a significant impediment to effective competition generally results from the creation or strengthening of a dominant position," while § 4 confirms that "most cases of incompatibility of a concentration with the common market will continue to be based upon a finding of dominance." According to the practice of the Commission, an undertaking's sole dominance is generally recognized when the undertaking has 70% or more of the market. When an

undertaking has a smaller market share, other factors are considered.

Competitors' market share

Merger undertakings' market power depends not only on their market share, but also on the market shares of their competitors (ECJ case *Hoffmann La-Roche & Co. AG v. Commission*, 1979, § 48). When a merged undertaking acquires 51% of the market, its market position would be different if there was one competitor with 49% of the market than if there were three competitors with 18%, 16%, and 15% of the market. The situation would be even more different if there were 49 competitors occupying 1% of the market each. If the merged entity were to occupy 51% of the market and the competitor 49%, an oligopoly would be formed in the market, and a collective dominant position would likely be established.

Exclusive advantages of the merger group

Merger undertakings' market power is strengthened by the other unique advantages they have acquired. In the practice of EU courts and the Commission, the following were recognized as exceptional advantages: the existing and future production and commercial capacities of the merged group (EC case *Rexam (PLH)/American National Can*, 2000); the degree of their utilization (ECJ case *Hoffmann La-Roche & Co. AG v. Commission*, 1979); the possession of goods with a well-known brand and the significance of the brand for the consumer (ECJ case *NV Nederlandsche Banden Industrie Michelin v. Commission*, 1983); the degree of research development (EC case *Hilti Eurofix-Bauco/Hilti*, 1987; CFI case *Hilti AG v. Commission*, 1991; ECJ case *Hilti AG v. Komisija*, 1994); the number and volume of special, exclusive products under possession (ECJ case *Michelin v. Commission*, 1983); the use of new technologies protected by patents, financial possibilities, economies of scale, and the advantages of transportation or sales of goods (ECJ case *United Brands Company and United Brands Continental BV v. Commission*, 1978); access to sources of raw materials (EC cases *Gencor/Lonrho*, 1996; *BP Amoco/Arco*, 1999); the possession of the main source (EC case *World*

Com/MCI, 1998); the possession of long-term supply contracts (EC case *Soda-ash – Solvay*, 1990); the undertaking's economic strength (ECJ case *United Brands Company and United Brands Continental BV v. Commission*, 1978); technological advantages (ECJ case *Hoffmann La-Roche & Co. AG v. Commission*, 1979); the possession of distribution (ECJ case *NV Nederlandsche Banden Industrie Michelin v. Commission*, 1983) and effective customer service networks (EC case *Soda-ash – Solvay*, 1990), etc.

Market characteristics

Each market is unique, and market characteristics are considered when determining the merger undertaking's impact on competition. In its assessment, the Commission considers "if the market is highly dynamic in character and if the market structure is unstable due to innovation or growth" (Guidelines for horizontal mergers, § 15). The level of market maturity (EC case *Hilti Eurofix-Bauco/Hilti*, 1987; CFI case *Hilti AG v. Commission*, 1991; ECJ case *Hilti AG v. Komisija*, 1994), supply and demand trends (Regulation 139/2004, Article 2(1)(b)), technological progress, and high start-up business costs, the degree of fulfilling the geographic and product markets, the harmonization of technical standards, the impact of the implementation of public procurement directives (Goyder, 2003, p. 363), and other factors are important for the assessment.

The Commission pays attention not only to the circumstances at the time of the concentration, but also to the changes in these circumstances, which can be predicted based on assumed market development trends. In particular, if the market is expanding, the entry of new entrants into the market is very likely. As a result, the large market share held by the parties to the concentration may not reflect their market power. For example, in *Gerling/NCM* (2001, §§ 44–45), the Commission concluded that the merged group, with a market share of 60%–70%, did not have significant market power, as the market growth in the last 5 years had been 60%–65%, which encouraged the entry of new competitors into the

market, and the latter had gained significant market shares in a short period of time. On the other hand, if the market is stable or shrinking, the entry of a new competitor into the market is less likely because it would have to take business from the existing seller.

Potential competition

The merged group would not acquire significant market power if the competitors provided or could immediately provide the buyers of the merged group with the option to purchase goods elsewhere, and these actions would have a significant restrictive effect on the behavior of the merged group. For example, in *Aérospatiale/MBB* (1991, § 19), even though the parties to the concentration had 50% of the market, the Commission allowed the concentration because potential competitors from the United States strongly influenced the market for the sale of civil helicopters.

Potential competition exists when new competitors are likely to enter the market from another product or geographic market or when existing competitors have the capacity to increase production or sales volumes.

Entry of new competitors from another product or geographic market

Irrespective of whether the merged undertaking would gain a significant market share, the Commission would permit a concentration where any action by that undertaking to increase the price, quality, or choice of products would be constrained by a new competitor entering the market. In *Aérospatiale-Alenia/de Havilland* (1991, § 53), the Commission noted that "a concentration which leads to the creation of a dominant position may, however, be compatible with the common market ... if there exists strong evidence that this position is only temporary and would be quickly eroded because of the high probability of strong market entry." In this case, the Commission found that the probability of new competitors entering the market was low because the airplane market is mature, entering the

market requires high initial costs, marketing research to determine which plane is required to meet the anticipated needs of the market takes 2–3 years, and the manufacturing of an airplane takes 4 years (§§ 54–55).

Moreover, § 68 of the Guidelines for horizontal mergers indicates that for "entry to be considered a sufficient competitive constraint on the merging parties, it must be shown to be likely, timely and sufficient to deter or defeat any potential anti-competitive effects of the merger."

Increasing production and sales volumes of existing competitors

Existing competitors that can increase sales or production volumes can also constrain the merged group's unilateral actions. The merged group would not be able to raise prices profitably when there is a threat that, due to such an action, buyers will choose competitors' products. The ability of competitors to limit the actions of the merged group depends on the viability of competitors' supply (Lindsay, 2006, p. 451), which depends on whether the increase in production and sales volumes is likely, timely, and sufficient. For example, in *Sonoco/Ahlstrom* (2004, *§§ 96–97)*, the Commission unanimously acknowledged that the merged group's continuous market decline would increase competition for orders. It found that four competitors could increase their production level by at least 30% without incurring significant expenses and within a short time frame. Therefore, any customer within could immediately turn to competitors of the merged group, and these suppliers were able to serve them on a competitive basis and for any conceivable quantity. Considering this, the Commission concluded that "the concentration does not risk creating or strengthening a dominant position as a result of which effective competition would be significantly impeded in the common market."

The likelihood that competitors will expand their production and sales volumes depends on whether competitors are able and willing to do so. It is likely

that competitors would be willing to expand their production or sales volume when it is profitable to do this (Lindsay, 2006, p. 452).

The ability to expand production or sales volume depends on the available raw materials, equipment, etc. For example, in *Ciba-Geigy/Sandoz*, *§ 61,* the Commission concluded that other companies could easily increase their production volumes, considering that the patent for genetic medicines was expiring. Following *Bertelsmann/Springer/JV* (2005, § 106), competitors' abilities to expand production volumes depend on whether competitors have sufficient spare capacity to replace these sales to a significant extent, whether competitors could make available such capacity by shifting their capacity to the merged group's action field, whether planned capacity extensions will make available further capacity, and whether potential competitors could contribute to making available further capacity in the event of a price increase.

Financial resources may constrain competitors' abilities for the expansion of production or sales volumes (EC case *General Electric/Honeywell*, 2001, §§ 302–304) due to contractual obligations (for example, a loan agreement), weak management (Porter, 1998, pp. 64–65), and other factors.

Competitors' intentions and abilities to increase production or sales volume also depend on buyers' reactions. If buyers cannot or do not intend to buy larger quantities of competitors' goods, then competitors would not intend to and could not increase production or sales volumes.

Merger group's buying power

Buying power is significant when a company or a group of companies, due to its dominant position in the market for goods or services or because of other advantages, can negotiate significantly more favorable conditions for the purchase of goods with the seller than those available to other buyers (OECD, 2006, p. 8, 35–37) or those that are usually agreed upon under normal competitive conditions (Dobson et al., 1998).

Investigations and reports by competition authorities have revealed at least two situations in which buying power detrimentally affects competition (Varona et al., 2005, pp. 291–292). First, buying power could have an anti-competitive effect if, in the course of a concentration, it were combined with market power in a vertically downstream market. Second, a buyer with buying power can force competitors to raise prices to a level that benefits them and distort competition in a vertically downstream market. Specifically, a buyer with sufficient buying power may prevent competing buyers from purchasing the seller's goods at lower prices because they buy all the goods, and it is more convenient for the seller to sell all the goods to one buyer. Such a buyer can also negotiate the price so that only the variable costs of the seller's goods are covered. In order to cover fixed costs, the seller would have to sell the goods to other buyers at significantly higher prices.

Undertaking to acquire purchasing power, the seller must not be able to sell goods in other markets, and there must be high barriers to entry into the market.

The European Commission analyzed buying power issues in various decisions, including a controversial case that raised discussions about protecting the European market. In *Boeing/McDonnell Douglas* (1997, §§ 105–108), the Commission concluded that the merger of McDonnell Douglas' buying power with Boeing's strong position in the commercial aircraft market would increase suppliers' dependence on Boeing and weaken the competitive position of its main competitor, Airbus.

Countervailing power of buyer

The seller's competitive behavior is influenced not only by the actions of competitors, but also by buyers (consumers). The buyer's countervailing power exists when the buyer can quickly take retaliatory actions in response to the merged group's intentions to restrict effective competition. In § 64 of the Guidelines for horizontal mergers, it is specified that "countervailing buyer power … should be understood as the bargaining strength that the buyer has vis-à-vis the seller in

commercial negotiations due to its size, its commercial significance to the seller and its ability to switch to alternative suppliers." The effect of countervailing buyer power on the actions of the merged undertaking depends on the strength of the buyers in the related markets (Goyder, 2003, p. 362). The Commission considers this while analyzing buyers' countervailing power in the market. For example, in *Coca-Cola Company/Carlsberg A/S* (1997, *§ 81), the Commission considered* "whether there is sufficient countervailing buyer power to neutralise the market power of the parties."

If product purchases by one or more buyers make up a large part of the demand for products, the merged entity will likely not be able to act independently of buyers.

The countervailing power of the buyer is considered effective enough to be taken into account in the assessment of the concentration when (Lindsay, 2006, pp. 469–475):

- buyers can choose goods in the market and have bargaining power;
- buyers would buy goods from other sellers if the merged undertaking were to take competition-restricting actions;
- all buyers are protected by countervailing buying power, not only those who have buying power.

The effectiveness of the buyer's countervailing power also depends on the buyer's willingness to buy other sellers' goods if the merged group raises prices. For example, in *Enso/Stora* (1998, § 91), the Commission found that Tetra Pak, as a buyer of merged group products, has an incentive to seek to exercise its countervailing buyer power. This finding was based on the fact that Tetra Pak "would have the option of developing new capacity with other existing or new suppliers should the merged group attempt to exercise market power." Additionally, the Commission indicated that through close cooperation with the producers of the liquid packaging board, Tetra Pak "has an intimate knowledge of the

cost structure of the parties." Furthermore, the liquid packaging board represents more than 50 % of the cost of the blank supplied by Tetra Pak to its customers. Finally, the Commission noted that plastic, which is uses as packaging material, may also, "to a certain extent, be a substitute for liquid packaging boards in the long term in the downstream market for the packaging of liquids."

Economic theory shows that the higher the cost of the product, the greater the probability that the buyer will start buying another seller's goods if the original seller raises their prices (Lindsay, 2006, p. 473).

It should be noted that the buyer's compensatory power is insufficient if not all buyers are protected because the merged group could set different sales conditions for different buyers. According to the Commission, "countervailing buyer power cannot be found to sufficiently off-set potential adverse effects of a merger if it only ensures that a particular segment of customers … is shielded from significantly higher prices or deteriorated conditions after the merger" (Guidelines for horizontal mergers, § 67).

9.4. Chains of cause and effect

9.4.1. Causality issues

A concentration is prohibited if it significantly restricts effective competition. The transaction must cause harmful results in order to be prohibited, and there must be causal links between mergers and potential competition harms (Wang & Rudanko, 2012, p. 557). Therefore, concentration assessments require the determination of the causal link between the concentration and its effect on competition. Case *IAG/BMI* (2012, § 111), shows that when "assessing the competitive effects of a concentration, the Commission compares the competitive conditions that would result from the [t]ransaction with the conditions that would have prevailed absent the [t]ransaction."

Each market has its own characteristics, so determining causation is sometimes tricky. Non-horizontal concentrations, in contrast to horizontal, do not directly restrict competition in the market because direct competitors do not participate in them. For this reason, it is difficult to determine what effect the concentration will have on the price, quality, or supply of goods.

Establishing a causality of power leverage from one market to another and the effect in the second market is even more complicated. In *GE/Amersham* (2004, § 31), the Commission noted that it analyzes "whether or not the merged entity may acquire, as a direct and immediate result of the merger, the ability and economic incentive to foreclosure competition, by leveraging its pre-merger market power from one market to another." However, it should be noted that sometimes the effect of using power in another market is felt "only after a certain time" (*Tetra Laval v. Commission*, 2002, § 154). This makes it different from an impact that directly and immediately changes market conditions.

Merger control entails a prospective analysis of future market events requiring a prognostic exercise of great accuracy, which must be based on sufficiently reliable predictions (Todino et al., 2019, p. 26). The ECJ noted in *Commission v. Tetra Laval* (2005, § 44), that the impact of conglomerate concentrations is assessed "a lengthy period of time in the future," and in determining the consequences, "the chains of cause and effect are dimly discernible, uncertain and difficult to establish." When evaluating, it is necessary to predict how the merged undertaking will act, how buyers and competitors will react to its behavior, and what influence other circumstances will have. Nor can it be said with certainty whether the merged undertaking will actually exercise power, resulting in long-term competitive damage. Thus, the Commission's analysis "calls for a particularly close examination of the circumstances relevant for assessing that effect on the conditions of competition in the reference market" (*Tetra Laval v. Commission*, 2002, § 155).

Perhaps because of this, the CFI emphasized in *Tetra Laval v. Commission*

(2002, *§ 155)*, that "the proof of anti-competitive conglomerate effects of such a merger calls for a precise examination, supported by convincing evidence, of the circumstances which allegedly produce those effects." Following the opinion of the CFI in *Airtours v. Commission* (2002), "convincing evidence" means "the evidence must concern … factors playing a significant role in the assessment." In *French Republic and SCPA and EMC v. Commission* (1998, § 222), the ECJ explained that this means "close examination in particular of the circumstances which, in each case, are relevant for assessing the effects of the concentration on competition in the reference market." The CFI, in *General Electric Company v. Commission* (2005, §66), emphasized the importance of the quality of the evidence to be produced by the Commission "to form a sound basis for a decision declaring a concentration incompatible with the common market." The court explained that "evidence must support the Commission's conclusion that, if such [Commission's] decision were not adopted, the economic changes envisaged by it would be plausible."

Following Articles 2(2) and (3) of Regulation 139/2004, a concentration can only be prohibited when it "significantly" impedes competition. This allows us to assume that only a significant impact on the functioning of the market and effective competition can be considered a cause of harmful effects. The Commission's practice confirms this assumption. For example, in *Tetra Laval/SIG* (2005, *§ 76),* the Commission noted that "the transaction brings only marginal changes to the incentives for Tetra," so this cannot be the reason for possible consequences in the future.

Following the analysis presented in the other parts of this paper, the European Commission must prove whether a merged undertaking will have the ability and initiative to engage in activities detrimentally affecting market competition. Such an analysis requires imagining various chains of cause and effect to ascertain which are the most likely (*Commission v. Tetra Laval*, 2005, *§ 43*). This, in

practice, means determining the most profitable line of business.

A concentration is not prohibited if the market changes are the same as they would be without the concentration. Following the Commission's reasoning in *Kali & Salz/MdK/Treuhand* (1993, *§ 71)*, it could be said that a concentration will not be considered the reason for the creation or strengthening of the merger undertakings' power in the market or otherwise increasing their ability to impede competition in the market when, even in the event of the concentration being prohibited, the acquirer would inevitably achieve or reinforce its position in the market. Therefore, when assessing the results of the concentration, the Commission compares the conditions of competition that would arise in the event of a merger and the conditions that would exist without the merger. The assessment considers the consequences of the market expanding in all possible directions.

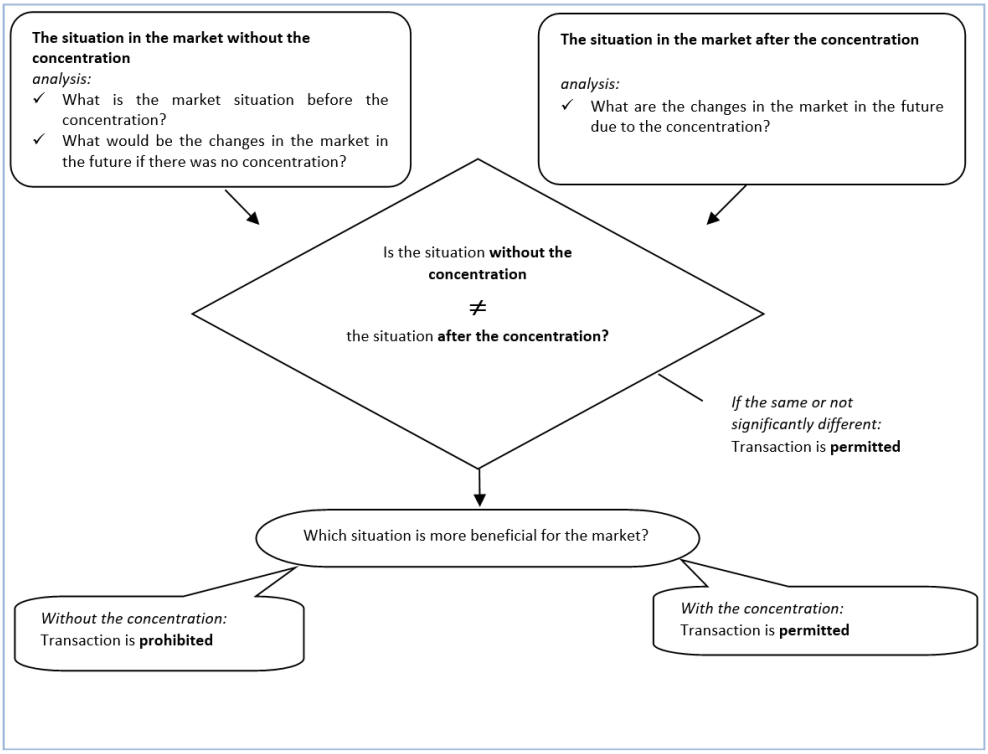


Figure 3. Establishing causation

Figure 3 presents the structure of causation analysis, prepared following the practice of Commission and EU court cases. This shows that to determine whether the concentration is the cause of harmful effects in the market, it is necessary to compare the market situation with the concentration against the situation without the concentration. When determining the market situation that would have existed in the absence of the concentration, it is necessary to consider not only the facts that existed before the concentration, but also the changes in the development of the market that would take place without the concentration. Once the situation in the market has been established (both with and without the concentration), differences in the situation are examined. If the functioning of the market, both with and without the concentration, are the same or do not differ significantly, then the concentration is allowed. The concentration is also allowed if the situation after the concentration is better. However, when it is established that the situation in the market after the concentration would be worse, the concentration is prohibited because there is a clear causal connection between the concentration and the occurrence of harmful effects.

The period over which the concentration's impact on the market should be examined is highly important in determining causation. When considering the harmful effects of leveraging market power to another market, the length of time during which the exercise of power is expected to eliminate or weaken competitors in the market is relevant. Hence, § 21 of the Guidelines for non-horizontal mergers indicates that the "more immediate and direct the perceived anti-competitive effects of a merger," the more likely the concentration transaction will be prohibited.

In *Airtours v. Commission* (2002, *§ 58),* the CFI indicated that the impact on market competition which is expected to have a "direct and immediate effect" should be considered. In *Tetra Laval v. Commission* (2002*,* § 153), the same court, considering the leverage of the effect of market power, explained that the effect

should result "in the relatively near future." The question arises as to whether a "direct and immediate effect" is the same as "in the relatively near future." Applying both concepts, EU court and Commission practice show the time frame within which market changes need to be examined.

While applying the "direct and immediate effect" concept, the Commission analyzed market development over 3 years (*Procter & Gamble/VP Schickedanz (II)*, 1994; *Glaxo Wellcome/SmithKline Beecham*, 2000). However, there have been cases where periods of 5 (*ABB/Daimler-Benz*, 1995) or 10 years (*Shell/Enterprise Oil*, 2002) have been examined.

At first glance, the concept of "in the relatively near future" seems similar to the concept of "direct and immediate effect" because the CFI, in *Tetra Laval v. Commission* (2002, § 239), examined market changes over 3 years. However, it should be emphasized that the ECJ, in *Commission v. Tetra Laval* (2005, § 44), noted that the significant impact on the market of a conglomerate-type concentration using leveraging occurs "a lengthy period of time in the future." This indicates that the period in which impact may appear which should be examined when assessing such concentrations can be longer than 3 years. It is likely that in the assessment of future market power leverage to another market, the court, using the concept of "in the relatively near future," wanted to maintain flexibility in choosing the evaluation period, which would allow choosing the period depending on the need that arose in a particular case. The period in some situations can be the same as when applying the concept "in the relatively near future," but it also can be much longer.

9.4.2. The merger of a failing undertaking

In EU Member States, a concentration in which another undertaking acquires or amalgamates a failing (bankrupt) undertaking is usually allowed because the interests of creditors, owners, and/or employees of small businesses are protected.

There may also be no causal connection between the concentration and changes in the market because a bankrupt undertaking would disappear from the market without the concentration. Jones and Sufrin observe that allowing the bankrupt undertaking to amalgamate is rational when the bankrupt undertaking and its creditors avoid the high bankruptcy administration costs and preserve valuable means of production in the market (Jones & Sufrin, 2001, p. 801). In the evaluation, it is necessary to take into account both the social price that the consumer must pay when the seller joins the bankrupt undertaking and the merged undertaking acquires or strengthens market power, and the social price that the consumer should pay when the seller acquires or strengthens market power because the bankrupt undertaking disappears from the market due to their bankruptcy (Hovenkamp, 1994, pp. 494–495).

Article 2(1) of Regulation 139/2004 indicates that in making its appraisal, the Commission must consider "the need to maintain and develop effective competition," "the structure of all the markets concerned," and "the market position of the undertakings concerned and their economic and financial power." Such regulation shows that concentrations involving the amalgamation of a failing undertaking can be justified under EU law. However, the Regulation does not provide a broader explanation of this issue. As in other areas regulated by the EU, the interpretation of the provisions of the Regulation is left to the EU courts, and the practical application of the Regulation is left to the European Commission.

On this issue, § 6 of the Guidelines for non-horizontal mergers indicates that general guidance in the Guidelines for horizontal mergers is also relevant in non-horizontal mergers. Therefore, guidance regarding the amalgamation of a failing undertaking provided in the Guidelines for horizontal mergers also applies to non-horizontal concentrations. Thus, § 89 of the Guidelines for non-horizontal mergers indicates that an otherwise problematic merger can nevertheless be declared compatible with the common market if one of the merging parties is a

failing undertaking. There is one primary condition that "the deterioration of the competitive structure that follows the merger cannot be said to be caused by the merger." Following the Commission's decision in *BASF/Eurodiol/Pantochim* (2001, § 143), the application of the concept of the rescue merger requires that the deterioration of the competitive structure through the merger is at least no worse than in the absence of the merger.

The ECJ's decision in *French Republic and SCPA and EMC v. Commission* (1998) indicates that the ECJ allows the failing firm defense, considering this issue from the chain of cause perspective, as § 110 of the decision shows that the Court considers that if the concentration is not the cause of changes in the market having a significant impact on the competitive situation, it must be declared compatible with the common market. In § 115, the Court explained that "the existence of a causal link between the concentration and the deterioration of the competitive structure of the market can be excluded only if the competitive structure resulting from the concentration would deteriorate similarly even if the concentration did not proceed." In addition, the ECJ, in §111, agreed with the Commission's established conditions in *Kali & Salz/MdK/Treuhand* (1993) when a concentration involving the amalgamation of failing undertakings was not considered the cause of the deterioration of the market's competitive structure.

The Commission decision in *Kali & Salz/MdK/Treuhand* (1993) was the first decision authorizing the acquisition of a failing undertaking. In this case, Kali & Salz wanted to acquire MdK. The merged undertaking would have 98% of the German potash market and 100% of the market for magnesium products. The Commission allowed the concentration because MdK would have been forced out of the market by bankruptcy anyway.

Following *French Republic and SCPA and EMC v. Commission* (1998, § 111), and *Kali & Salz/MdK/Treuhand* (1993, § 71), a concentration involving the acquisition of failing undertakings is not considered the cause of the deterioration of

the market's competitive structure when three conditions are fulfilled:

1. the acquired undertaking would, in the near future, be forced out of the market if not taken over by another undertaking;
2. the acquiring undertaking would gain the market share of the acquired undertaking if it were forced out of the market;
3. there is no less anticompetitive alternative purchase.

The first condition means that the concentration is not considered to be restricting competition when the merged undertaking would disappear from the market regardless of whether or not it was merged with another undertaking. The second condition shows that there should not be a causal connection between the concentration and changes in the market when the changes after the concentration are the same as if the concentration had not occurred. The third condition includes the principle of proportionality, widely recognized in the EU. This means that the justification of the amalgamation of the failing undertaking is possible only in exceptional cases when there is no other option, which is less restrictive of competition.

Finally, it should be said that, following § 116 of *French Republic and SCPA and EMC v. Commission* (1998), the merger of a failing firm is possible if the change in the competitive structure after the concentration is not more harmful than if the concentration had not occurred. The ECJ has stressed that this is consistent with the concept of causal connection.

One of the conditions set in *French Republic and SCPA and EMC v. Commission* (1998), and *Kali & Salz/MdK/Treuhand* (1993) was changed in later Commission practice regarding merger cases. In *BASF/Eurodiol/Pantochim* (2001), the Commission updated the conditions for the justification of failing to undertake an amalgamation.

In this case, BASF Antwerpen N.V. was going to acquire two chemical subsidiaries, Eurodiol and Pantochim, of the Italian company SISAS Spa, which were

established in Belgium. Eurodiol and Pantochim were close to bankruptcy, and their parent company in Italy was already bankrupt. Considering the position of Eurodiol and Pantochim, the Commission allowed the acquisition even though the concentration would create a dominant position in various chemical product markets. In the situation under consideration, BASF could satisfy the first and third requirements of *Kali & Salz/MdK/Treuhand*. However, it could not meet the second one, which requires that when an undertaking disappears from the market, its market share is taken over by the company that acquires it (*BASF/Eurodiol/Pantochim*, 2001, § 151). In *Kali & Salz/MdK/Treuhand*, there were only two companies in the market – the bankrupt company and the company that wanted to amalgamate the bankrupt company – so it was easy to prove that the market share of the bankrupt company would still go to another company, regardless of whether the concentration happened or not. However, this requirement is unsuitable for situations where several undertakings remain on the market after the merger and the market share of the undertaking that disappeared from the market would probably go to several undertakings. In particular, with the disappearance of Eurodiol and Pantochim from the market, BASF's competitors could also expect to gain market share.

Considering the facts of this case, the Commission changed the conditions established in *Kali & Salz/MdK/Treuhand*, the fulfilment of which can justify the acquisition of a failing undertaking. Instead of the requirement to prove that after the undertaking disappears from the market its market share will be taken over by the acquiring undertaking, an additional alternative condition – "assets' disappearance" – was established. This means that the Commission will consider the failing firm defence in cases when, in addition to the fulfilment of the first and third criteria established in *Kali & Salz/MdK/Treuhand*, there are indications that "the assets to be purchased would inevitably disappear from the market in the absence of the merger." (*BASF/Eurodiol/Pantochim*, 2001, § 141).

In the BASF/Eurodiol/Pantochim (2001), the Commission recognised that the assets of the failing firm would definitely exit the market if there were no acquisitions (§ 151). The conclusion was based on the following circumstances: an immediate takeover of Eurodiol and Pantochim, after bankruptcy, by a third party seems unlikely (§ 153); restarting the plants after six months would be relatively expensive compared with an immediate takeover (§ 154); and the "plants of Eurodiol and Pantochim can only be economically operated as a whole as they use a highly integrated production process which does not make it possible to purchase isolated assets" (§ 155). In addition, the Commission determined that, given the limited supply and growing demand, prices in the market would rise above what they would have been in the absence of concentration. If factories were shut down due to the long-term installation of new equipment, there would be a significant shortage of supply in the market. Consequently, removing assets from the market would hinder competition for an extended period. The Commission as well concluded that BASF will not intend to raise the prices of its goods following the concentration, as it could not reduce production volumes without jeopardizing its ability to secure raw materials (*BASF/Eurodiol/Pantochim*, 2001, §§ 157- 162).

Considering the mentioned circumstances, the Commission decided that the concentration was less harmful to competition than if it were not to take place (*BASF/Eurodiol/Pantochim*, 2001, § 163).

Summarizing the case practice of EU courts and the European Commission, it could be concluded that a concentration involving the acquisition of failing undertakings is not considered the cause of the deterioration of the market's competitive structure when the following conditions are fulfilled:

1. the acquired undertaking would, in the near future, be forced out of the market if not taken over by another undertaking;
2. the acquiring undertaking would gain the market share of the acquired undertaking if it were forced out of the market, or the assets would inevitably disappear from the market in the absence of the merger;

3. there is no less anticompetitive alternative purchase.

The following conclusions can be drawn by comparing the conditions of causality with the conditions of justification for acquiring a failing undertaking. In order not to establish a causal relationship between the concentration and changes in the market, it is sufficient to prove that the situation in the market after the concentration would not be worse than it would have been without the concentration. The justification of a concentration due to the acquisition of a failing undertaking essentially means the justification of the fact that there is no causal connection between the acquisition of the failing undertaking and changes in the market. In other words, whether or not the failing undertaking were to be merged with another undertaking in the market, the conditions of competition in the market would be similar or even better if a concentration were to occur. In establishing that there is no causation, it is sufficient to show that the merged undertaking will be able and will have the intention to engage in anti-competitive conduct regardless of whether the concentration takes place or not. When justifying a concentration through acquiring a failing undertaking, it is necessary to prove more – that is, that if the undertaking goes bankrupt, its assets would inevitably be removed from the market, or the merger undertaking would acquire all its assets. If this cannot be proven, the concentration whose harmful impact would not be more significant than the changes that would have occurred without the acquisition of the bankrupt undertaking (that is, where there is no causal connection between the transaction and the functioning of the market) may not be allowed, as it is necessary to additionally prove that the acquiring undertaking would gain the market share of the acquired undertaking if it were forced out of the market, or the assets would inevitably disappear from the market in the absence of the merger. This suggests that justifying the acquisition of a failing firm requires more than simply not establishing a causal relationship.

In addition, considering the proportionality principle, all possible acquisition

options must be considered. This requirement is not foreseen when establishing causation. It can be assumed that in authorizing the acquisition of a failing undertaking, the Commission evaluates whether strengthening the undertaking's market power is the best possible option.

Discussing such regulation, competition law experts Monti and Rousseva (1999) even observe that the additional conditions set for the authorization of the acquisition of a failing undertaking are intended to create opportunities for potential competitors to enter the market or to implement one of the objectives of EU competition regulation – to increase competitiveness in the European Union (p. 42). It can be assumed that the Commission not only determines whether the concentration significantly restricts effective competition, but also actively promotes competition by choosing a solution most suitable for the market.

Given this, competition experts debate whether the resulting social or economic benefits should be considered when assessing a concentration during which a bankrupt undertaking is merged (Monti & Rousseva, 1999, pp. 38–55). Some even claim that acquiring a failing company is always beneficial (McChesney, 1986, p. 3). In the case of a concentration, shareholders do not lose their investments; if the merger is profitable, they increase them. If successful, creditors can recover debts. In bankruptcy, they would probably lose at least some of them. Moreover, at least some employees do not lose their jobs, especially in cases where the undertaking's activities require highly qualified and experienced staff. The undertaking's disappearance from the market may affect the overall economic stability of the region.

Given this, it can be agreed that economic and social benefits should also be considered when assessing concentrations that the acquisition of a failing undertaking could justify. Benefit assessment should be clearly provided for, if not in legal norms, then at least in concentration assessment practice. As the analysis presented in the first part of this paper shows, the legal prerequisites for such an

assessment are in both EU treaties and Regulation 139/2004.

The benefits generated could be considered when examining whether the concentration worsens competition in the market. An assessment of the benefits would allow the improvement of competition to be considered, as the concentration itself may contribute to realizing the objectives set out in the EU Treaties.

According to Monti and Rousseva, the solution to social issues should also be included among the benefits. By evaluating social problems together with competition issues, an effective model can be created to assess the impact of concentrations that include a bankrupt company (Monti & Rousseva, 1999, p. 55). The assessment should consider both the harmful and beneficial effects of the concentration on the economy and the social environment.

Understandably, social benefits should not justify eliminating competition in the market, but improving the economic and social environment falls within the scope of EU competition regulation and should, therefore, be considered in the assessment.

Conclusions

Vertical, and conglomerate concentrations differ from those of a horizontal nature. Mergers of companies operating at different supply levels of goods or services or mergers of companies operating in complementary, neighboring, or even unrelated product or geographical markets can create various mega-conglomerates. These conglomerates can include companies that operate not only in the EU internal market, but also in non-EU countries. Non-EU mergers may impact the EU market due to existing ties with producers, consumers, and raw materials, or because the products of these conglomerates belong to the global market in which EU companies also share.

The detrimental effects of such concentrations are harder to assess than those of horizontal concentrations because, in most cases, a longer prognosis is needed

to identify the negative impact of such a merger, and the impact itself can be ambiguous. In addition, there is broad disagreement about whether such concentrations negatively impact competition. They create the conditions to increase productivity due to economies of scale, encourage large-scale, long-term investments, accelerate the implementation of research and innovations, etc. However, they can also create conditions for the foreclosure of upstream or downstream markets by creating the ability and intention of the merger group to refuse to buy or sell products. They can increase market transparency, thereby facilitating merger groups' easy access to business-sensitive information. Merger groups can acquire the ability and thereby gain the initiative to involve product tying, pure bundling, technical tying, mixed bundling, full-line forcing, cross-subsidization, predatory pricing, abuses of power, and coordinating business actions with competitors.

In addition, attention should be drawn to the fact that mega-conglomerates formed by concentrations can have various negative effects, not only on competition but also on political situations in various countries. Corporate size often translates to political power. Considering its role in monitoring and supervising the functioning of the EU, the European Commission, while deciding on the authorization of the concentrations of such mega-conglomerates, should be able to focus not only on economic issues, but also on political aspects.

EU competition policy influences the regulation of concentrations. As a basis, Regulation 139/2004 is focused on strengthening the internal market, increasing competitiveness, protecting effective competition, and raising living standards in the EU. Raising living standards includes various social aims indicated in the EU treaties, such as the well-being of people, balanced economic growth and price stability, employment, the protection and improvement of the quality of the environment, etc. Recently, the Commission has indicated that strengthening European economic security should also be the aim of EU competition policy. The

new reality determines the appearance of such an aim – the COVID-19 pandemic, Russia's war in Ukraine, hostile economic actions, cyber and infrastructure attacks, foreign interference and disinformation, and a global increase in geopolitical tensions.

It is not clear whether EU economic security is an integral part of the common security policy or whether it falls under the EU common commercial policy. If EU economic security is an integral part of the common security policy, then this means that the powers of the European Commission will be narrowed, and not only the European Council but also the Member States will have to be more active in this field. Considering the unanimity requirement in making decisions on common security policy issues, this means that decisions on economic security issues may be hindered, especially when the current geopolitical situation shows that the EU Member States do not find consensus on other EU national security issues. The integration of economic security policy into common security policy may not only weaken the EU's economic security, but may also have a detrimental effect on the Single Market.

If EU policymakers would like to consider economic security as an integral part of EU national security, then EU constitutional treaties should clearly allocate the responsibilities of the EU institutions and Member States. The EU treaties should unambiguously show which decisions can be made by EU institutions under the common commercial policy and which decisions can be made only following the EU national security policy implementation procedure.

Economic security issues can be addressed by applying the principle of extraterritoriality when deciding on the authorization of concentrations and Article 21 of Regulation 139/2004. Article 21 indicates that Member States can address public security issues, the plurality of the media, and prudential rules when deciding on mergers. In addition, any other public interest can be addressed after the Commission's approval.

The European Commission's proposal for a Regulation on Foreign Subsidies Distorting the Internal Market foresees additional measures under the EU's economic security policy. The document authorizes the Commission to approve a concentration when any of the merger partners received an aggregate financial contribution of more than €50 million from third countries in the last 3 years before notification. A foreign subsidy directly facilitating a concentration is considered most likely to distort the internal market.

Concentrations can be assessed by applying the universally known causation rule, under which a causal connection between the action and the future harm is identified. The action here is making a concentration, which could be a merger, amalgamation, or acquisition of sole and joint control. Control means "decisive influence," which can be acquired de jure by any form of agreement or de facto. The European Commission and EU courts decide on a case-by-case basis whether a particular form of action or the holding of rights is considered an acquisition of control. Changes in the quality of control (change of joint control to sole control or sole control to joint control, changes in members of joint control or changes of control due to the break up of an undertaking) also constitute a concentration. Acquisition of control or changes of control should be long-lasting. The Commission's practice shows that changes lasting for 5 to 10 years are considered long enough for them to be recognized as long-lasting.

Additional power acquired by the merger group may facilitate the appearance of damages to competition and consumers. Competitors could be removed from the market, product prices for consumers could be increased, and the product portfolio could decrease. To cause damage, the merged group must have power in the market. Therefore, market size determines which actors are included and what power particular actors have. A too-wide market means more actors in the market with less power, and the opposite: a too-narrow market means fewer actors in the market but with more significant power. The imprecise determination

of the market can lead to prohibiting a harmless concentration or authorizing a harmful one. Improper market determination can even lead to economic security problems in the EU. The Commission decides holistically on the merged group's market power. It considers the market share of the merged group and competitors, exclusive advantages of the merger group, market characteristics, potential competition, the merger group's buying power, and the countervailing power of the buyer (consumer).

The efficiency of undertakings, the welfare of consumers, labor, environmental protection, and other social issues should be considered in the assessment of a merger. This could also include benefits for EU economic security. Of course, common well-being is not always compatible with the direct interests of consumers because consumers are interested in the widest product portfolio at the lowest price. Therefore, increasing employment, promoting social progress, ensuring a high level of environmental protection, and allowing measures for increasing EU economic security can lead to results that are opposite to the interests of consumers. Considering this, the role of the European Commission and the EU courts in regulating concentrations is particularly significant, as the meaning of EU goals and their compatibility depends on the interpretation and application of EU law.

There must be causal links between mergers and potential harm. Following the Commission, the causal link does not exist when the conditions in the market will be at least the same, irrespective of whether there is concentration or not. Two additional conditions should be fulfilled for the "failing firm" justification: indications should be that the undertaking's assets would inevitably disappear from the market; and there must be no less anti-competitive alternative than the merger.

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