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CRYPTOCURRENCIES: THE NEED FOR LEGAL REGULATION AND POSSIBLE MODELS

Master Thesis

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LIST OF ABBREVIATIONS

EU – European Union

EBA – European Banking Authority

ECB – European Central Bank

ECJ – European Court of Justice

ESMA – European Securities and Markets Authority

EIOPA – European Insurance and Occupational Pensions Authority

FINTRAC – Financial Transactions and Reports Analysis Centre of Canada

FATF – Financial Action Task Force

ICO – Initial Coin Offering

IPO – Initial Public Offering

USA – United States of America

INTRODUCTION

With the appearance of the Internet, we had a significant transformation of major industries such as media, communications, information, software etc. Cryptocurrency and the technology on which it is based also will transform major industries such as banking, insurance, real estate, energy etc. to a much bigger extent than that the Internet affected. With the appearance of new technologies, in particular, cryptocurrency, we are going to accelerate progress in a much faster way. However, one of the biggest problems is that policymakers and legislators around the world faced difficulties not only when trying to create the optimal legal framework for cryptocurrencies, but also when trying to identify and understand such a phenomenon as the decentralized systems. Thus, the historical context illustrates the incapability of most states to respond adequately to innovation and technological progress. Opinions of regulators vary from jurisdiction to jurisdiction and even from the body to the body in one particular state. A lot of major questions remain without answers that create additional problems in law enforcement. Also, a potential investor can use the cryptocurrency, more often bitcoin or ether, as an investment when he purchases tokens through the ICO. ICO, can be considered as an analogy of IPO, but in the cryptocurrency world. However, if IPO is regulated by national legislation, the ICO is not. Such tokens can be either cryptocurrency or an asset, or utility tokens. Thus, only one type of tokens can be considered as cryptocurrency and as a result fall under the scope of this Mater Thesis. In this Master Thesis, the main focus will be on jurisdictions of the EU Member States as well as on regulatory environment for cryptocurrency in other major economies throughout the world. States do not know how the appearance of cryptocurrencies will influence the future and generally take a diplomatic position that they are watching the development of the cryptocurrency, but will determine its regulation later.

Research problem. Taking into account this situation the following problem may be formulated: “Is there a need to determine the legal status of the cryptocurrency at the legislative level?”

The aim of the research. The aim of the Master Thesis is after the analysis of legal positions of different states to determine whether there is a need to impose regulation on the usage of cryptocurrency or it should be left in the legal vacuum.

Research objectives. In order to achieve such aim the following objectives were formulated:

1. To provide the overview of the concept of cryptocurrency, cryptocurrency usage, and activity;

2. To evaluate legal aspects of various cryptocurrency models and Bitcoin as the most

common among them;

3. To examine the legal status of cryptocurrency and legislative requirements for the cryptocurrency business in the EU.

4. To discuss the possibility and necessity of regulation and legalisation of operations with cryptocurrencies taking into account modern legal realities.

Review of the literature. In most jurisdictions, regulators widely discuss the topic regarding the nature of cryptocurrencies and their legal status and constantly monitor the development of the cryptocurrency sector. Some researchers believe that cryptocurrency should operate outside of and apart from traditional national governments, others view regulation as inevitable. According to some legal scholars, for instance, **Arvind Narayanan (2016)[1], G.Hileman and M.Rauchs (2017)[2],** the globalisation processes lead to the appearance of certain concerns about the necessity of establishment the legal framework in the sphere of the cryptocurrency.

R. Subramanian and T. Chino and **Wim Raymaekers** support the opinion that there is no need to regulate the thesis subject matter by legal means. **R. Subramanian (2015)[3]** stressed that the situation with almost no regulation in the particular sphere of the Internet and the Web, which enjoyed a long period of time, could be preferable for the further development of the cryptocurrency. Concurrently, **Wim Raymaekers (2015)[4]** also has more 'libertarian' views and opposes the scholars who lobby the intervention of the governments to the current situation. However, the scolars expresses the opinion of possibility to create the legal framework for some sectors of the subject matter, such as cryptocurrency exchanges and service providers.

There are also researchers such as **Ivashchenko A.I. (2016)[5]** who argues that the intervention of the authorities into the present state of affairs will not create any obstacles for cryptocurrency's development. In her opinion, a lot of different approaches to such regulation exist, therefore, the choice of the right one which does not contain strong restrictions could create certainty for users.

The institutions of the EU and the USA demonstrated the similar approach.

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[1] Narayanan, A., Bonneau, J., Felten, E., Miller A., S. Goldfeder S., Bitcoin and Cryptocurrency Technologies. Princeton University Press, 2016: pp. 200-201.

[2] Hileman, Garrick, and Michael Rauchs. Global Cryptocurrency Benchmarking Study. Cambridge Centre for Alternative Finance, 2017: p.61. Accessed April 15, 2018, https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2017-global-cryptocurrency-benchmarking-study.pdf

[3] Subramanian, Ramesh, and Theo Chino. The State of Cryptocurrencies, Their Issues and Policy Interactions. Journal of International Technology and Information Management Volume 2, Issue 3. International Information Management Association, Inc., 2015: p. 35.

[4] Raymaekers, Wim. "Cryptocurrency Bitcoin: Disruption, challenges and opportunities". Journal of Payments Strategy & Systems Volume 9 Number 1 (2014): p.34

[5] Ivashchenko A.I. Using cryptocurrency in the activities of Ukrainian small and medium enterprises in order to improve their investment attractiveness. Problems of the economy №3. (2016): p.270

Respectively **the European Central Bank in its Report "Virtual currency schemes" (2012)**[6] stressed that the legal uncertainty surrounding these schemes might constitute a challenge for public authorities as these it could be used by criminals, fraudsters and money launderers to perform their illegal activities. The **Law Library of Congress in its Research about the Regulation of Bitcoin (2014)**[7] also considered that the lack of regulation of the Bitcoin system could possibly have the impact on the national currencies, the growth of criminal misuse, and on the consideration of the Bitcoin's transactions by the tax authorities.

After the examination of different sources, it can be concluded that there is no unified position regarding the regulation of cryptocurrencies in general and Bitcoin in particular.

The scientific novelty. The Master Thesis's scientific novelty is in the development of proposals applicable to the already existing legal and regulatory framework in sectors related to cryptocurrency and proving whether it is necessary or not, under new circumstances created by the technology, to develop the specific regulation by which to determine the legal status of cryptocurrency.

Practical significance. The master thesis's practical significance is in the following: for **entrepreneurs who work or plan to work with cryptocurrencies -** in obtaining the latest information on the regulation of cryptocurrency business; for **the representatives of the banking sector, regulators and lawyers –** in making an informed decision on how to deal with the question of cryptocurrency regulation effectively; **for the academic community –** in the opening of more debates by bringing to attention what are the issues concerning cryptocurrency usage.

Thesis' statements being defended:

- The lack of cryptocurrency regulation entails the increase of legal risks for state economies and for the participants of cryptocurrency market.
- Legislators may determine the legal status of cryptocurrency (either by the adoption of new law or amendment of the existing legal framework) and identify the status, rules, and requirements for professional players in the cryptocurrency market.

Research methods. The following **research methods** will be used in order to achieve the aim of the Master Thesis:

1. **Systematic analysis method** will be applied to assess and systematise different

[6] European Central Bank, "Virtual currency schemes", 2012: p.6
[7] Regulation of Bitcoin in Selected Jurisdictions,The Law Library of Congress,Global Legal Research Center,2014: p.1. Accessed April 15, 2018, https://www.loc.gov/law/help/bitcoin-survey/regulation-of-bitcoin.pdf

sources of information in order to identify the most relevant problems. The main focus of it will be on the detailed analyses of court practice, legislative acts, legislative proposals, guidelines and official positions of policymakers and legislators. To gain access to more recent information, the Master Thesis will also use this method to analyse online sources including reputable news, sites, and blogs.

2. **Comparative method** will be used to provide the comparative analysis of the legal status of cryptocurrency. The main focus will be on finding differences and similarities between legal regulations in various jurisdictions (especially within the EU) and the attitude of the authorities in using cryptocurrency. In particular, which governments (or even specific bodies of executive power) do not recognise the cryptocurrency at all, which of them have doubts but want to ban cryptocurrency, and which treat the cryptocurrency positively, but in general, do not want simply to interfere.

3. The **method of comparative historical analysis** will be also used to discover how the attitude of authorities to cryptocurrencies was developed. To determine whether there is a common historical background regarding the attitude to cryptocurrency and how this attitude was evolving.

4. The **linguistic method** will be applied to understand the meaning of the legal concepts and definitions relevant to cryptocurrency while analysing the provisions of the legal acts and case law.

Thesis structure. The Master Thesis has been divided into four chapters. The **First Chapter** gives the overview of the concept of cryptocurrencies, cryptocurrency usage, and activity. **Chapter Two** provides cryptocurrencies' legal analysis and explains possible cryptocurrency models and Bitcoin as the most common among them. **Chapter Three** introduces issues about the legal status of cryptocurrency and legislative requirements for the cryptocurrency business in the EU. **Chapter Four** describes the possibility and necessity of regulation and legalisation of operations with cryptocurrencies taking into account modern legal realities.

Chapter One gives an introduction to the issues discussed in the thesis. It explains why the phenomena of cryptocurrencies are worth researching. Chapter One explains essence and functions of money. This chapter includes definitions of currencies as they are formulated by the legislative, banking and financial authorities. It also provides an overview of some fundamental concepts that are important in understanding of the functioning of the cryptocurrencies, its usage, and activity.

Chapter Two is focused on cryptocurrencies' legal analysis, their growth potential, possible cryptocurrency models, their essential legal aspects, and possible framework for them.

This chapter will go into more depth about the Bitcoin, advantages, and disadvantages of using it. The Chapter explains what factors can be taken into account to determine the cryptocurrency as a currency, commodity, intangible digital asset, unit of account, means of payment, financial asset etc. Provides statements of various monetary authorities, such as ECB, the International Monetary Fund, the Internal Revenue Services of the USA regarding the definition of what they consider currency and whether cryptocurrency fit within their definition or not.

Chapter Three gives an explanation how cryptocurrency fits within the existing framework of EU, what are the positions of the EU institutions and what kind of practice the EU Member States already had while dealing with cryptocurrencies. It discusses possible adaptations and different interpretations of cryptocurrency in the already existing framework.

Chapter Four highlights risks which an unregulated currency can have to an economy and discusses whether the regulation could prevent these economic risks. Investigates possible forms of regulation, the risks it poses and the possible scenarios which could be in the future. The Chapter identifies best practices and makes recommendations for the improvement of the existing regulatory system.

1. THE NATURE OF CRYPTOCURRENCY

In 2008, the world experienced the largest global financial crisis in modern history. This led to the conclusion that the time had come for the creation of a money system that is safe, practical for global economic interactions and independent from existing large financial institutions and governments. The complex cryptocurrency ecosystem that emerged faces considerable uncertainty, raising the question, what will the future of finance look like after appearance of cryptocurrencies?[8]

Virtual currencies have been defined by the ECB as a "digital representation of value, not issued by a central bank, credit institution or e-money institution, which, in some circumstances, can be used as an alternative to money".[9] Cryptocurrencies are based on a decentralised peer-to-peer network, it does not require any intermediaries and created without the interference of a central authority. Being decentralized, cryptocurrencies poses several risks which have not gone unnoticed by regulators. Convertibility, decentralization, and protection through cryptography are features of all cryptocurrencies.[10]

The European legislator has mainly remained silent concerning the regulation of alternative payment mechanisms, such as cryptocurrencies. The ECB has tried to raise awareness concerning the potential dangers, but at this point in time, there is no clear sign of regulatory intervention on the EU-wide level. The legal status of cryptocurrencies and their service providers is thus highly uncertain.[11]

All abovementioned facts show that the topic of cryptocurrency is of the significant importance. The cryptocurrency, in particular, Bitcoin, has been declared as illegal in a very few countries (for example, Ecuador). But it cannot lead to the conclusion that cryptocurrencies are recognized as a legal tender. However, when something is not recognized as a legal tender, it does not mean that it cannot be used for payment.

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[8] Halaburda, Hanna and Miklos Sarvary, "Beyond Bitcoin, the economics of digital currencies", 1st edition 2016: pp. 2-3

[9] European Central Bank, Virtual Currency Schemes – A Further Analysis (February 2015), p.4. Accessed April 15, 2018, https://www.ecb.europa.eu/pub/pdf/other/virtualcurre ncyschemesen.pdf

[10] Anning, Paul, Lorna Brazell, Stuart Hoegner, Mark Brailsford, Jerry Brito, Mattew J. Cleary, Jillian Friedman, Michael Taylor, Ryan J. Straus and Christoph-Nikolaus Von Unruh. The Law of Bitcoin, iUniverse, 2015: p.4

[11] iLINC Legal & Technology Briefs "The regulation of cryptocurrencies – a global overview", p. 2. Accessed April 15, 2018, http://www.ilincnetwork.eu/wp-content/uploads/2015/08/1-LB-The-Regulation-of-Crypto-Currencies-A-Global-Overview-update1.pdf

1.1 The Concept and Brief History of Cryptocurrency

The ECB president Mario Draghi said that with anything that's new, people have great expectations and great uncertainty. He stated that cryptocurrencies are not mature enough to be considered by the ECB for regulation.[12]

For a better understanding of cryptocurrencies and whether there is a need to create a legal framework for them, it is necessary to define the concept of fiat currency. The ECB defines fiat currency as any legal tender designated and issued by a central authority that people are willing to accept in exchange for goods and services because it is backed by regulation and because they trust this central authority. Fiat money is similar to commodity backed money in this regard with respect to its usage but differs in that it cannot be redeemed for a commodity, such as gold.[13] In contrast, virtual currency was defined by the ECB as a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among members of a specific virtual community. [14] In the 19th century, money was backed by gold, in other words, a certain amount of gold represented some number of paper money, it was known as a gold standard. However, in 1970 the gold standard was replaced by fiat money which is based only on the trust to the government and is not backed by gold anymore.

While it is common to think about money in its physical form, only a small fraction of a country's total money supply is in the form of notes and coins. This leads to the discussion about electronic money, or e-money.[15] Electronic money is electronically, including magnetically, stored monetary value, represented by a claim on the issuer, which is issued on receipt of funds for the purpose of making payment transactions, and which is accepted by a person other than the electronic money issuer. Types of e-money include pre-paid cards and electronic pre-paid accounts for use online.[16] In e-money schemes funds are expressed in units of the currency against which it is issued (U.S. dollar, euro, Kenyan shilling, etc.).[17] E-money, like many other digital forms of fiat currency, such as credit and debit cards, PayPal, and wire transfers, is a mechanism by which to interact with fiat currency. The cash against which e-money is issued

[12] ECB President: Bitcoin Not 'Mature' Enough to Be Regulated, October 20, 2017. Accessed April 15, 2018, https://www.coindesk.com/ecb-president-bitcoin-not-mature-enough-to-be-regulated/
[13] European Central Bank, Virtual Currency Schemes, October 2012: pp.9-10. Accessed April 15, 2018, https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemes201210en.pdf
[14] Ibid, p.5
[15] Peters, W. Gareth, Efstathios Panayi, and Ariane Chapelle. Trends in crypto-currencies and blockchain technologies: A monetary theory and regulation perspective, 2015: p.3. Accessed April 15, 2018, https://arxiv.org/pdf/1508.04364.pdf
[16] Halpin, Ruth, & Moore, Roksana. Developments in electronic money regulation–the Electronic Money Directive: A better deal for e-money issuers? Computer Law & Security Review, 25(6), (2009): p. 563
[17] Rotman, Sarah. Bitcoin Versus Electronic Money, CGAP, January 2014: p.2. Accessed April 15, 2018, http://documents.worldbank.org/curated/en/455961468152724527/pdf/881640BRI0Box30WLEDGENOTES0Jan02014.pdf

usually must be deposited with fully prudentially regulated financial institutions in order to prevent systemic and consumer protection risks.[18] Cryptocurrencies cannot be considered as e-money, because currently, there is no legal founding to enforce the link between fiat money and cryptocurrencies as it is in regulated electronic money transactions. It is a decentralized currency, in that one does not need financial intermediaries in order to perform electronic transactions and it does not have a central bank or other authority in control of monetary policy.[19]

There have been numerous efforts to introduce alternative or complementary private currencies. The private currencies had low volume and localized circulation, their main aim is to strengthen the local economy. Even though they are not the legal tender, central banks recognize them, because they help to provide liquidity to the banking sector. However, private currencies cannot be defined as independent, because it shares its unit of account with the official currency and customers can redeem them one to one with public sector cash. For example, several local currencies such as Totnes pound, the Lewes pound, the Stroud pound and the Bristol pound have been introduced in the United Kingdom in addition to the Great Britain Pound. However, in each of these cases very limited amounts of money have been issued and none has gained widespread acceptance.[20] Germany also has some successful experience regarding private money. The issuance of the Chiemgauer started in 2003 and is named after the region in which it is locally in circulation.[21] The Chiemgauer has been very successful and it continues to retain a purchasing power locally in the issuance region which is stronger than the euro. For example, in 2013 there has been a turnover of over 7 million euro.

Also, in recent years, a lot of large Internet companies decided to introduce their own digital currencies. As a result, Amazon Coins, Facebook Credits, Q-coins, Microsoft Points, Reddit gold etc. have appeared on the market. All these currencies, which are limited in their functionality, have been introduced by large online platforms to provide interaction between different groups such as buyers and sellers, game players, or simply people who want to exchange pictures and messages with one another.[22] For example, Facebook Credits, Amazon Coins can only be spent on Facebook or Amazon and with such limitations, digital currencies could not become a means of payment rivalling the dollar, euro, or yen.[23]

One of the earliest versions of virtual currency was the Q coin. In 1999 Tencent

[18] Tarazi, Michael, and Paul Breloff. "Nonbank E-Money Issuers: Regulatory Approaches to Protecting Customer Funds." Focus Note 63. Washington, D.C.: CGAP, July (2010)
[19] Peters, W. Gareth, Efstathios Panayi, and Ariane Chapelle. Trends in crypto-currencies and blockchain technologies: A monetary theory and regulation perspective, 2015: p.3. Accessed April 15, 2018, https://arxiv.org/pdf/1508.04364.pdf
[20] Ibid
[21] Ibid, p.5
[22] Halaburda, Hanna and Miklos Sarvary, "Beyond Bitcoin, the economics of digital currencies", Palgrave Macmillan 1st edition, 2016: p.58.
[23] Ibid., p. 60

Holdings launched messaging service called OICQ, where each user was represented by a virtual character, and where users could spend money to customise their characters in the virtual online gaming world. The main reason for Tencent to launch in 2002 a virtual currency Q coin was the lack of credit cards and payment methods to process such payments.[24] But the first cryptocurrency was eCash which was a centralised system owned by DigiCash Inc. and later eCash Technologies. After that digital gold currency became popular, in particular, the most used was e-Gold. It was the first successful online micropayment system the annual transaction volume of which was over US$2 billion worth. But it was liquidated in 2008 because of failure to resolve the compliance issues.[25]

According to the FATF which is an international body setting and promoting the implementation of standards to combat money laundering, terrorist financing, and other threats to the global financial system, virtual currency is a digital representation of value that is traded digitally and has one or more of the following functions: a medium of exchange, a unit of account, and a store of value.[26] Virtual currency is not legal tender, is not issued or guaranteed by any jurisdiction, and fulfils its functions only by agreement within the community of users of the virtual currency.[27] Virtual currency is distinct from fiat currency and from e-money, which is a digital representation of fiat money.[28] Virtual currency can be divided in two groups: convertible and non-convertible. Convertible virtual currency, such as bitcoin, can be exchanged for fiat currencies and vice versa. A non-convertible virtual currency cannot be exchanged for fiat currency, it is specific for some domain. The FATF defines that all non-convertible virtual currencies are centrilized by definition because they are issued by a central authority that deems them to be non-convertible.[29]

Convertible virtual currencies can be divided into centralized and decentralized. Centrilized virtual currencies have a single administering authority who issues and redeems the currency, establishes the rules for its use and maintains a central payment ledger.[30] Decentrilized

[24] Peters W. Gareth, Ariane Chapelle and Efstathios Panayi, Opening discussion on banking sector risk exposures and vulnerabilities from virtual currencies: an operational risk perspective, September 2014: p.6. Accessed April 15, 2018, http://ssrn.com/abstract=2491991
[25] David Lee Kuo Chuen, Li Guo, Yu Wang, Cryptocurrency: a new investment opportunity. The Journal of Alternative Investments 20(3), December 2017: p. 6
[26] Financial Action Task Force, Virtual Currencies: key definitions and potential AML/CTF risks, June 2014: p.4. Accessed April 15, 2018, http://www.fatf-gafi.org/media/fatf/documents/reports/Virtual-currency-key-definitions-and-potential-aml-cft-risks.pdf
[27] Ibid.
[28] Ibid.
[29] Financial Action Task Force, Virtual Currencies: key definitions and potential AML/CTF risks, June 2014: p.4. Accessed April 15, 2018, http://www.fatf-gafi.org/media/fatf/documents/reports/Virtual-currency-key-definitions-and-potential-aml-cft-risks.pdf
[30] Ibid.

convertible currency is virtual currency where there is no central repository and no single administrator and that may be obtained by a person's own computing or manufacturing effort.[31] Cryptocurrency is a decentralized virtual currency. Cryptocurrencies are distributed open-source, math-based peer-to-peer virtual currencies that have no central administrating authority, and no central monitoring or oversight.[32] To distinguish between centralized and decentralized currencies can be considered the definition from the central bank of Canada according to which decentralized e-money is stored and flows through a peer-to-peer computer network that directly links users, much like a chat room. No single user controls the network.[33]

To answer the question whether cryptocurrencies can fulfil the traditional role of money in the economy, functions of money should be defined. Economists often use the following three-part definition of money: unit of account; medium of exchange; store of value. Unit of account means that two people can agree how much a good is worth in terms of money. Unit of account makes it possible to express the value of goods and services in units of the same reference value and thus make them comparable with each other.[34] The medium of exchange means that people accept the money when they are selling, for example, some good because they believe it will be accepted elsewhere when they want to exchange it for a good they want to buy. Store of value means that money will not lose its value cardinally between the time people get it and the time they spend it to buy something else.[35] These three characteristics make it possible for money to facilitate trade, which is a key role of money. Cryptocurrencies do not currently fulfil these functions in the way that fiat currencies and e-money do. The definition of the virtual currency reflects the fact that these functions are, at least currently, not always fulfilled at the same time or to the same extent.[36] Cryptocurrencies can be used as a medium of exchange in some venues but are not accepted widely enough to be used in everyday life. They are not yet a legitimate store of value, because of their price changes frequently and rapidly. Neither are they a unit of account.[37] However, it is, of course, possible that in the future, a more widespread

[31] Teitelbaum, David. Selected developments in Virtual Currency regulation, Sidley Austin LLP, 2015: p. 3
[32] Financial Action Task Force, Virtual Currencies: key definitions and potential AML/CTF risks, June 2014: p.5. Accessed April 15, 2018, http://www.fatf-gafi.org/media/fatf/documents/reports/Virtual-currency-key-definitions-and-potential-aml-cft-risks.pdf
[33] Bank of Canada, Decentralized E-Money (Bitcoin), April 2014. Accessed April 15, 2018, http://www.bankofcanada.ca/wp-content/uploads/2014/04/Decentralize-E-Money.pdf
[34] Federal Council report on virtual currencies in response to the Schwaab (13.3687) and Weibel (13.4070) postulates, June 25, 2014: p.6. Accessed April 15, 2018, https://www.news.admin.ch/NSBSubscriber/message/attachments/35355.pdf
[35] Halaburda, Hanna and Miklos Sarvary. "Beyond Bitcoin, the economics of digital currencies", Palgrave Macmillan 1st edition 2016: p.30.
[36] European Banking Authority Opinion on 'virtual currencies', EBA/Op/2014/08 4 July 2014: p.12
[37] Homeland Security, Studies and analysis Institute, Risks and threats of cryptocurrencies, December 31, 2014: p. 21. Accessed April 15, 2018, https://www.anser.org/docs/reports/RP14-01.03.03-02_Cryptocurrencies%20508_31Dec2014.pdf

uptake in a particular cryptocurrency may lead it to satisfy these criteria.[38]

However, in the USA, several court rulings have found Bitcoin to be money in a legal sense. Among such rulings are cases SEC v. Trendon T. Shavers and Bitcoin Savings and Trust, United States v Ross William Ulbricht, United States v Murgio. For example, in the SEC case, Judge Mazzant noted that Bitcoin can be used to purchase goods or services, and used to pay for individual living expenses. The only limitation of Bitcoin is that it is limited to those places that accept it as currency. However, it can also be exchanged for conventional currencies, such as the US dollar, Euro, Yen and Yuan. Therefore, Bitcoin is a currency or form of money.[39] In the Ulbricht case, Judge Forrest noted that the money laundering statute is broad enough to encompass use of Bitcoins in financial transactions. Any other reading would be nonsensical.[40] In the Murgio case, Judge Nathan found that Bitcoins can be accepted as payment for goods and services or bought directly from an exchange with a bank account. They, therefore, function as pecuniary resources and are used as a medium of exchange and a means of payment.[41] In contrast to abovementioned rulings in the case Florida v Espinoza Judge Pooler noted that while Bitcoin can be exchanged for items of value, they are not a commonly used means of exchange with a limited ability to act as a store of value.[42] It can be concluded that there is no common position of the USA courts regarding the abovementioned issue and the general approach is still unclear.

1.2 Main Features of Cryptocurrency

Cryptocurrency has very different characteristics from digital currencies which are centrally issued, circulated within a community or geographical location, or tied to fiat currency or organisation issuing them.[43] When you buy a cryptocurrency you don't get an actual coin or bill that you can hold in your hands, you just receive electronic units that people may agree to accept and treat like euros, dollars, or other forms of money.[44]

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[38] Peters, W. Gareth, Efstathios Panayi, and Ariane Chapelle. Trends in crypto-currencies and blockchain technologies: A monetary theory and regulation perspective, 2015: p.7. Accessed April 15, 2018, https://arxiv.org/pdf/1508.04364.pdf

[39] United States District Court, Eastern district of Texas Sherman division, Memorandum opinion regarding the court's subject matter jurisdiction, Case 4:13-cv-00416-RC-ALM, Document 23, Filed 08/06/13: p. 3. Accessed April 15, 2018, https://ia800904.us.archive.org/35/items/gov.uscourts.txed.146063/gov.uscourts.txed.146063.23.0.pdf

[40] United States District Court, Southern district of New York, Case 1:14-cr-00068-KBF, Document 42, Filed 07/09/14: p.50. Accessed April 15, 2018, http://www.nysd.uscourts.gov/cases/show.php?db=special&id=416

[41] Jin Enyi, Ngoc Dang Yen Le, The Legal Nature of Cryptocurrencies in the US and the Applicable Rules, June 30, 2017: p.2

[42] Ibid.

[43] David Lee Kuo Chuen, Li Guo, Yu Wang, Cryptocurrency: A New Investment Opportunity? The Journal of Alternative Investments JAI 2017, 20 (3) 16-40. July 4, 2017: p.2.

[44] Consumer Financial Protection Bureau, Risks to consumers posed by virtual currencies, Consumer Advisory, August 2014: p.1

The understanding of the differences between centralized virtual currency and cryptocurrency will help to define common features of the majority of cryptocurrencies. Cryptocurrencies can be considered as a specialised sub-class of virtual currencies with several important distinguishing features.[45] There are the following differences between cryptocurrencies and centralized virtual currencies:

- the specification of a cryptocurrency is agreed by a network consensus because users can 'vote' for changes according to the computational power they contribute to the network. The specification of centralised virtual currencies is dictated by the company that operates them. For example, Linden Labs controls the currency in the Second Life game, the Linden dollars[46];

- cryptocurrencies were introduced to the real economy with the aim to reduce transaction costs and to remove the need for financial intermediaries and central banking authorities. However, centralised virtual currencies were introduced for use within the environment of the authority which released that currency[47];

- usually, the cryptocurrency is released gradually into the economy. For example, Bitcoins are released through a process called 'mining', which includes solving a complex mathematical problem.[48] A cryptocurrency is based on a cryptographic protocol that manages the creation of new units of the currency through a peer-to-peer network. When the computer performs a sufficient amount of calculations, the protocol generates a new unit of the currency that can be delivered to the miner.[49] In centralised virtual currencies, issuance is fully controlled by the central authority. For example, on Amazon, the virtual currency is generated when a user buys Amazon coins to spend on apps[50];

- in cryptocurrencies, if transactions were confirmed, they cannot be modified or reversed. In centralised virtual currencies the authority (e.g. Amazon) can correct an error in a transaction, reverse it or issue refunds as it sees appropriate[51];

- users have one or more 'wallets' storing cryptocurrency addresses, each associated with a cryptocurrency balance. A cryptocurrency amount can be transferred from one individual to another using a cryptographically signed transaction, which has to be broadcast to the network and confirmed. Users can also trade cryptocurrency with one another through a number of

[45] Peters W. Gareth, Ariane Chapelle and Efstathios Panayi, Opening discussion on banking sector risk exposures and vulnerabilities from virtual currencies: an operational risk perspective, 2014: p.7.
[46] Ibid., p.12
[47] Ibid., p.12
[48] Ibid., p.13.
[49] Texas Department of Banking, Supervisory Memorandum,1037, April 3, 2014: p.2
[50] Peters W. Gareth, Ariane Chapelle and Efstathios Panayi, Opening discussion on banking sector risk exposures and vulnerabilities from virtual currencies: an operational risk perspective,: p.13. http://ssrn.com/abstract=2491991
[51] Ibid., p.13.

exchanges.[52] The private key should be used in order to access the digital wallet. The private key is the random sequences of 64 letters and numbers that should be kept secret. You can store and protect the private key yourself or entrust it to a wallet provider to protect it for you. The public key is the corresponding letter and number sequences that everyone can see on the blockchain.[53] Centralised virtual currency balances are stored within the environment in which they were issued. Users can use virtual currency amounts to purchase virtual goods from the platform, website, or from other users, but cannot generally transfer it outside this online environment[54];

- in cryptocurrencies, exchange rate varies, according to supply and demand. In centralised virtual currencies the exchange rate is usually fixed[55];

- there are two sources of value for a cryptocurrency: due to the size of the network using it and due to the cost of producing (mining) an amount of the cryptocurrency. There are other value generation mechanisms for centralised virtual currencies related to the interplay between virtual economies and real economies[56];

- there are no limitations to where cryptocurrencies can be used in the real economy. In centralised virtual currencies, the currency area only comprises of the website which operates the virtual currency. For example, Amazon coins can only be used for the purchase of apps from the Amazon app store. For MMO games, this is the virtual world of the game[57].

The functioning of the cryptocurrency depends on the processing power of private computers which maintain and update the blockchain which is an open distributed ledger that record transactions.[58] A block is a set of transactions that have been conducted between the users of the cryptocurrency. A chain is created from these blocks containing the history of past transactions that allows creating a ledger where one can publicly verify the number of balances or currency a user owns.[59] When an owner of a cryptocurrency transfers the cryptocurrency to a recipient, the transaction is verified in a process called mining. Miners consult the ledger, verifies the owner's claim of ownership, and documents the transfer to the recipient. The first miner who succeeds wins the competition logs the transaction on the ledger and is awarded a cryptocurrency.[60] Miners compete for the right to update the chain with a new block, in

[52] Ibid., p.13.
[53] Consumer Financial Protection Bureau, Risks to consumers posed by virtual currencies, Consumer Advisory, August 2014: p.2.
[54] Ibid, p.14
[55] Ibid.
[56] Ibid., p.15.
[57] Ibid.
[58] Consumer Financial Protection Bureau, Risks to consumers posed by virtual currencies, Consumer Advisory, August 2014: p.1
[59] David Lee Kuo Chuen, Li Guo, Yu Wang, Cryptocurrency: A New Investment Opportunity? The Journal of Alternative Investments JAI 2017, 20 (3) 16-40. July 4, 2017: p.5.
[60] Ritchie S. King, Sam Williams and, David Yanofsky, By Reading This Article, You're Mining Bitcoins, Quartz, December 17, 2013. Accessed April 15, 2018, http://qz.com/154877/by-reading-this-page-you-are-miningbitcoins

particular, they compete to solve a complex cryptographic problem.[61] The new batch of cryptocurrencies is automatically generated by the software and performs two main functions. The first one is the stimulus to participate in the mining process and the second is the maintenance of work of the decentralized mechanism for the issuance of new cryptocurrencies.[62] Cryptocurrency software is open-source and not controlled by any central entity.[63]

Lack of intrinsic value is another important characteristic of the cryptocurrency. There is no governmental authority or central bank establishing its value through law or regulation. Its value is only what a buyer is willing to pay for it. Most cryptocurrencies are traded on third party exchange sites, where the exchange rates with sovereign currencies are determined by averaging the transactions that occur.[64]

1.3 Cryptocurrencies' Risks and Vulnerabilities for Consumers, Businesses, and Governments

Cryptocurrency offers a good potential for innovation, but a lot of questions are still unresolved, among them are risks that can be associated with them. Virtual currency market players, be they users, miners, currency exchange platforms or wallet providers are currently not regulated in most of the jurisdictions around the world. As a consequence, no one is under the obligation to report any suspicious transactions and authorities lack information on such transactions.[65] However, whether the cryptocurrency, such as Bitcoin, can be defined as a kind of Ponzi scheme? No, because the system is decentralized, there is no person who controls it, nobody promise a high reward, there is no intermediary, as a result, users transact with each other directly. Pyramid schemes are business models in which the prospective profits of the participants are largely financed by the deposits of new participants. Without the permanent acquisition of new participants, the systems collapse, and the investors lose their investments in most cases.[66]

The EBA published its opinion where enumerated lots of potential risks from the use of

[61] David Lee Kuo Chuen, Li Guo, Yu Wang, Cryptocurrency: A New Investment Opportunity? The Journal of Alternative Investments JAI 2017, 20 (3) 16-40. July 4, 2017: p.6. Accessed April 15, 2018, file:///C:/Users/tapo/Downloads/SSRN-id2994097.pdf
[62] Marian, Omri. A Conceptual Framework for the Regulation of Cryptocurrencies, 82 U. Chi. L. Rev. Dialogue 53, 68 ,(2015-2016): p.55. Accessed April 15, 2018, file:///C:/Users/tapo/Downloads/OmriMarianAConceptualFram.pdf
[63] Ritchie S. King, Sam Williams, David Yanofsky, By Reading This Article, You're Mining Bitcoins, Quartz, December 17, 2013. Accessed April 15, 2018, http://qz.com/154877/by-reading-this-page-you-are-miningbitcoins

[64] Texas Department of Banking, Supervisory Memorandum,1037, April 3, 2014: p.2
[65] Commission staff working document, Impact Assessment, Accompanying the document Proposal for a Directive of the European Parliament and the Council amending Directive (EU) 2015/849 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing and amending Directive 2009/101/EC, 5 July 2016: p.15
[66] Switzerland's Federal Council report on virtual currencies in response to the Schwaab (13.3687) and Weibel (13.4070) postulates, June 25, 2014: p.21. Accessed April 15, 2018, https://www.news.admin.ch/NSBSubscriber/message/attachments/35355.pdf

virtual currencies. I want to point out some of them, which are from my point of view are the most important. In particular, according to the EBA's opinion the user can suffer a loss when an exchange acts fraudulently or through e-wallet theft, hacking or software malfunctions. There is also a possibility for the user to experience a drop in the value of virtual currencies due to unexpected exchange rate fluctuation. There is no central authority that could stabilize exchange rates as a result formation of the price can become the object of manipulation. Users also can suffer loss due to changes made to the virtual currency protocol, because it can be changed if a majority of miners will agree about that. The unregulated nature of virtual currencies put users into the position when it is difficult to identify risks arising from holding virtual currencies and obtain objective information about them. Users have no guarantee that virtual currency will be accepted by merchants as a means of payment on a permanent basis because there is no requirement to accept virtual currencies which are non-legal tender.[67]

The ECB also defines the similar risks. In particular, it was stated that even the basic functioning of virtual currency schemes can be difficult to understand for a user. For decentralised virtual currencies, it is not even clear who should provide information to users. This could mislead users in evaluating the risks and value, possibly inducing losses.[68] Users can face the problem of unexpected legal requirements that will render contracts illegal or unenforceable. In most jurisdictions, the taxation regime is also not yet clearly defined and might change unexpectedly, inducing additional costs for users.[69] There are no questions about the need to tax revenues in case if the tax payer receives the income from the sale of cryptocurrency. This operation is not different from the fact of selling any other goods. In other words, individuals who receive income from the sale of cryptocurrency must pay taxes. In case of the value added tax, states have different positions whether it should be applicable or not to the operations with cryptocurrency. Even in the EU level national tax authorities decided differently about VAT application. However, on 22 October 2015, the ECJ ruled that cryptocurrency transactions are more inclined to currency transactions than to commodity one, that is why VAT shall not be applicable.

Acceptance of virtual currencies by retailers is based on their decision and can cease at any moment. Decisions can be a consequence of a loss of confidence in the particular virtual currencies or of practical difficulties or drawbacks, such as possible losses due to exchange rate changes. Because of the loss of confidence, the market can become illiquid and users will no

[67] European Banking Authority, EBA Opinion on 'Virtual Currencies', EBA/Op/2014/08, European Banking Authority, London.
[68] European Central Bank, Virtual currency schemes – a further analysis, 2015: p.20.
[69] Ibid., p.21

longer be willing to buy virtual currencies.[70] The history of Bitcoin proves that the exchange rate of a virtual currency can be highly volatile.[71] As for the speed of transactions, the confirmation of one transaction can last from several hours to a few days. Also, it is not a green technology, because, for example, Bitcoin mining consumes a lot of energy (annually 46 TWh). Moreover, the cost of Bitcoin transaction (which does not depend from the transferred amount) is fluctuating, at the time of writing the Master Thesis, the cost is approximately 25 euros, which is a very high fee in case of micropayments.

The decentralisation of cryptocurrencies means that all functions such as issue, transaction processing and verification are managed collectively by the network. In those cryptocurrencies which use the proof-of-work system and accumulate large computational resources for mining and verification, the risk is that a pool which controls more than the majority of the computational power can impose conditions on the rest of the network and engage in malicious activities.[72] Another form of vulnerability that arises in cryptocurrencies is irreversibility of the transaction. It is important to note that the difference between standard electronic transaction payments and virtual currencies like Bitcoin relates to irreversibility of the transaction. In other words, a data entry error cannot easily be corrected, once it enters the blockchain.[73] In the case of unauthorised or faulty transactions where, for example, wrong beneficiary or wrong amount, there is no payment service provider to whom you can apply.[74]

Anonymity is also one of the most important vulnerabilities that could result in operational risk losses from cryptocurrencies.[75] But it should be noted that most cryptocurrencies are not completely anonymous, but rather are pseudonymous.[76] If the identity of some wallet owners is known, it is theoretically possible to use these known nodes in the system to build a "transaction graph" that tracks each particular cryptocurrency. By doing so, one could expose the identity of owners of unknown wallets with which the known wallets transacted.[77] The owners themselves are not identified by name on the ledger, but rather by a set of letters and numbers

[70] Ibid., p.22
[71] Ibid., p.23
[72] Peters W. Gareth, Ariane Chapelle and Efstathios Panayi, Opening discussion on banking sector risk exposures and vulnerabilities from virtual currencies: an operational risk perspective: p.19. Accessed April 15, 2018, http://ssrn.com/abstract=2491991
[73] Ibid., p.23
[74] European Central Bank, Virtual currency schemes – a further analysis, 2015: p.21.
[75] Commission staff working document, Impact Assessment, Accompanying the document Proposal for a Directive of the European Parliament and the Council amending Directive (EU) 2015/849 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing and amending Directive 2009/101/EC, 5 July 2016: p.15
[76] Edward V. Murphy, M. Maureen Murphy, Michael V. Seitzinger Bitcoin: Questions, Answers, and Analysis of Legal Issues, Congressional Research Service, October 13, 2015: p. 3. Accessed April 15, 2018, https://fas.org/sgp/crs/misc/R43339.pdf
[77] Marian, Omri, A Conceptual Framework for the Regulation of Cryptocurrencies, 82 U. Chi. L. Rev. Dialogue 53, 68 (2015-2016): p.56. Accessed April 15, 2018, file:///C:/Users/tapo/Downloads/OmriMarianAConceptualFram.pdf

representing their public cryptocurrency address which, together with the private key that proves ownership of that address, constitute the owner's cryptocurrency wallet.[78] As a result, Bitcoin address with its pair of public and private keys, are the only requirements to undertake transactions in Bitcoins. The Bitcoin address is not registered to a named individual, only the possession of the private key gives control over the balance associated with the address.[79]

Financial institutions and banks which consider the acceptance of cryptocurrencies should be sure that they will satisfy regulations on anti-money laundering, Know Your Customer, Politically Exposed persons etc.[80] Money laundering occurs when a person tries to hide an object acquired through an unlawful act, for himself or for a third person. It is very hard to link the pseudonyms with the real persons or organisation behind it. Fraudsters could take advantage of this, for instance by misleading users about the real beneficiary of the payments.[81] As far as I know, at the present moment, there are no guidelines issued by regulators regarding the rules and recommendations of how the banking system shall behave to customers' activity with cryptocurrency. As was stated by the Bank of Israel the main reason of the absence of such guidelines is a real difficulty in issuing guidelines to the system regarding the proper way to estimate, manage and monitor the risks inherent in such activity. Thus, it is difficult to provide a response for customers whom the banks refuse to allow converting the money in their accounts into virtual currencies.[82]

The irreversibility of payments in cryptocurrencies and the unique reliance on private keys (in the case of Bitcoin) also has potential to generate operational risk losses. If anyone gets access to a private key, there is a possibility to create a transaction message, sign it as genuine owner and transfer units of the currency to the own address. In the case of Bitcoins, an electronic wallet is the most widespread storage account, which stores the private/public key pairs for each of the user's Bitcoin addresses. The problem is that after losing keys to the e-wallet, the user cannot get access to their virtual currencies. That means that while the Bitcoins themselves continue to exist, and everyone in the blockchain could verify that they belong to certain accounts, without the private/public key pairs it would not be possible to access them, in order to use them in a transaction.[83] From the perspective of tax non-compliance, a bank or financial institution accepting transaction in cryptocurrency should carefully figure out the taxation rules

[78] Marian, Omri A Conceptual Framework for the Regulation of Cryptocurrencies, 82 U. Chi. L. Rev. Dialogue 53, 68 (2015-2016): p.56. Accessed April 15, 2018, file:///C:/Users/tapo/Downloads/OmriMarianAConceptualFram.pdf
[79] Ibid, p.24
[80] Peters W. Gareth, Ariane Chapelle and Efstathios Panayi, Opening discussion on banking sector risk exposures and vulnerabilities from virtual currencies: an operational risk perspective: p.25. Accessed April 15, 2018, http://ssrn.com/abstract=2491991
[81] European Central Bank, Virtual currency schemes – a further analysis, 2015: p.22
[82] Bank of Israel, Press Release, Remarks by Bank of Israel Deputy Governor at the Knesset Finance Committee meeting on activity and use of virtual currencies, January 8, 2018
[83] Ibid, p.26

regarding a cryptocurrency that is universal and not associated with one country.[84] While banks can control their IT infrastructure through supervising their IT departments, this is not the case for the cryptocurrency networks. The processing functions for blockchain verification and cryptocurrency creation are external to the bank. The reliance on an external group of different geographically located entities creates a potentially massive operational risk exposure for any bank accepting processing of cryptocurrencies[85].

Risks to financial integrity comprise risks of money laundering and terrorist financing, as well as financial crime.[86] Some Member States have reported that they have seen money laundering issues arise with respect to virtual currencies and see a possibility of these being used to fund terrorism.[87] The financial-regulation system mostly relies on regulating intermediaries that are positioned to disrupt misconduct. For example, financial institutions are obliged to meet know-your-costumer rules in order to prevent money laundering, banks fulfil the role of the tax-withholding agents to prevent tax evasion and regulate securities exchanges to protect investors etc.[88] The cryptocurrency market demands the creation of new financial intermediaries, in particular exchanges of cryptocurrencies to fiat currencies, cryptocurrency-wallet service providers etc.[89] In the next Chapters will be discussed possibilities how to regulate these new intermediaries and whether it is possible to apply to them, traditional regulatory models.

The EBA, ESMA and EIOPA in February 2018 issued the warning to consumers, according to which virtual currencies are subject to extreme price volatility, as a result, the consumer should be aware that they could lose a large amount or even all. Also, the consumer is at the risk of not being able to trade or exchange virtual currencies for traditional currencies. And the available information about virtual currencies is in most cases does not properly disclose risks for consumers. The price formation was defined as not transparent.[90] Additionally, virtual currencies and exchanges where consumers can trade are not regulated under EU law, which means that consumers buying virtual currencies do not benefit from any protection associated with regulated financial services. For example, if a virtual currency exchange goes out of business or consumers have their money stolen because their virtual currency account is subject

[84] Ibid, p.27
[85] Ibid, p.29
[86] European Banking Authority Opinion on 'virtual currencies', EBA/Op/2014/08 4 July 2014: p.32.
[87] Commission staff working document, Impact Assessment, Accompanying the document Proposal for a Directive of the European Parliament and the Council amending Directive (EU) 2015/849 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing and amending Directive 2009/101/EC, 5 July 2016: p.7.
[88] Marian, Omri. A Conceptual Framework for the Regulation of Cryptocurrencies, 82 U. Chi. L. Rev. Dialogue 53, 68 (2015-2016): p.57.
[89] Ibid, p.58
[90] ESMA, EBA and EIOPA warn consumers on the risks of Virtual Currencies, Warning, February, 2018. Accessed April 15, 2018, https://www.esma.europa.eu/sites/default/files/library/esma50-164-1284_joint_esas_warning_on_virtual_currenciesl.pdf

to a cyber-attack, there is no EU law that would cover their losses.[91]

To sum it up, to make investments in cryptocurrency can be very risky because of the price volatility, so you cannot be sure about your investment. In the case of bitcoin, according to the protocol, only twenty-one million bitcoins will be available. Thus, when all bitcoins will by mined, people will want to exchange them for the as higher price as possible, as a result, the price is expected to become higher. However, cryptocurrency is unpredictable. For example, when bitcoin was firstly introduced in 2008 its price was thirty cents; at the end of 2017 the price reached the point 20.000 per one bitcoin and at the beginning of 2018 dropped to approximately 10.000 per one bitcoin. If cryptocurrencies will remain unregulated, risks associated with them will increase. Cryptocurrency market started to shift to the mainstream very rapidly, as a result, states around the world actively started to think about the necessity to adopt the regulation.

[91] ESAS warn consumers of risks in buying virtual currencies, 12 February 2018. https://www.esma.europa.eu/press-news/esma-news/esas-warn-consumers-risks-in-buying-virtual-currencies

2. CRYPTOCURRENCIES' LEGAL ANALYSIS

Cryptocurrency and bitcoin as the most widespread among them are not so revolutionary from a legal point of view and it is possible to place them into existing legal framework without a need to create the wholly new type of decentralized law.[92] Thus, rather than making entirely new rules, regulators will likely attempt to adapt existing rules to cryptocurrency as much as possible. The introduction of a legal regulation for cryptocurrency and the development of basic national conceptual approaches to it is only a matter of time. The main question is how cryptocurrency can be defined? As a currency or commodity, means of payment or means of exchange, or as an asset etc. Attempts to explain the legal nature of cryptocurrency do not lead to any unambiguous conclusion yet. Governmental authorities understand that to this absolutely new technology shall be applied new regulatory practices.

The regulation shall be implemented in consideration of the following points. Firstly, shall be taken into account the cryptocurrency application to the already existing social relations in the crypto economy. Secondly, the introduction of a new regulation or amendment of existing laws may be harmonized with the existing legal framework. Thirdly, the supranational nature of the cryptocurrency shall be taken into account. Also, an understanding between regulators and cryptocurrency community is of high importance, as a result, the ban of cryptocurrency shall be abandoned because it will lead to economic losses and to a backwardness of the state from other economies.

This Chapter is focused on legal aspects of cryptocurrency and proves the statement that states may define the legal status of cryptocurrency. Clarification of cryptocurrency status and implementation of rules to cryptocurrency activities will lead to the following advantages. Firstly, the relations with commercial goals will exit from the shadow. Secondly, participants of the cryptocurrency market will be able to protect their rights. Thirdly, the state will benefit from the opportunity to fill the treasury in case if it will be decided to tax operation with cryptocurrency.

[92] Kerrikmae, Tanel and Addi Rull, The future law and eTechnologies, Springer International Publishing Switzerland, 2016: p.111.

2.1 Working Mechanisms Behind Cryptocurrency

Cryptocurreny relies on the principles of cryptography in order to validate transactions and govern the production of the currency. Cryptography means a communication that is secure from the view of third parties. Users who want to join cryptocurrency network should download open-source software. All transactions which are recorded on the blockchain (a decentrilised public ledger) are visible to all computers on the network. However, blockchain does not reveal any personal information, because each user is encrypted with a unique identity.[93] Cryptocurrency network use public-key cryptography and each user has the pair of keys (public and private). A user who wants to send cryptocurrency to another user should create the message (transaction) which will contain the recipient's public key. After that, the sender should "sign" the message by using the private key that is kept in secret like a password.[94] The public key is often referred to as a cryptocurrency address. Cryptourrency addresses are recorded in the blockchain, but they are not tied to anyone's identity.[95] Public-key cryptography ensures that all computers in the network have a constantly updated and verified the record of all transactions within the cryptocurrency network, which prevents double spending and fraud.[96]

With the invention of cryptocurrency was resolved the double-spending problem, because all transactions are checked to ensure that the same cryptocurrency spent only once. Previously, the third party intermediary should be present, because it is necessary to curate a central ledger, to monitor and verify all transactions. Without the intermediation, online funds could be spent more than once.[97] To explain the problem of double-spending the example with the debt certificate can be taken into consideration. The problem of double-spending can arise if the debt certificate, which covers all the assets of the issuer, is signed digitally by the issuer and sent to two or more parties. As a result, it has spent two times more than it has assets to spend. For a better understanding of the double-spending problem, other examples can also be considered. The first one is when one party wanted to send to another party 100 euros over the Internet and that party would have to rely on a third-party service, for example, PayPal. PayPal deducts the amount from one account and adds to another. As a result, PayPal is the curator of the common ledger determining who owes what. As for the second example, imagine a simple digital payment system in which cash is just a computer file. In that situation, the money can be sent by just attaching the money file to a digital message. If to retain a copy of the file, the party

[93] Kerrikmae, Tanel and Addi Rull, The future law and eTechnologies, Springer International Publishing Switzerland, 2016: p. 113
[94] Brito, Jerry and Andrea O'Sullivan, Bitcoin: a primer for policymakers, 3 of May 2016: p. 7.
[95] Ibid, p.10.
[96] Ibid, p.7
[97] Ibid, p.6

would be able to send the same amount to another person, because sending the attachment would not remove it from the computer.[98]

Satoshi Nakamoto, the inventor of Bitcoin, proposed a solution to the double-spending problem using a peer-to-peer network. Thus, the global peer-to-peer network, through which the necessary ledger distributed among all users of the system, takes place as an intermediary. Every transaction that occurs in the cryptocurrency network is registered in a distributed public ledger called the blockchain. New transactions are checked against the blockchain to ensure that the same cryptocurrency have not been previously spent, thus eliminating the double-spending problem.[99] The cryptocurrency network, such as Bitcoin, resolved that problem by timestamping transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work.[100] Proof-of-work means to solve a complicated and computationally intense puzzle posted by the system.[101] In other words, the transaction, and thus the transfer of ownership of the cryptocurrency, is recorded, time-stamped, and displayed in one block of the blockchain by a network of voluntary miners that contribute their computer's processing power to the system.

There are the following features of the cryptocurrency system. Firstly, it is peer-to-peer and computationally impractical to reverse ("irreversibility"), making centralized authorities irrelevant.[102] Secondly, it is cryptographically secure. This means that transactions are publicly announced, with each owner transferring coins (or parts thereof) to the next owner by digitally signing a hash of the previous transaction.[103] A hash function can be defined as a mathematical process that compresses data to produce shorter, fixed-size outputs.[104] These transactions are put into consecutive blocks (blockchain), secured by cryptographic proofs ensuring that the data has not been tampered with.[105] Thirdly, in the case of Bitcoin and a lot of other types of cryptocurrencies, it uses proof of work among the nodes to discover new blocks to add to the chain.[106] Cryptocurrency does not require a central authority, such as a company or government,

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[98] Ibid
[99] Brito, Jerry, Houman Shadab and Andrea Castillo, Bitcoin financial regulation: securities, derivatives, prediction markets and gambling, The Columbia Science and technology law review, Vol. 16, 2014: p.149.
[100] Kerrikmae, Tanel and Addi Rull, The future law and eTechnologies, Springer International Publishing Switzerland, 2016: p.113.
[101] Halaburda, Hanna and Miklos Sarvary, "Beyond Bitcoin, the economics of digital currencies", 1st edition 2016: p.105
[102] Satoshi Nakamoto, Bitcoin: a peer-to-peer electronic cash System, 2008: p.1. Accessed April 15, 2018, https://bitcoin.org/bitcoin.pdf
[103] Ibid, p.2
[104] Goldwasser, Shafi and Mihir Bellare, Lecture notes on cryptography, July 2008: p.136. Accessed April 15, 2018, https://cseweb.ucsd.edu/~mihir/papers/gb.pdf
[105] Levin, Jonathan. I love the blockchain, just not Bitcoin, CoinDesk. Accessed April 15, 2018, https://www.coindesk.com/love-blockchain-just-bitcoin/
[106] Satoshi Nakamoto, Bitcoin: a peer-to-peer electronic cash System, 2008; p.3. Accessed April 15, 2018, https://bitcoin.org/bitcoin.pdf

to issue cryptocurrency or verify transfers between individuals. Instead, cryptocurrency employs secure communication techniques (cryptography) and peer-to-peer networking to eliminate the need for third parties.[107] The cryptocurrency protocol is open-source, this means that the review and modification of the protocol's code can be carried out by any developer. In the cryptocurrency network, the protocol changes become effective only if they are adopted by most users on the network.[108] As a result, it is impossible to make changes to the protocol which will contradict the interests of the users on the network.

2.2 Characteristics of Types of Cryptocurrencies

All types of cryptocurrencies initially were designed to be instruments of exchange in the digital world. However, they gradually started to interact with the real economy. They can be bought or sold against fiat currencies, held or used as a means of exchange or as investment or financing instruments with the creation of ICOs.[109]

The term cryptocurrency became widely known after the publication of the white paper where a concept of bitcoin was introduced in 2008 by the pseudonymous programmer, or group of programmers, known as Satoshi Nakamoto. Bitcoin's unique peer-to-peer properties allow it to simultaneously serve as a currency and a distributed ledger system.[110] Transactions on the Bitcoin network are not denominated in dollars or any other country's currency as they are on PayPal but are instead denominated in bitcoins.[111] As a result, the word bitcoin refers to two things: "Bitcoin" means decentralized, global payments network; "bitcoin" means an international, decentralized, convertible, virtual currency, or cryptocurrency.[112] Bitcoin is an open-source, peer-to-peer digital currency.[113] If to consider Bitcoin from the technical side, it can be defined as a computer program/network/file.

There are a lot of new cryptocurrencies emerged and their number is constantly growing, for example, in January 2018 their number was over 1384. However, this number is constantly growing, because new cryptocurrencies appear every month. The reason of that is

[107] Ibid.
[108] Anning, Paul, Lorna Brazell, Stuart Hoegner, Mark Brailsford, Jerry Brito, Mattew J. Cleary, Jillian Friedman, Michael Taylor, Ryan J. Straus and Christoph-Nikolaus Von Unruh. The Law of Bitcoin, iUniverse, 2015: p.10.
[109] Banque de France, The emergence of bitcoin and other crypto-assets: challenges, risks and outlook. Focus, No 16-5 March 2018, p.1
[110] Brito, Jerry, Houman Shadab and Andrea Castillo, Bitcoin financial regulation: securities, derivatives, prediction markets and gambling, The Columbia Science and technology law review, Vol. 16, 2014: p.148
[111] Ibid., p.150
[112] Anning, Paul, Lorna Brazell, Stuart Hoegner, Mark Brailsford, Jerry Brito, Mattew J. Cleary, Jillian Friedman, Michael Taylor, Ryan J. Straus and Christoph-Nikolaus Von Unruh. The Law of Bitcoin, iUniverse, 2015: p.7.
[113] Brito, Jerry and Andrea O'Sullivan, Bitcoin: a primer for policymakers. Mercatus Center, May 2016: p. 5

because the Bitcoin algorithm is publicly available, and people can copy it.[114] Also, the costs of creating alternative cryptocurrency are very low. As was stated above, Bitcoin is open source, as a result, anyone can use the same algorithm and code to create a similar cryptocurrency. Another reason is that miners started to look for alternatives which will not require specialized ASIC machines and huge investments while mining cryptocurrency.[115] The aim of the creation of alternative cryptocurrencies is different. For example, in order to increase the number of transactions per second, or to increase the block size, or to address the issue of high computation cost, or to accommodate the more efficient use of smart contracts etc. [116] The public ledger (blockchain) is the common feature of these different cryptocurrency systems, as a result, they have no centralized authority.[117] Usually, miners need to solve complicated mathematical puzzles to enter the new transaction into the ledger. Some of the new cryptocurrencies are very similar to Bitcoin and work in the same manner.[118] For example, minor differences can be on the different block time, currency supply and issuance scheme.[119] In contrast, there are some types of new cryptocurrencies which have substantive differences from Bitcoin. For example, they can include a new consensus mechanism such as proof-of-stake.[120] While proof-of-work awards the first party who comes up with the solution to the hashing puzzle, proof-of-stake distributed the reward to all holders of a cryptocurrency, but the people who hold more coins (those who have more stake in the system) receiving a larger dividend.[121]

The cryptocurrency market capitalization reached around EUR 0.33 trillion at the 2018, mainly made up of bitcoin (35%), ether (20%) and ripple (10%). In contrast, to the number of coins and banknotes in circulation that is around EUR 7.5 trillion in the euro area and USD 3.5 trillion in the USA. As I mentioned in the previous Chapter all cryptocurrencies are highly speculative and their price can collapse at any time.[122] That happens because investors can only recover their funds in other currencies if other users wish to do so because cryptocurrencies are not the legal tender and not guaranteed by any centralized authority. There is a growing interest

[114] Halaburda, Hanna and Miklos Sarvary. Beyond Bitcoin, The economics of digital currencies, Palgrave Macmillan, 2016: p.121.
[115] Ibid., p.139.
[116] David Lee Kuo Chuen, Li Guo, Yu Wang, Cryptocurrency: A New Investment Opportunity? The Journal of Alternative Investments JAI 2017, 20 (3) 16-40. July 4, 2017: p.9.
[117] Dr Garrick Hileman and Michel Rauchs. Global Cryptocurrency Benchmark Study, Cambridge Centre for Alternative Finance, University of Cambridge, Judge Business School, 2017: p.15.
[118] Halaburda, Hanna and Miklos Sarvary. Beyond Bitcoin, The economics of digital currencies, Palgrave Macmillan, 2016: p.121.
[119] Dr Garrick Hileman and Michel Rauchs. Global Cryptocurrency Benchmark Study, Cambridge Centre for Alternative Finance, University of Cambridge, Judge Business School, 2017: p.15.
[120] Ibid., p.16.
[121] Halaburda, Hanna and Miklos Sarvary. Beyond Bitcoin, The economics of digital currencies, Palgrave Macmillan, 2016: p.129.
[122] Banque de France, The emergence of bitcoin and other crypto-assets: challenges, risks and outlook. Focus, No 16-5 March 2018, p.3

in many types of cryptocurrencies, in particular, from the side of users and merchants. As a result, this is leading to the development of numerous services whose structure is based on that of existing services in the traditional finance sphere.[123] Thus, there are four main reasons why cryptocurrencies have to be regulated: to protect investors; preserve market integrity; fight against terrorist financing and money laundering, and because of financial stability reasons.[124]

2.3 Legal Aspects of Cryptocurrencies

In order to identify possible scenarios for cryptocurrency regulation, it is necessary to make an overview of legal aspects of cryptocurrency. The main focus will be made on the Bitcoin which is not only the first cryptocurrency but at the present moment also the dominant in terms of market capitalization. Many other types of cryptocurrencies are very similar to Bitcoin and work in the same manner. Thus, the legal treatment of Bitcoin is extended also to other forms of cryptocurrencies.

Current law and regulation do not cover a technology like cryptocurrencies, as a result, it is in a legal gray area because existing definitions of currency and other financial instruments do not fit to virtual currencies.[125] The ECB has defined Bitcoin as high-risk, decentralized, peer-to-peer network based, unregulated digital money scheme which has certain innovations that make its use more similar to conventional money.[126] Also, the ECB stated that Bitcoin acts as a medium of exchange and as a unit of account within a particular virtual community, but it does not clearly fulfill the store of the value function in terms of being reliable and safe.[127] According to the position of EBA a virtual currency, including Bitcoin, is a form of unregulated digital money that is not issued or guaranteed by a central bank and that can act as means of payment.[128] It was defined that each day approximately 284 000 Bitcoin transactions occur around the world in contrast to 330 million payments per day in euro.

In Canada, the Internal Revenue Service made a determination that bitcoin should be treated as property for tax purposes, but this does not necessarily imply that bitcoin will be regulated as property in all respects and in all transactions. For example, in Germany, cryptocurrency has been recognized as a unit of account and, consequently referred to as private money. In other words, it can be defined as the alternative private mean of payment.[129] At first

[123] Ibid.
[124] Ibid, p.4
[125] Brito, Jerry and Andrea O'Sullivan, Bitcoin: a primer for policymakers, 3 of May 2016: p.41
[126] European Central Bank "Virtual currency schemes", 2012: p.27.
[127] Ibid., p.11.
[128] European Banking Authority, Warning to consumers on virtual currencies, 12 December 2013: p. 1. Accessed April 15, 2018, http://www.eba.europa.eu/documents/10180/598344/EBA+Warning+on+Virtual+Currencies.pdf
[129] Mandjee, Tara Bitcoin, its Legal Classification and its Regulatory Framework, Journal of Business & Securities

glance, cryptocurrency seems to be money. However, it definitely does not fall under the current definition of money and e-money, while its functions as money *de facto*. Its decentrilised nature has prevented it from being classified as regulated means of payment.[130] There is a lot of debate about whether cryptocurrency can be qualified as currency, commodities, or a new asset class altogether.[131]

There is no uniform legal definition of money. Economists defined money as a special good or verifiable record which can be exchanged for another good or service in a particular country of socio-economic context, made so desirable due to its extremely liquid form.[132] Fiat money is not made of or backed by any commodity and has no intrinsic value. Fiat money is a legal tender and backed by a government. It is a promise made by the issuer of money, and its value is based on trust for the issuer. Currency, which can be defined as a fungible, transferable, divisible and recognisible legal tender, is the most common form of fiat money.[133] A currency is an instrument which is used to facilitate transactions between parties.[134] Cryptocurrency, like fiat money, has no intrinsic value backed by any commodity. Cryptocurrencies, in particular, bitcoin, are, like a legal tender, transferable, divisible and to some extent recognizable. Bitcoin is in contrast to fiat money not backed by any entity because it is decentralized and created by the dispersed Bitcoin community itself. [135]

As it was already discussed in the previous Chapter, from the economic perspective the functions of money are a store of value, means of exchange and unit of account. For example, cryptocurrency, such as Bitcoin has proven to have characteristics of the medium of exchange and unit of account. But there are a lot of questions about its ability to store value. An instrument is a store of value if it retains its purchasing power over time with a good deal of certainty.[136] In the case of cryptocurrency arose a lot of doubts whether it can be used in the future to purchase goods and services and if yes, how many. Cryptocurrency is not backed by any good or

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Law, Volume 15, Issue 2: p. 165.

[130] Kerrikmae, Tanel and Addi Rull. The future law and eTechnologies, Springer International Publishing Switzerland, 2016: p.128.

[131] Regulation of Bitcoin in Selected Jurisdictions, The Law Library of Congress, Global Legal Research Center, 2014

[132] Frederic S. Mishkin, The economics of money, banking and financial markets, Addison Wesley, 2013, Boston: p.8.

[133] Kerrikmae, Tanel and Addi Rull, The future law and eTechnologies, Springer International Publishing Switzerland, 2016: p.121.

[134] Dietmar Peetz, Gregory Mall, Why Bitcoin is not a currency but a speculative real asset, September 9, 2017: p. 2. Accessed April 15, 2018, https://ssrn.com/abstract=3098765

[135] Shcherbak, Sergii. How should Bitcoin be regulated?, European Journal of Legal Studies, 2014, Vol. 7, No. 1, 2014: p.58. Accessed April 15, 2018, http://cadmus.eui.eu/bitstream/handle/1814/32273/183UK.pdf?sequence=1Abstract:The

[136] Butler, John. Is money a store of value?, Financial sense, November 3, 2010. Accessed April 15, 2018, https://www.financialsense.com/contributors/john-butler-john-boylan/is-money-a-store-of-value

commodity, its trust is not generated by the government and bitcoin is very volatile.[137] In the report published by the National Bureau of Economic Research mentioned that bitcoin is too volatile and it undermines its usefulness as a store of value.[138] Despite the fact that fiat money is also not backed by any commodity, the structure of state leads to people's trust towards money. A writer Kurt Tucholsky said that money has value because it is accepted everywhere, and it is accepted everywhere because it has value.[139] The unit of account is defined by economists as the ability to express the value of goods by reference to something such as money. Bitcoin can fulfill this function.[140] The medium of exchange function helps sellers and buyers to define the price at which is possible to conduct the transaction.[141] On the one hand, despite the fact that the accepted valuation model for bitcoin does not exist yet, it can fulfill medium of exchange function, because there are growing numbers of merchants who start to accept bitcoin.[142] On the other hand, the enormously high bitcoin price volatility can make it unsuitable for a reliable day-to-day medium of exchange.[143]

However, it can also be stated that Bitcoin has all the essential functions of money. Firstly, Bitcoin serves as a medium of exchange when bitcoins are sent to merchants in exchange for goods and services. Secondly, Bitcoin functions as a unit of account when merchants denominate the prices of certain goods and services in bitcoins. Thirdly, Bitcoin is used as a store of value when users hold bitcoins to send or sell them in future, relying on a positive leap forward in the exchange price of the bitcoins.[144] As a result, this issue is not resolved yet and it is still controversial.

The Financial Crimes Enforcement Network defined that virtual currency is not a currency, because it is not a legal tender. In other words, "real" currency consists only of the coin and paper money of the USA or of any other country that is designated as legal tender and that circulates and is customarily used and accepted as a medium of exchange in the country of

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[137] Ibid
[138] Yermack, David. Is Bitcoin a Real Currency?, Department of Finance New York University Stern School of Business, December 1, 2013: p. 1. Accessed April 15, 2018, http://www.centerforfinancialstability.org/research/DavidYermack-Bitcoin.pdf
[139] Kerrikmae, Tanel and Addi Rull. The future law and eTechnologies, Springer International Publishing Switzerland, 2016: p.123
[140] Mandjee, Tara. Bitcoin, its Legal Classification and its Regulatory Framework, Journal of Business & Securities Law, Volume 15, Issue 2: p. 171.
[141] Dietmar Peetz, Gregory Mall, Why Bitcoin is not a currency but a speculative real asset, September 9, 2017: p. 2. Accessed April 15, 2018, https://ssrn.com/abstract=3098765
[142] Mandjee, Tara. Bitcoin, its Legal Classification and its Regulatory Framework, Journal of Business & Securities Law, Volume 15, Issue 2: p. 169.
[143] Dietmar Peetz, Gregory Mall, Why Bitcoin is not a currency but a speculative real asset, September 9, 2017: p. 2. Accessed April 15, 2018, https://ssrn.com/abstract=3098765
[144] Shcherbak, Sergii. How should Bitcoin be regulated?, European Journal of Legal Studies, 2014, Vol. 7, No. 1, 2014: p.57. Accessed April 15, 2018, http://cadmus.eui.eu/bitstream/handle/1814/32273/183UK.pdf?sequence=1Abstract:The

issuance.[145] Cryptocurrency is not issued nor sanctioned by the US, or by any other government. Cryptocurrency lacks the requirements of legal tender in all jurisdictions and as a result, it cannot be qualified as a currency.[146] Virtual currency appears to meet the Commodities Futures Trading Commission's definition of commodities, which includes "goods and articles and all services, rights, and interests in which contracts for future delivery are presently or in the future dealt in." Virtual currency is a "good" or "interest," and it has a volatile market price that could support, now or in the future, contracts for subsequent delivery.[147]

In addition to answering the question whether cryptocurrency can be considered as a currency, I want to stress some skeptical points regarding the long-term future perspectives of, for example, bitcoin as a currency. Firstly, the bitcoin total supply which is fixed to 21 million can possess additional disadvantages. Currently, bitcoin's aggregate energy consumption is estimated to be around 16.3 Terra Watt/h (180 Kw/h per transaction). There is a necessity for miners to make investments into technology in order to compete with other miners because transaction capacity will depend on future hardware possibilities. The higher bitcoin prices, the more profitable the mining becomes. When most bitcoins will be mined, the only option for miners to be compensated for their work is by transaction fees. As a result, there is a risk that they will become much higher.[148] Secondly, it is difficult to regulate anonymous peer-to-peer payment system which is based on cryptographic proof. As a result, policymakers have a lack of clarity how to regulate it, cryptocurrency users do not protected by law as consumers, and it can be easily used for money laundering and terrorist financing purposes and etc.

Cryptocurrency cannot be defined as e-money, despite the fact that it meets some criteria of them. By its nature, e-money is still a fiat money as long as its value is based on currency. According to the Article 2 clause 2 of the E-Money Directive 2009/110/EC electronic money means electronically, including magnetically, stored monetary value as represented by a claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions as defined in and which is accepted by a natural or legal person other than the electronic money issuer. According to the E-Money Directive e-money issuers (among which are credit institutions and e-money institutions) shall redeem at any moment and at par value, the monetary value of e-money held upon request of the e-money holder.[149] However,

[145] Elijah Alper, What is a Bitcoin? The key question for virtual currency regulation: p.2
[146] Mandjee, Tara. Bitcoin, its Legal Classification and its Regulatory Framework, Journal of Business & Securities Law, Volume 15, Issue 2: p. 167.
[147] Elijah Alper, What is a Bitcoin? The key question for virtual currency regulation: p.4.
[148] Dietmar Peetz, Gregory Mall, Why Bitcoin is not a currency but a speculative real asset, September 9, 2017: p. 2. https://ssrn.com/abstract=3098765
[149] Directive 2009/110/EC of the European Parliament and of the Council of 16 September 2009 on the taking up, pursuit and prudential supervision of the business of electronic money institutions amending Directives 2005/60/EC and 2006/48/EC and repealing Directive 2000/46/EC , Article 2

cryptocurrency cannot be defined as electronic money for the following reasons. Cryptocurrencies are not issued by any entity but created by the disseminated community; as a result, there is no central issuer against which is not possible to generate a claim. In other words, it means that, for example, the Bitcoin network produces bitcoins itself without receipt of any funds and without the redemption of the monetary value of bitcoins upon request of the holder.[150] To sum it up, cryptocurrency may be considered as a monetary value stored electronically and accepted by a person other than the issuer. However, cryptocurrency is not a monetary value represented by a claim on the issuer and is not issued on receipt of funds.

Cryptocurrency also does not fall under the Payment Services Directive 2015/2366/EC, because it is applicable only to certain type of payment service providers which are legal entities. In case of cryptocurrency, in particular, Bitcoin, it cannot be classified as payment service provider, because it is not a legal entity.[151] According to the Article 2 of the Payment Service Directive, it is applicable to several categories of payment service providers, among which are payment institutions, credit institutions, and e-money institutions.[152] In accordance with the Article 4 of the Regulation 575/2013 on prudential requirements for credit institutions and investment firms, credit institution means an undertaking the business of which is to take deposits or other repayable funds from the public and to grant credits for its own account.[153] According to the Article 2 of the E-money Directive, electronic money institution means a legal person that has been granted authorisation to issue electronic money.[154] Bitcoin is a decentralised virtual currency circulating within the Bitcoin peer-to-peer network which operates under the Bitcoin protocol and is not controlled or owned by any entity. As a result, Bitcoin can neither be classified as a credit institution nor an e-money institution or payment institution because Bitcoin is not a legal entity.[155]

As was stated above cryptocurrency, in particular, Bitcoin, cannot be considered as a credit institution, payment institution or e-money institution. However, whether can we say that

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[150] Shcherbak, Sergii. How should Bitcoin be regulated?, European Journal of Legal Studies, 2014, Vol. 7, No. 1, 2014: p.57. Accessed April 15, 2018, http://cadmus.eui.eu/bitstream/handle/1814/32273/183UK.pdf?sequence=1Abstract:The

[151] Kerrikmae, Tanel and Addi Rull, The future law and eTechnologies, Springer International Publishing Switzerland, 2016: p.116.

[152] Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015, on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC

[153] Regulation 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012, Article 4

[154] Directive 2009/110/EC of the European Parliament and of the Council of 16 September 2009 on the taking up, pursuit and prudential supervision of the business of electronic money institutions amending Directives 2005/60/EC and 2006/48/EC and repealing Directive 2000/46/EC , Article 2

[155] Shcherbak, Sergii. How should Bitcoin be regulated?, European Journal of Legal Studies, 2014, Vol. 7, No. 1, 2014: p.61. Accessed April 15, 2018, http://cadmus.eui.eu/bitstream/handle/1814/32273/183UK.pdf?sequence=1Abstract:The

Bitcoin may be considered as a payment service? According to the Article 4(5) of the Payment Services Directive 2015/2366/EC, payment transaction means an act, initiated by the payer or on his behalf or by the payee, of placing, transferring or withdrawing funds, irrespective of any underlying obligations between the payer and the payee. According to the abovementioned Directive, funds means banknotes and coins, scriptural money or electronic money.[156] As was stated above bitcoin is not e-money. But, Bitcoin may be considered as a money and currency. As a result, it has to be considered whether we can classify Bitcoin transactions as payment transactions? In accordance with the Article 4(8) of the Payment Services Directive 2015/2366/EC, a payer means a natural or legal person who holds a payment account and allows a payment order from that payment account, or, where there is no payment account, a natural or legal person who gives a payment order.[157] According to the Payment Services Directive, the payment account should be held in the name of one or more payment service users. However, the Bitcoin address does not held in the name of the user, and as a result, cannot be considered a payment account within the meaning of the Payment Services Directive. As for the payment order, the Bitcoin transactions do not include the placement of a payment order, because a Bitcoin user sends the message not to the legal entity, but to the Bitcoin network represented by miners. Consequently, Bitcoin does not fall under the classification of a payment service for execution of payment transactions within the meaning of the Payment Service Directive.[158]

Another question is whether Bitcoin can be considered as a payment service for money remittance. According to the Article 4(22) of the Payment Services Directive 2015/2366/EC money remittance means a payment service where funds are received from a payer, without any payment accounts being created in the name of the payer or the payee, for the sole purpose of transferring a corresponding amount to a payee or to another payment service provider acting on behalf of the payee, and/or where such funds are received on behalf of and made available to the payee.[159] However, according to the definitions of the Payment Services Directive, 2015/2366/EC bitcoins are not funds and the bitcoin user does not meet the requirements of the payer. But even if to consider that bitcoins are funds and the bitcoin user meets the requirements of the payer, the transfer of funds from the Bitcoin payer to the Bitcoin payee does not involve

[156] Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015, on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC, Article 4
[157] Ibid., Article 4(8)
[158] Shcherbak, Sergii. How should Bitcoin be regulated?, p.63, European Journal of Legal Studies, 2014, Vol. 7, No. 1, 2014: p.63. Accessed April 15, 2018, http://cadmus.eui.eu/bitstream/handle/1814/32273/183UK.pdf?sequence=1Abstract:The
[159] Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015, on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC, Article 4(22)

any trusted party. As a result, the criteria of the money remittance were not met.[160] The other important issue is whether Bitcoin may fall under the statutory definition of a payment system. According to the Article 4(7) of the Payment Services Directive, 2015/2366/EC payment system means a funds transfer system with formal and standardised arrangements and common rules for the processing, clearing and/or settlement of payment transactions.[161] But payment systems are provided by payment service providers. In the case of Bitcoin, a service provider cannot be determined. To sum up, it can be said that the Payment Services Directive 2015/2366/EC is not cover the concept of Bitcoin.

There are several reasons why bitcoins may be viewed as being similar to precious metals. They are limited in supply and capable of being physically delivered (in a digital sense). In addition, like metals, bitcoins are a capital good because they are used to produce other goods and services such as digital assets and contracts.[162]

To answer the question whether the cryptocurrency can be defined as a commodity the following features have to be pointed out. A commodity can be defined as a homogeneous fungible good whose value is determined by supply and demand. The Agreement on the European Economic Area defines a good as both materials and products. According to the abovementioned Agreement, material means any ingredient, raw material, component or part, etc., used in the manufacture of the product.[163] Cryptocurrency does not use in the manufacture of the product and it is not tangible, as a result, it cannot be defined as a material. The Agreement on the European Economic Area defines the product as the product being manufactured, even if it is intended for later use in another manufacturing operation.[164] It is a controversial issue whether cryptocurrency can be considered as a product. To determine that it is necessary to understand the meaning of the manufacturing. According to the Article 1 of the Agreement on the European Economic Area, manufacture means any kind of working or processing including assembly or specific operations.[165] From the one hand, we can consider the mining of Bitcoin as something similar to the process of manufacturing and as a result Bitcoin can be fall under the definition of the good. On the other hand, cryptocurrency cannot be considered as a good, because in the process of manufacturing should be a manufacturer which will sell products to the consumer, but in the case of cryptocurrency, there is no entity which

[160] Shcherbak, Sergii. How should Bitcoin be regulated?, European Journal of Legal Studies, 2014, Vol. 7, No. 1, 2014: p.65. http://cadmus.eui.eu/bitstream/handle/1814/32273/183UK.pdf?sequence=1Abstract:The
[161] Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015, on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC, Article 4(7)
[162] Brito, Jerry, Houman Shadab and Andrea Castillo. Bitcoin financial regulation: securities, derivatives, prediction markets and gambling, The Columbia Science and technology law review, Vol. 16: p.162.
[163] Agreement on the European Economic Area, Protocol 4, Article 1
[164] Ibid.
[165] Ibid.

produces bitcoins.[166] The Agreement on the European Economic Area does not include digital concepts such as cryptocurrency in the definitions of a commodity or the good. However, cryptocurrency may fall under these definitions, because, for example, Bitcoin can be considered as homogenous and fungible good, because Bitcoin is denominated in bitcoins, which are the units of the same nature, and bitcoin's value is determined by supply and demand.[167]

To sum it up, cryptocurrency has some features of a currency, commodity, electronic payments system, but it is neither a foreign currency, nor a traditional commodity, nor is it simply a payments network.[168]

2.4 Legal Framework for Cryptocurrencies

Many states watch what will happen to cryptocurrency, try to understand whether there is a need to regulate it and if yes, to which problems and interests they must address the regulation. There is a possibility that cryptocurrencies can remain unregulated and will follow the principle of freedom of contract and the legal status of the Internet.[169] But on the other side, when it comes to legal areas important for governments and states such as taxation and anti-money laundering, counter terrorist financing, then appears the necessity to determine what is cryptocurrency.[170]

Cryptocurrencies can be used for good, but it can also be used for evil. Nobody tries to restrict fiat money only because they can be used in illicit transactions, the similar situation should be with virtual currencies. Regulators have to only prohibit their illicit use, but not restricted in its entirety. In the case of Bitcoin, which is a decentralized global network with ledger existing only in the distributed peer-to-peer network created by its users, it will be impossible to prohibit its use, because there is no entity or company that can be targeted. As a result, the main task for policymakers is to minimize cryptocurrencies' negative consequences and stress out positive ones.[171] The main reason why cryptocurrency is a new phenomenon for policymakers is the absence of the central server or company that can be regulated. The focus of the regulators should be on intermediaries who conduct their activity on the cryptocurrency network. Among such intermediaries are exchanges that allow consumers to trade fiat currency for cryptocurrency and vica versa; online wallets that allow consumers to carry cryptocurrency

[166] Shcherbak, Sergii. How should Bitcoin be regulated?, European Journal of Legal Studies, 2014, Vol. 7, No. 1, 2014: p.59. Accessed April 15, 2018, http://cadmus.eui.eu/bitstream/handle/1814/32273/183UK.pdf?sequence=1Abstract:The
[167] Ibid.
[168] Brito, Jerry and Andrea Castillo. Bitcoin: Primer for Policymakers, Mercatus Center, George Mason University, 2016: p. 42
[169] Mandjee, Tara. Bitcoin, its Legal Classification and its Regulatory Framework, Journal of Business & Securities Law, Volume 15, Issue 2: p. 114
[170] Ibid, p.115
[171] Brito, Jerry and Andrea Castillo. Bitcoin: Primer for Policymakers, p.67, Mercatus Center, George Mason University, 2016

balances and spend them; and merchant services, which allow merchants to accept cryptocurrency payments and have fiat currency (such as euros, dollars etc.) deposited in their bank account, thus eliminating volatility risk.[172] By set up rules according to which require exchangers and money transmitters to keep records and report suspicious activities, as traditional financial institutions do, the government's interests in preventing money laundering and terrorist financing would be better protected.[173]

According to Switzerland's Federal Council report on virtual currencies from June 25, 2014 bitcoin transactions are considered deposits under the Banking Act if a bitcoin dealer accepts credit balances in official currencies on the dealer's own accounts with a view to future currency transactions. The same situation will be if the dealer accepts bitcoins from clients for future exchange transactions and the client is not able to dispose of the bitcoins at all times without the involvement of the dealer. Such acceptance must be treated the same as under the Banking Act the acceptance of money in official currencies because an obligation of the dealer arises to pay out the equivalent in money to the client.[174] From the perspective of the banking law, it is unproblematic if the platform merely brings together parties for the purchase and sale of cryptocurrencies or assigns purchase and sale offers to each other.[175] Currency exchange, the purchase and sale of cryptocurrencies on a professional basis are covered by the Anti-Money Laundering Act. The same is true of the operation of cryptocurrency trading platforms that forward money or cryptocurrency from users of the platform to other users. In the case of such activities, the due diligence requirements applicable under the Anti-Money Laundering Act – especially to verify the identity of the contracting party and to establish the identity of the beneficial owner – must, therefore, be complied with.[176]

On 11th of December 2014, the Tallinn Administrative court in Estonia made the first decision concerning anti-money-laundering regulation and crypptocurrency. The Financial Intelligence Unit argued that dealing with cryptocurrencies fall under the anti-money laundering regulation as being alternative means of payment. According to the division 2, section 6, subsection 4 of Estonian Money Laundering and Terrorist Financing Prevention Act, service of alternative means of payment means buying, selling or mediating funds of monetary value, through communications, transfer or clearing system, by which financial obligations can be

[172] Brito, Jerry, Houman Shadab and Andrea Castillo, Bitcoin financial regulation: securities, derivatives, prediction markets and gambling, The Columbia Science and technology law review, Vol. 16: p.152.
[173] Brito, Jerry and Andrea Castillo. Bitcoin: Primer for Policymakers, Mercatus Center, George Mason University, 2016: p. 68.
[174] Switzerland's Federal Council report on virtual currencies in response to the Schwaab (13.3687) and Weibel (13.4070) postulates, June 25, 2014: p.12. Accessed April 15, 2018, https://www.news.admin.ch/NSBSubscriber/message/attachments/35355.pdf
[175] Ibid., p.13
[176] Ibid., p.17

performed or which can be exchanged for an official currency.[177] Consequently, it can be concluded that Financial Intelligence Unit sees cryptocurrency as a fund with a monetary value which is possible to use for performing financial obligations.[178] The cryptocurrency is the appropriate subject to anti-money-laundering laws because there is a possibility to change it for commodities and services in shops and markets.

It is impossible to bring cryptocurrency under the scope of the current legislation, because the current legal framework is based on the centralised approach to money, payments, and financial services, and does not imply the existence of decentralised payment mechanisms.[179] Thus, one of the possible scenarious for regulation of the cryptocurrency usage is partial regulation, aiming to ensure the interests of regulatory bodies and bitcoin stakeholders. In this case, four levels of cryptocurrency functionality can be defined. Firstly, it is a conceptual level on which cryptocurrency should be recognized officially as unregulated technology, similar to the e-mail and Internet. Secondly, it is the level of user interaction where cryptocurrency users transact directly with each other, should not be the subject of regulation too. The third level, which is the level of interaction between users and merchants should be regulated because cryptocurrency merchants and their consumers should be subject to requirements in the relevant law. The fourth level is the level of interaction between users and exchanges, should be most regulated and falling under anti-money laundering rules and Payment Service Directive and also investments regulations.[180] To sum up, according to the opinion of Sergii Scherbak transactions between users and miners should remain unregulated, but activities of professional participants such as exchangers, who should be treated as payment service providers, and merchants should be covered by the regulation. In other words, the regulation should be aimed at the anti-money laundering rules, know your customer rules and consumer protection licensing.

However, the statement about the absence of regulation on the level of user interaction is not fully true. In the case, if two entities will agree about the transfer of cryptocurrency, the usual contract law principles will be applicable. For example, if one party will provide a loan to the other party in Bitcoins, the regulation of loan agreements will apply. In the case, if such loan will be provided in professional or economic activities (can be a natural person) according to the Section 397(1) of Estonian Law of Obligations Act there is an obligation to pay interests even if there is no agreement on that. Such interest should be paid in euros because the interest is

[177] Money Laundering and Terrorist Financing Prevention Act, Passed 19.12.2007, RT I 2008, 3, 21, Entry into force 28.01.2008
[178] Kerrikmae, Tanel and Addi Rull. The future law and eTechnologies, Springer International Publishing Switzerland, 2016: p.120.
[179] Shcherbak, Sergii. How should Bitcoin be regulated?, European Journal of Legal Studies, 2014, Vol. 7, No. 1, 2014: p.91. Accessed April 15, 2018, http://cadmus.eui.eu/bitstream/handle/1814/32273/183UK.pdf?sequence=1Abstract:The
[180] Ibid.

considered to be in a monetary form according to the law.[181]

The regulation of cryptocurrency should be developed taking into account circumstances of each activity. But, generally, cryptocurrency users' main interest is to feel more protected; cryptocurrency exchanges want to understand with what legal requirements they should comply with; cryptocurrency merchants are also interested in the clear legal requirements which they should meet; policymakers want to be sure in the fulfilment of legal requirements. As a result, should be created the type of the regulation which will take into account the interests of all abovementioned groups. The technology itself has almost no manifestations in the material world; as a result, it is senseless to control its compliance with laws. In other words, it is impossible to regulate cryptocurrency as a technology. However, the partial regulation, which will take into account the interests of different groups, is needed.

[181] Kerrikmae, Tanel and Addi Rull. The future law and eTechnologies, Springer International Publishing Switzerland, 2016: p. 124.

3. REGULATORY FRAMEWORK FOR CRYPTOCURRENCY IN THE EUROPEAN UNION

3.1 Position of the European Union Institutions

In 2012 the ECB published a report in which it stated that typical financial sector regulation and supervision arrangements are not applicable to virtual currency. The ECB mentioned that virtual currency is currently not regulated and not closely supervised or overseen by any public authority.[182] According to the ECB virtual currency means a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community. Bitcoin was defined as a convertible decentralized virtual currency. Also, it was stated that the link between virtual currency and traditional currency, with a legal tender status, is not regulated by law, as a result, it can be problematic or costly when redeeming funds.[183] Moreover, it was stressed that virtual currencies are not bound to a specific country or currency area, which complicates law making, regulating and law enforcing.[184] Central banks of the EU Member States do not consider virtual currency as a legal tender and do not treat them as equivalent to money.

The ECB document does not necessarily reflect a consensus of Member States nor does it contain any recommendations, but rather limits itself to the presentation of potential challenges. It views itself much more as a contribution to future discussions of the topic. This means that any regulation of cryptocurrency is being left to the Member States.[185]

According to the warning to consumers on virtual currencies which was issued on 12 December 2013 by the EBA, a virtual currency is a form of unregulated digital money that is not issued or guaranteed by a central bank and that can act as means of payment.[186] EBA stated that consumers should be aware that exchange platforms are not banks that hold their virtual currency as a deposit, as a result, if an exchange platform loses any money or fails, there is no specific legal protection. When using virtual currencies to pay for goods and services you are not protected by any refund rights under EU law offered.[187] The Organization for Economic Cooperation and Development in June 2014 pointed out that the technology associated with the

[182] European Central Bank, Virtual Currency Schemes, October 2012: p.6. Accessed April 15, 2018, https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemes201210en.pdf
[183] Ibid., p.5.
[184] Ibid., p.47.
[185] Switzerland's Federal Council report on virtual currencies in response to the Schwaab (13.3687) and Weibel (13.4070) postulates, June 25, 2014: p.22. Accessed April 15, 2018, https://www.news.admin.ch/NSBSubscriber/message/attachments/35355.pdf
[186] European Banking Authority, Warning to consumers on virtual currencies, 12 December 2013: p.1. Accessed April 15, 2018, https://www.eba.europa.eu/documents/10180/598344/EBA+Warning+on+Virtual+Currencies.pdf
[187] European Banking Authority, Warning to consumers on virtual currencies, 12 December 2013: p.2. Accessed April 15, 2018, https://www.eba.europa.eu/documents/10180/598344/EBA+Warning+on+Virtual+Currencies.pdf

cryptocurrencies is an innovation that creates the ability to carry out transactions without the need for a trusted third party. This mechanism could work to eliminate the role of many intermediaries, as a result reducing transactions costs.[188] It was also stated by the OECD that it is necessary to remove anonymity where money transmission is concerned and to meet minimum requirements for consumer protection.[189]

In July 2014 the EBA published an Opinion addressed to the European Union Council, European Commission, and European Parliament according to which advised discouraging financial institutions from buying, holding or selling virtual currencies while no regulatory regime is in place. The EBA identified more than 70 risks, including risks for users, market participants, risks related to financial integrity, such as money laundering and other financial crimes, and risks for existing payments in fiat currencies. The EBA expressed the view that a regulatory approach to address these risks would require a substantial regulation. A regulatory approach would need to cover governance requirements for several market participants, capital requirements and the creation of governing authorities for the integrity of a virtual currency scheme and its key components, including its protocol and transaction ledger.[190]

In February 2015 the ECB published a report according to which virtual currency was defined as not money or currency from a legal perspective, but as a digital representation of value, not issued by a central bank, credit institution or e-money institution, which in some circumstances can be used as an alternative to money.[191] It was stated that users do not benefit from legal protection such as redeemability or a deposit guaranty scheme and are more exposed to the various risks that regulation usually mitigates.[192] The ECB recognizes that, despite numerous risks of using virtual currencies, they also have advantages over traditional payment solutions, for example, for payments within virtual communities' environments and for cross-border payments.[193]

In February 2016 the European Commission announced plans to make stricter reporting standards for cryptocurrency exchanges and cryptocurrency wallet providers. The Commission announced plans to bring virtual currency exchange platforms under the scope of the Fourth Anti-Money Laundering Directive to identify the users who trade in virtual currencies. The

[188] Blundell-Wignall, Adrian. The Bitcoin Question, Currency versus trust - less transfer technology, OECD Working Papers on Finance, Insurance and Private Pensions No. 37, 2014: p.1. Accessed April 15, 2018, http://www.oecd-ilibrary.org/content/workingpaper/5jz2pwjd9t20-en

[189] Ibid., p.17

[190] European Banking Authority, EBA Opinion on 'virtual currencies', 4 July 2014. Accessed April 15, 2018, http://www.eba.europa.eu/documents/10180/657547/EBA-Op-2014-08+Opinion+on+Virtual+Currencies.pdf

[191] European Central Bank, Virtual currency schemes – a further analysis, February 2015: p.4. Accessed April 15, 2018, https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemesen.pdf

[192] Ibid., p.21.

[193] European Central Bank, Virtual currency schemes – a further analysis, February 2015: p.33. Accessed April 15, 2018, https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemesen.pdf

Commission also mentioned about the possibility of applying the licensing and supervision rules of the Payment Services Directive to virtual currency exchange platforms and virtual wallets providers.[194] Pending amendments to the Fourth Anti-Money Laundering Directive, so called "Fifth Anti-Money Laundering Directive" the objective of which is to cover all the potential uses of virtual currencies. Thus, if amendments to the Fourth Anti-Money Laundering Directive would be adopted, virtual currency exchanges and wallet providers will become covered entities for Anti-Money Laundering purpose. As a result, these businesses will be required to apply identification and verification procedures; monitor customers' transactions; keep specific records, and report suspicious activity.

In February 2016 the European Parliament's Committee on Economic and Monetary Affairs published a draft report according to which no direct regulation for Bitcoin and other virtual currencies is required. The Committee also suggested adjusting Bitcoin regulations in accordance with existing anti-money laundering and countering terrorist financing regulations. In addition, the authors of the report proposed to create a special taskforce to deal with cryptocurrency-related issues. In May 2016, the European Parliament approved the proposal for the taskforce.[195] Also, in February 2016 the Council of the EU published a conclusion on the fight against the financing of terrorism. In the conclusion the Council of the EU emphasized the importance of prompt change of legislation of the EU in the sphere of counteraction to money laundering and terrorist finance, considering the cryptocurrency.[196]

In July 2016 the European Commission released the Commission strengthens transparency rules to tackle terrorism financing, tax avoidance, and money laundering according to which the Commission proposes to bring virtual currency exchange platforms and custodian wallet providers under the scope of the Directive on the prevention of use of the financial system for the purposes of money laundering or terrorist financing (2015/849/EC). The European Commission stated about the need for registration and licensing for cryptocurrency exchange operators exchanging cryptocurrencies for fiat money and vice versa, as well as cryptocurrency wallet providers.[197]

In August 2016 the EBA issued the Opinion on the EU Commission's proposal to bring virtual currencies into the scope of the Directive on the prevention of the use of the financial

[194] European Commission, Questions and Answers: Action Plan to strengthen the fight against terrorist financing, 2 February 2016. Accessed April 15, 2018, http://europa.eu/rapid/press-release_MEMO-16-209_en.htm
[195] Likhuta, Vlad, Anatoliy Kaplan, Dima Gadomsky Kyrylo Korol Oleh Heletkanych Orest Havryliak and Tetiana Otter. Bitcoin Regulation: Global Impact, National Lawmaking, February 2017: p.36.
[196] Council of the EU, Council conclusions on the fight against the financing of terrorism, Press Release, 50/16 12/02/2016. Accessed April 15, 2018, http://www.consilium.europa.eu/en/press/press-releases/2016/02/12/conclusions-terrorism-financing/pdf
[197] European Commission, Commission strengthens transparency rules to tackle terrorism financing, tax avoidance and money laundering, 5 July 2016. Accessed April 15, 2018, http://europa.eu/rapid/press-release_IP-16-2380_en.htm

system for the purposes of money laundering or terrorist financing (2015/849/EC). The EBA welcomes the Commission's proposal to bring cryptocurrency wallet providers and cryptocurrency exchanges within the scope of the Directive, as this will be an important step to mitigate some of the financial crime risks arising from the use of virtual currencies.[198] However, it was mentioned that national authorities should have at their disposal effective, proportionate and dissuasive sanctions for failure of these new type of entities to respect key requirement of the Directive 2015/849/EC, including the reporting of suspicious transactions.[199]

In October 2016 the ECB published the Opinion on the European Commission's proposal. The ECB supported the mandatory registration or licensing of the activity of cryptocurrency exchanges, which carry out the exchange of cryptocurrency for fiat money and vice versa, and providers of cryptocurrency wallets.[200] According to this Opinion, the ECB recommends defining virtual currencies more specifically, in a manner that explicitly clarifies that virtual currencies are not legal currencies or money. Also, in the Opinion was mentioned that virtual currencies are not in fact currencies, it would be more accurate to regard them as a means of exchange, rather than as a means of payment.[201] ECB pointed out that the reliance of economic actors on virtual currency units could in principle affect the central banks' control over the supply of money with potential risks to price stability.[202]

In February 2018 the ECB published the explanation regarding Bitcoin where was mentioned that it is not the ECB's responsibility to ban or regulate bitcoin or other cryptocurrencies. Also, it was stated that Bitcoin is a speculative asset, it is something that you can gamble on to make a profit, but with a risk that you will lose your investment.[203] Also, in February 2018 EBA, ESMA and EIOPA issued the warning for consumers on the risks of virtual currencies. It was stated that virtual currencies are highly risky, generally not backed by any tangible assets and unregulated under EU law, and as a result do not offer any legal protection to consumers. Also, it was mentioned that virtual currencies are still unregulated under EU law, even though EU anti-money laundering requirements, which will enter into force later in 2018,

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[198] European Banking Authority, Opinion of the European Banking Authority on the EU Commission's proposal to bring Virtual Currencies into the scope of Directive (EU) 2015/849 (4AMLD), p.2, 11 August 2016: p.2. Accessed April 15, 2018, http://www.eba.europa.eu/documents/10180/1547217/EBA+Opinion+on+the+Commission%E2%80%99s+proposal+to+bring+virtual+currency+entities+into+the+scope+of+4AMLD

[199] Ibid.

[200] European Central Bank, Opinion on a proposal for a directive of the European Parliament and of the Council amending Directive (EU) 2015/849 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing and amending Directive 2009/101/EC, 12 October 2016: p.2. Accessed April 15, 2018, https://www.ecb.europa.eu/ecb/legal/pdf/en_con_2016_49_f_sign.pdf

[201] Ibid., p.3.

[202] Ibid., p.2.

[203] European Central Bank, What is Bitcoin?, 13 February 2018. Accessed April 15, 2018, https://www.ecb.europa.eu/explainers/tell-me/html/what-is-bitcoin.en.html

will be applicable to wallet providers and virtual currency exchange platforms.[204]

In 8 of February 2018 Yves Mersch, Member of the Executive Board of the ECB, in the Official Monetary and Financial Institutions Forum in London said that virtual currencies cannot be directly regulated or overseen because of the absence of the centralized governance and legal framework. He said that virtual currencies are not money, their market share is still small and their ties to the real economy is limited. However, this can change in the future, that is why regulators and legislators at all levels should pay attention to the risks which can arise because of the growing virtual currencies business. He paid attention that lots of regulatory bodies and central banks have issued warnings to inform consumers about possible risks. Also, he said that there is a need for a broader regulatory intervention that will extend beyond the fields of anti-money laundering and counter terrorist financing. Yves Mersch mentioned the possibility to broaden existing frameworks such as the revised Payment Services Directive, as a result, supervision and licensing rules will be also applicable to virtual currency facilitators.[205]

In December 2017 the European Parliament and the Council reached the agreement on the amendments to the 4th Anti-Money Laundering Directive.[206] The amended text shall be signed by the European Parliament and by the Council. The 5th Anti-Money Laundering Directive will come into force approximately by the end of 2019 because 18 months shall past after its publication in the Official Journal of the European Union. As was mentioned above, according to the amendments virtual currency exchange platforms and custodian wallet providers will become obliged entities and fall within the scope of the 4th Anti-Money Laundering Directive.

In 26 of February 2018, the European Commission hosted a roundtable on "Cryptocurrencies – Opportunities and Risks" under the chairmanship of Valdis Dombrovskis, Commission Vice-President in charge of Financial Stability, Financial Services, and Capital Markets Union. Participants of the round table stressed out that virtual currencies and blockchain technology are affecting many sectors of the economy, including finance. The discussion was organized around three themes: cryptocurrencies and their implications for financial markets, investor protection and market integrity in relation to cryptocurrencies as an emerging asset class, and the potential and challenges posed by ICOs. Valdis Dombrovskis underlined that due to the global nature of cryptocurrency market it is important to work together with the G20 and

[204] ESMA, EBA and EIOPA warn consumers on the risks of Virtual Currencies, Warning, February, 2018. Accessed April 15, 2018, https://www.esma.europa.eu/sites/default/files/library/esma50-164-1284_joint_esas_warning_on_virtual_currenciesl.pdf

[205] Mersch, Yves. Lecture, Official Monetary and Financial Institutions Forum, London, 8 February 2018. Accessed April 15, 2018, https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp180208.en.html

[206] European Commission, Strengthened EU rules to prevent money laundering and terrorism financing, December 2017. Accessed April 15, 2018, http://ec.europa.eu/newsroom/just/item-detail.cfm?item_id=610991

international standard-setters.[207] Also, Valdis Dombrovskis said that he invited Member States of the EU to prepare for a transposition of the legislation regarding virtual currency exchanges and wallet providers that should be subject to the Anti-Money Laundering Directive.[208]

3.2 The practice of the European Union Member States

None of the Member States consider cryptocurrency as legal tender equal to money, because they are not issued by the government's monetary authority.

In Germany, BaFin interprets cryptocurrency as a unit of account and as a result of a financial instrument within the meaning of section 1(11) of the Banking Act. A unit of account has a nominal value and is comparable to foreign currencies, but does not refer to a legal tender, can be considered as a private means of payment in barter transactions.[209] Legal tender means an instrument of payment that the law requires a creditor to accept as payment from a debtor.[210] According to sections 1(1) and 1(1a) of the Banking Act businesses that deal with financial instruments are defined as a credit or financial institutions, and according to section 32 of the Banking Act need an accreditation issued by the BaFin.[211] According to the Section (1), no 4 of the Banking Act a credit institution is a company that the purchase and sale financial instruments in the credit institution's own name for the account of others. In other words, businesses that buy and sell cryptocurrencies for the commission are considered to be credit institutions according to the section 1(1), no 4 of the Banking Act.[212] According to Section 1(1a), no 1 of the Banking Act, a company is a financial services institution when the business involving the purchase and sale of financial instruments.[213] BaFin has specified that the arranging of meetings between buyers and sellers only beomes a financial service institution when 25 or more transactions are arranged per month. For example, the leading exchange in Germany, bitcoin.de, is licensed by Bafin.[214] Also, according to the section 1(1a), no 4a of the Banking Act financial services comprise in continuously offering to purchase or sell financial instruments at self-determined prices on an organised market or in a multilateral trading facility.[215] As a result, the purchase and

[207] European Commission, News, Roundtable on cryptocurrencies, February 26, 2018. Accessed April 15, 2018, https://ec.europa.eu/commission/news/roundtable-cryptocurrencies-2018-feb-26_en
[208] Remarks by Vice-President Dombrovskis at the Roundtable on Cryptocurrencies, European Commission, Speech, 26 February 2018. Accessed April 15, 2018, http://europa.eu/rapid/press-release_SPEECH-18-1242_en.htm
[209] Anning, Paul, Lorna Brazell, Stuart Hoegner, Mark Brailsford, Jerry Brito, Mattew J. Cleary, Jillian Friedman, Michael Taylor, Ryan J. Straus and Christoph-Nikolaus Von Unruh. The Law of Bitcoin, iUniverse, 2015: p.87.
[210] Ibid., p.88.
[211] Sections 1(1); 1(1a) of the Banking Act (Gesetz über das Kreditwesen)
[212] Section (1), no 4 of the Banking Act (Gesetz über das Kreditwesen)
[213] Section 1 (1a), no 1 of the Banking Act (Gesetz über das Kreditwesen)
[214] Anning, Paul, Lorna Brazell, Stuart Hoegner, Mark Brailsford, Jerry Brito, Mattew J. Cleary, Jillian Friedman, Michael Taylor, Ryan J. Straus and Christoph-Nikolaus Von Unruh. The Law of Bitcoin, iUniverse, 2015: p.87.
[215] Section 1 (1a), no 4a of the Banking Act (Gesetz über das Kreditwesen)

sale of cryptocurrencies on a continuous basis, on its own account, against its own proprietary capital, at prices defined by itself on an organized market or on a multilateral trading system will also be considered a financial services institution. If a business is limited to exchanging cryptocurrencies to fiat and engages in this activity on a continuous basis, the business will also be categorized as a financial services institution in accordance with section 1(1a) no 4b of the Banking Act.[216]

Cryptocurrencies cannot be defined as electronic money under section 1a(3) of the Payment Services Oversight Act, according to which electronic money is defined as the monetary value represented by a claim on the issuer that is stored on an electronic device. However, cryptocurrencies do not represent a claim on any issuer, so they do not meet the requirements of electronic money. According to section 2(1) of the Securities Trading Act, securities are shares in companies or debt securities. Debt securities arise when one promising something related to that security. In Germany, cryptocurrencies cannot be interpreted as securities, because no one promises anything.[217]

According to Section 90 of the German Civil Code, only corporeal objects are things as defined by law.[218] In other words, an only physical object which has fixed dimensions can be defined as a thing. As a result, cryptocurrencies cannot be qualified as things under this definition, because they are only digital and do not have fixed dimensions. Cryptocurrencies also cannot be considered to be a right. Only rights explicitly recognized by law can be identified as rights.[219] Another category of property is immaterial goods (for example, ideas, inventions) which can be defined as goods that are not things and yet have monetary or non-monetary value. However, cryptocurrencies are not original personal creations, as a result, according to section 2(2) of the Copyright Act, they cannot be protected. Only the source code and software of a cryptocurrency might be protected by the copyright law, but not the currency unit.[220] According to the article 14(1) of the Basic, Law property means a valuable and legal asset that is tangible or intangible and belongs to one person. As a result, cryptocurrencies may be defined as a property with associated rights because other people are willing to pay to receive it. Contracts involving cryptocurrency will usually qualify as contracts to purchase rights (section 453 of the Civil Code) or as exchange contracts (section 480 of the Civil Code).[221] In February 2018, German Minister of Finance issued a guidance on tax treatment of virtual currency. According to the

[216] Anning, Paul, Lorna Brazell, Stuart Hoegner, Mark Brailsford, Jerry Brito, Mattew J. Cleary, Jillian Friedman, Michael Taylor, Ryan J. Straus and Christoph-Nikolaus Von Unruh. The Law of Bitcoin, iUniverse, 2015: p.95.
[217] Ibid., p.89.
[218] Section 90 of the German Civil Code BGB
[219] Anning, Paul, Lorna Brazell, Stuart Hoegner, Mark Brailsford, Jerry Brito, Mattew J. Cleary, Jillian Friedman, Michael Taylor, Ryan J. Straus and Christoph-Nikolaus Von Unruh. The Law of Bitcoin, iUniverse, 2015: p.115.
[220] Ibid., p.116.
[221] Ibid., p.86.

guidance, virtual currency should be treated as the equivalent to legal tender for tax purposes.

According to the BaFin, those buying and selling virtual currencies commercially in their own name for the account of others carry out principal broking services which are subject to authorisation. Examples of the broking services are the following: the platform does not act as representative of the participants but rather in its own name; the platform is obliged to account to the participants for the execution of transactions and to transfer acquired virtual currencies; the individual participants are authorised to give instructions to the platforms until the realisation of the orders by setting the number and price of the transactions etc. In case, if there is no principal broking services are carried out by platforms, they may instead be operating a multilateral trading facility. This brings together multiple third-party buying and selling interests in financial instruments.[222] Also, according to BaFin cryptocurrency exchanges which propose the possibility to exchange virtual currencies to fiat money and vice versa, need authorization,

Bank of Lithuania defined virtual currency as ungoverned and unregulated digital money, which may be used as a means of payment, but is issued into circulation and guaranteed by an institution other than the central bank.[223] Thus, the Bank of Lithuania followed the position of the EBA in defining the virtual currency.

According to the "Position of the Bank of Lithuania on virtual currencies and initial coin offering" from October 10, 2017, financial market participants who provide financial services should not participate in activities with virtual currencies or provide services associated with them. Financial services include acceptance of deposits and other repayable funds; lending, leasing, financial mediation; investment, payment, insurance and other services. Activities associated with virtual currencies is not the provision of financial services, thus, such activity may be incompatible with legislation. Also, it was stated that financial market participants, should ensure separation of activities associated with virtual currencies and the financial services provision activity and ensure appropriate communication about the nature of provided services. Finally, according to the position of the Bank of Lithuania activities and services associated with virtual currencies pose a risk of money laundering and/or terrorist financing. Thus, financial market participants should take appropriate measures set forth in money laundering and terrorist financing prevention legislation to reduce and manage the risks.[224]

According to the interview with Marius Jurgilas, Member of the Board of the Bank of

[222] BaFin, German Federal Supervisory Authority, Virtual Currency, https://www.bafin.de/EN/Aufsicht/FinTech/VirtualCurrency/virtual_currency_node_en.html
[223] Bank of Lithuania position on virtual currencies and ICO. Accessed April 15, 2018, https://www.lb.lt/en/news/bank-of-lithuania-announces-its-position-on-virtual-currencies-and-ico
[224] Position of the Bank of Lithuania on virtual currencies and initial coin offering, approved by the Board of Bank of Lithuania at the meeting of 10 October 2017. Accessed April 15, 2018, https://www.lb.lt/uploads/documents/files/Pozicijos%20del%20virtualiu%20valiutu%20ir%20VV%20zetonu%20platinimo%20EN.pdf

Lithuania, the following points can be defined. Marius Jurgilas said that the existence of cryptocurrency cannot be denied and the Bank of Lithuania follows the position of the EBA according to which cryptocurrency possess consumer risks. Bank of Lithuania warns the public about the risks and if you deal in cryptocurrencies you assume all responsibility because it is the unregulated and unsupervised area. Marius Jurgilas mentioned that increasingly more people get involved in that. However, the Bank of Lithuania is not ready to regulate cryptocurrencies because first of all, it is necessary to understand how they work.

In January 2018 the French minister of the economy, Bruno Le Maire, has announced the creation of a working group to develop cryptocurrency regulation. According to his speech, the working group will be responsible for proposing guidelines and drafting a framework on cryptocurrency regulations.[225] On December 4, 2017, the financial authority of France (Autorité des marchés financiers) published its position on cryptocurrency. According to this position Bitcoin is one of the speculative assets, sometimes wrongly referred to as virtual currencies or cryptocurrencies, that currently exist worldwide. It is traded online and does not exist as a physical coin or banknote. Bitcoins are not considered as financial instruments as the law stands, so "crypto" assets do not fall within the scope of direct supervision of the Autorité des marchés financiers. They cannot be classified as currencies or considered as a means of payment in the legal sense of the term. They are therefore not subject to the regulatory framework for means of payment.[226] On February 22, 2018, the Autorité des marchés financiers conclude that a cash-settled cryptocurrency contract may qualify as a derivative, irrespective of the legal qualification of a cryptocurrency. As a result, online platforms which offer cryptocurrency derivatives fall within the scope of MiFID 2 and must, therefore, comply with the authorisation, conduct of business rules, and the European Market Infrastructure Regulation trade reporting obligation to a trade repository. Above all, these products are subject to the provisions of the Sapin 2 law, and notably the ban of advertisements for certain financial contracts.[227]

It is worth to mention that on April 28, 2016, the French government passed a new ruling (No 2016-520) authorizing the use of blockchain technology for the issuance and the recording of transfers of mini-bonds. According to the ruling, the blockchain is defined as a

[225] Sundararajan, Sujha. Coindesk. France creates working group for cryptocurrency regulation, January 16, 2018. Accessed April 15, 2018, https://www.coindesk.com/france-creates-working-group-for-cryptocurrency-regulation/
[226] Autorité des marchés financiers, December 4, 2017. News releases AMF.
Buying Bitcoin: the AMF and the ACPR issue a warning to savers. Accessed April 15, 2018, http://www.amf-france.org/en_US/Actualites/Communiques-de-presse/AMF/annee-2017?docId=workspace%3A%2F%2FSpacesStore%2Fc2dfeaab-35c0-4fdf-9a1b-d4601eff2097
[227] Autorité des marchés financiers, February 22. News releases AMF. The AMF considers that the offer of cryptocurrency derivatives requires authorisation and that it is prohibited to advertise such offer via electronic means. Accessed April 15, 2018, http://www.amf-france.org/en_US/Actualites/Communiques-de-presse/AMF/annee-2018?docId=workspace%3A%2F%2FSpacesStore%2Fa225bf1d-de35-4f58-89e3-f03cb7e9e551

shared electronic recording system allowing for authentication.[228] On December 8, 2017, by the French government was made the second step towards the idea to widespread the blockchain technology. According to the new ruling (No 2017-1674), there will be a possibility of listing financial securities on a blockchain.[229] As a result, it will enable banks and fintech firms to establish blockchain platforms for unlisted securities trading. To sum it up, even if the future development of cryptocurrencies is unclear, states see a big potential in the blockchain technology and approve the promotion of the use of it.

Also, the French financial market authority decreed that anyone wanting to operate a trading platform for virtual currencies in France must apply for official authorisation as a payment service provider (prestataire de services de paiement) and that the platform must settle incoming and outgoing payments connected with its activities only via licensed financial service providers.[230] According to the position of the Banque de France from March 2018, the conversion of crypto-assets into fiat currency by internet platforms which fulfill the role of intermediary between buyers and sellers shall be considered as a payment service and require an authorization.[231] Moreover, the Banque de France suggested that the regulation of cryptocurrency service providers can be supplemented by a limitation of the possibility of banks, asset management firms, and insurers etc. to be engaged into activities with cryptocurrencies (for example, to ban deposits and loans in crypto-assets). Also, it was stated that because of the internet-based and dematerialized nature of this technology, which promotes the provision of cross-border services, the domestic regulation will not be able to fully mitigate all possible risks. As a result, the central bankers think about the necessity of regulation on the international level.[232]

The Central Bank of Estonia, the Estonian Financial Supervision Authority and the Ministry of Finance have stated that Bitcoin is not legal tender, but an alternative means of payment.[233] According to the section 3, subsection 9 of the new version of the Estonian Money Laundering and Terrorist Financing Prevention Act (from 27th of November 2017) virtual

[228] Ordonnance n° 2016-520 du 28 avril 2016 relative aux bons de caisse. Accessed April 15, 2018, https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000032465520&categorieLien=id
[229] Ordonnance n° 2017-1674 du 8 décembre 2017 relative à l'utilisation d'un dispositif d'enregistrement électronique partagé pour la représentation et la transmission de titres financiers. Accessed April 15, 2018, https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000036171908
[230] Switzerland's Federal Council report on virtual currencies in response to the Schwaab (13.3687) and Weibel (13.4070) postulates, June 25, 2014, p.23. Accessed April 15, 2018, https://www.news.admin.ch/NSBSubscriber/message/attachments/35355.pdf
[231] Banque de France, The emergence of bitcoin and other crypto-assets: challenges, risks and outlook. Focus, No 16-5 March 2018, p. 5
[232] Banque de France, The emergence of bitcoin and other crypto-assets: challenges, risks and outlook. Focus, No 16-5 March 2018, p. 5
[233] European Central Bank, Virtual Currency Schemes – A Further Analysis (February 2015): p.34. Accessed April 15, 2018, https://www.ecb.europa.eu/pub/pdf/other/virtualcurre ncyschemesen.pdf

currency means a value represented in the digital form, which is digitally transferable, preservable or tradable and which natural persons or legal persons accept as a payment instrument, but that is not the legal tender of any country.[234] According to the section 70, subsection 1 (4) and (5) an undertaking is required to have authorisation for operating in providing services of exchanging a virtual currency against a fiat currency and providing a virtual currency wallet service.[235] In accordance with section 3, subsection 10 virtual currency wallet service means a service in the framework of which keys are generated for customers or customers' encrypted keys are kept, which can be used for keeping, storing and transferring virtual currencies.[236] Thus, in Estonia provision of services of the exchange of virtual currency and custodial wallet services requires authorization from the Financial Intelligence Unit. The ground of this is that Estonia amended AML law to list virtual currency exchange businesses among reporting entities.

In 23 of February 2018, Austria announced the intention to implement new regulations for the cryptocurrency. Austria will use as a model existing rules for the trading of gold and derivatives. The government plans to require cryptocurrency market participants to identify all trading parties and to disclose trades of €10,000 or more to the government financial intelligence unit. Austrian Finance Minister Hartwig Loeger suggested that the EU shall implement cryptocurrency regulation. The Austrian Financial Market Authority Board also welcomed the move by Finance Minister Hartwig Loger to subject cryptocurrencies such as Bitcoin to regulation and supervision.[237]

[234] Section 3, subsection 9 of the Estonian Money Laundering and Terrorist Financing Prevention Act, passed 26.10.2017
[235] Section 70, subsection 1 (4) and (5) of the Money Laundering and Terrorist Financing Prevention Act, passed 26.10.2017
[236] Section 3, subsection 10 of the Money Laundering and Terrorist Financing Prevention Act, passed 26.10.2017
[237] Milano, Annaliese. Coindesk. Austria planning new regulations for cryptocurrency, ICOs. Accessed April 15, 2018, https://www.coindesk.com/austria-cryptocurrency-regulation-icos-gold-derivatives/

4. POSSIBLE MODELS OF CRYPTOCURRENCY REGULATION

4.1 A Legal Perspective on Current Regulatory Trends Worldwide

States around the world have various positions on how to define cryptocurrencies, as a result, there is no unified view regarding their legal status. The world is divided by approaches by naming cryptocurrency as a commodity, unit of account, means of payment, intangible digital asset, a separate type of securities, investment or financial asset. Policymakers and legislators have difficulties to place cryptocurrencies into the existing legal framework. On the one hand, a lot of states have an active position and thinking about the creation of new laws. On the other hand, some states remain silent and not saying anything how they are going to treat this technology.

Cryptocurrencies do not fit within the existing regulatory models, because of their decentralized nature. Issuers or payment processors are usually subjects of regulation, but cryptocurrencies eliminate the role of a central intermediary because of the use of distributed ledger technology. In such circumstances it is not obvious whom to regulate, there is no company or other entity that can be targeted. Some countries have decided to ban the use of cryptocurrency; other countries do not adopt a formal position yet; a number of countries have addressed risks, in particular, by issuing consumer warnings or by amending and clarifying the interpretations of existing laws and regulations.[238] It is hard to impose regulations on the entire system because it is a decentralized global network. However, exchanges, cryptocurrency wallet providers, and merchants are much easier to supervise. Without the regulation, users do not benefit from legal protection and are more exposed to risks that regulation usually helps to mitigate. Users can be in the situation when they will confront unexpected legal requirements that render contracts illegal or unenforceable, because of the lack of information regarding legal obligations for each entity.

The World Economic Forum in Davos (2018) showed that for the first time the economic forum has turned not just only into a technology forum, but also into a forum with a significant focus on the blockchain and cryptocurrencies. In March 2018 leaders of G20 had the meeting in Buenos Aires and among the topics also were cryptocurrencies and blockchain technology. G20 leaders agreed that until June they will intensively discuss regulatory issues and in July will follow the real implementation of the regulatory framework.

According to the position of the International Monetary Fund, when establishing a legal framework for cryptocurrencies, the regulators either impose regulations on market participants

[238] International Monetary Fund Staff discussion note, Virtual Currencies and Beyond: Initial Considerations, January 2016: p.25.

that provide an interface with the broader economy or take the decision to restrict the ability of regulated entities, such as banks, to interact with virtual currencies and virtual currency market participants.[239]

In case if the State decided to prohibit cryptocurrency, the government would lose the opportunity to regulate intermediaries in the cryptocurrency economy, such as exchangers and money transmitters. The government's interest in preventing money laundering and terrorist financing would be better advanced, not by prohibiting the technology, but by requiring intermediaries to keep records and report suspicious activities, just as traditional financial institutions do. It seems that the majority of states will not prohibit this technology, and by prohibiting cryptocurrency, the state could put itself at an international competitive disadvantage in the development.[240] In the discussion about the regulatory framework shall be involved not only regulators and policymakers, but also consumers, merchants, advocates of cryptocurrency, bank representatives, digital currency firms etc. in order to get a better understanding about possible models of regulation.

Submissions from the banking sector highlighted a lack of regulation as a key reason for hesitation among banks to take on digital currency firms as customers. The majority of digital currency firms, consultancies and academics called for such regulation in order to avoid possible risks. Most banks and payment scheme companies also recommended regulation, in particular, highlighted the need for clear guidance on their obligations under anti-money laundering and counter terrorist financing rules.[241]

The regulation shall prevent cryptocurrencies from becoming a vehicle for criminal activity, however, shall not prevent from achieving their positive potential. One of the most important advantages for users of the cryptocurrency is its anonymity. On the one hand, because of anonymity, many users are more confident in cryptocurrencies than in real currencies. On the other hand, in the case of theft or hack users feel helpless and many of them try to turn to legal authorities for remedy. As a result, the authorities are interested in regulating a system which provides possibilities of fraud for its users and possibilities of money laundering.[242]

One more reason why governments pay attention at cryptocurrency is that untraceable digital cash defeats capital controls. Capital controls can be defined as rules or laws the main aim of which is to limit the flow of capital into or out of the country and try to regulate these flows. In case of cryptocurrency, someone can buy it with capital inside the country and after that

[239] Nica, Octavian , Karolina Piotrowska and Klaus Reiner Schenk-Hoppé. Cryptocurrencies: Economic benefits and risks, October 26, 2017: p.36.
[240] Brito, Jerry and Andrea O'Sullivan. Bitcoin: a primer for policymakers, 3 of May 2016: p. 67.
[241] HM Treasury, Digital currencies: response to the call for information, March 2015: p.12.
[242] Nica, Octavian, Karolina Piotrowska, Klaus Reiner Schenk-Hoppé. Cryptocurrencies: Economic benefits and risks, October 26, 2017: p.31.

transmit it outside the country electronically and then trade them for capital or wealth outside the country. Thus, the capital will move from inside to outside or vice versa, as a result, it is very problematic for the government to control wealth in this electronic form.[243] Countries want to know who is transferring what to whom and where that money came from. The goal of the anti-money-laundering policy is to prevent large flows of money from crossing borders or moving between the underground and legitimate economy without being detected. One of the essential countermeasures against money laundering is Know Your Customer laws.[244]

In the USA government noticed that cryptocurrency, in particularly, Bitcoin, was large enough to pose a risk of money laundering. Thus, it was considered as a threat to the banking system, economic activities, and financial stability. In the USA, there are the federal and state law levels of regulations of relations involving cryptocurrencies. In case if the law of state requires, Bitcoin businesses shall obtain licenses. For example, in 2015 the New York State Department of Financial Services started to regulate cryptocurrency business activities by introducing BitLicense, a virtual currency business activity license.[245] California was the first US state to enact a regulation authorizing the use of cryptocurrencies. The law, which entered into force in early 2015, enables corporations, associations, and individuals in California to be involved in the turnover of money other than the US official currency.[246] In Washington State, digital currencies are defined as a medium for transmitting money under the Uniform Money Services Act.[247] According to this Act, businesses are required to obtain a Washington Money Transmitter License to transmit money to Washington-based individuals. Also, this requirement should be fulfilled by exchanges providing services for the exchange of fiat money for cryptocurrencies, and vice versa, and those exchanging digital currencies only. Individuals carrying out cryptocurrency transactions with other individuals are not required to obtain licenses.[248]

In March 2013 the Financial Crimes Enforcement Network issued guidelines defining the businesses that had to be registered as money transmitters with the Financial Crimes Enforcement Network, in particular, the companies that transmit, trade and exchange cryptocurrencies. Companies registered as money transmitters are required to comply with anti-

[243] Narayanan, A., Bonneau, J., Felten, E., Miller A., S. Goldfeder S., Bitcoin and Cryptocurrency Technologies. Princeton University Press, 2016: p. 204.
[244] Ibid., p. 207.
[245] New York Codes, Rules and Regulations. Virtual Currencies // New York State Department of Financial Services. Accessed April 15, 2018, https://www.dfs.ny.gov/legal/regulations/adoptions/dfsp200t.pdf
[246] Likhuta, Vlad, Anatoliy Kaplan, Dima Gadomsky Kyrylo Korol Oleh Heletkanych Orest Havryliak and Tetiana Otter. Bitcoin Regulation: Global Impact, National Lawmaking, February 2017: p.72.
[247] Virtual Currency Regulation, Washington State Department of Financial Institutions. Accessed April 15, 2018, http://www.dfi.wa.gov/documents/money-transmitters/virtual-currency-regulation.pdf
[248] Likhuta, Vlad, Anatoliy Kaplan, Dima Gadomsky Kyrylo Korol Oleh Heletkanych Orest Havryliak and Tetiana Otter. Bitcoin Regulation: Global Impact, National Lawmaking, February 2017: p.73.

money laundering legislation and Know Your Customer rules. Therefore, cryptocurrency companies are required to identify users before carrying out any transactions. If a company suspects that a user is involved in illicit activities, this company is required to report to the competent authorities.[249] In the USA there is a different determination of virtual currency by federal agencies. For example, the The U.S. Commodity Futures Trading Commission defined virtual currency as a commodity; the Internal Revenue Service said that it is property, and the Financial Crimes Enforcement Network defined virtual currencies as a medium of exchange.

In Russian Federation, the Finance Ministry published a draft law on the regulation of digital assets on January 25, 2018. This draft law, among other things, defines cryptocurrencies, including bitcoins, tokens, mining, and ICOs. Cryptocurrencies and tokens are considered as types of a digital financial asset. Thus, the draft law states that cryptocurrencies are not an authorized means of payment, as a result, they cannot be defined as money. Mining of cryptocurrency is defined as an entrepreneurial activity, aimed at creating cryptocurrency and/or validating transactions in exchange for payment in cryptocurrency. Consequently, miners shall be registered as self-employed persons or incorporated as a legal entity in order to offer services in exchange for the cryptocurrency. According to the draft law, trading of cryptocurrencies will be permitted only on licensed exchanges of digital financial assets or trading through platforms that have stock exchange license.[250] To sum it up, the government wants to control the cryptocurrency with a securities market and all cryptocurrency transactions should be under state control by being provided through the licensed operator.

Canada is one of the most progressive countries in terms of adopting cryptocurrencies in their regulatory framework. It has been the first country in the world which established a tax on virtual currencies. In 2014 Canada's Parliament passed a bill amending anti-money laundering and terrorism-financing laws in order to apply to persons using virtual currencies. According to that bill cryptocurrency exchanges are required to register with the Financial Transactions and Reports Analysis Centre of Canada (FINTRAC) as money service businesses; companies dealing with cryptocurrencies are subject to anti-money laundering regulations and must report all suspicious transactions to the regulator, verify user identities, etc; banks may not open accounts for cryptocurrency exchanges that failed to register with FINTRAC. The act applies to bitcoin businesses incorporated in Canada, and as well those services in Canada, but incorporated in foreign jurisdictions.[251]

[249] Ibid., p.74.
[250] The Russian Federation draft law on the regulation of digital assets, 25 of June 2018. Accessed April 15, 2018, https://www.minfin.ru/ru/document/?id_4=121810&page_id=2104&popup=Y&area_id=4
[251] Likhuta, Vlad, Anatoliy Kaplan, Dima Gadomsky Kyrylo Korol Oleh Heletkanych Orest Havryliak and Tetiana Otter. Bitcoin Regulation: Global Impact, National Lawmaking, February 2017: p.45

In April 2017, the Japanese government has started recognizing bitcoin as a legal method of payment, exchanges are governed by anti-money laundering and know-your-customer rules and bitcoin are classified as the prepaid payment instrument.[252] As a result, Japan through the favorable regulation of the cryptocurrency increased the country's GDP by 0.3%. Thus, in Japan virtual currency defined as a legal means of payment, and virtual currency exchanges fall under licensure requirements. There are two acts, in particular, "Act on Settlement of Funds" and "Act on Prevention of Transfer of Criminal Proceeds" which were amended on April 1, 2018, providing the regulatory landscape for virtual currency businesses. China banned all crypto-to-fiat exchanges, but despite such strict position against cryptocurrencies, the government created Digital Currency Research Institute within People's Bank of China.

In the UK bitcoin is de facto treated as private money, because VAT is not charged when exchanging bitcoin for pound sterling but on the commission instead. In 2014 the Bank of England made the official statement according to which digital currencies do not pose a material risk to monetary or financial stability in the United Kingdom.[253] On April 6, 2018, the Financial Conduct Authority stated that cryptocurrency derivatives are capable of being financial instruments under the Markets in Financial Instruments Directive II (MIFID II), although Financial Conduct Authority does not consider cryptocurrencies to be currencies or commodities for regulatory purposes under MiFID II. Firms conducting regulated activities in cryptocurrency derivatives must, therefore, comply with all applicable rules in the Financial Conduct Authority's Handbook and any relevant provisions in directly applicable EU regulations.[254] They specifically mentioned products such as cryptocurrency futures – a derivative contract in which each party agrees to exchange cryptocurrency at a future date and at a price agreed by both parties; cryptocurrency contracts for differences (CFDs) – a cash-settled derivative contract in which the parties to the contract seek to secure a profit or avoid a loss by agreeing to exchange the difference in price between the value of the cryptocurrency CFD contract at its outset and at its termination; and cryptocurrency options – a contract which grants the beneficiary the right to acquire or dispose of cryptocurrencies.[255] In February 2018, UK Parliament's Treasury Committee published digital currencies inquiry. Three months before in November 2017, HM Treasury representative stated that the UK wants to increase regulation of Bitcoin and other digital currencies.

[252] Nica, Octavian, Karolina Piotrowska and Klaus Reiner Schenk-Hoppé. Cryptocurrencies: Economic benefits and risks, October 26, 2017: p.33.
[253]Ibid., p.32.
[254] Financial Conduct Authority, April 6, 2018. FCA statement on the requirement for firms offering cryptocurrency derivatives to be authorized. Accessed April 15, 2018, https://www.fca.org.uk/news/statements/cryptocurrency-derivatives
[255] Ibid.

Thailand was the first state in the world to ban the sale and purchase of bitcoins or products using this payment system. The main motivation of the ban was the lack of laws capable of dealing with the system. In 2013 People's Bank of China has issued a warning according to which country's financial institutions should not trade bitcoin. In the beginning of 2017 Chinese government instead of banning, imposed regulations on bitcoin exchanges. However, in September 2017 the government returned to its previous position.[256] On March 9, 2018, the representatives of People's Bank of China made a statement that the Bank does not recognize bitcoin and other cryptocurrencies as a means of payment and believes that too fast distribution of such unreliable financial products can lead to the most unpredictable negative consequences on the financial market.[257]

According to the statement of the Reserve Bank of Australia from February 28, 2018, the Bank has been monitoring closely developments in the market of cryptocurrency.[258] According to the statement, the use of ctyptocurrency as an actual method of payment remains relatively limited in Australia. Digital currencies do not currently appear to raise any urgent regulatory issues. Also, was mentioned that distributed and cross-border nature of digital currencies like bitcoin means that regulation of the core protocols of these systems will be not effective.[259] In South Korea, from January 30, 2018, all domestic virtual currency exchanges must prohibit anonymous trading account and link them to real-name bank accounts. At the same time, government officials considering specific licence rules. In Singapore the regulator has taken "wait-and-see" position regarding cryptocurrency regulation, however, local banks continue to close bank accounts opened for virtual currency businesses.

On December 21, 2017, the President of the Republic of Belarus signed the "Digital economy development ordinance" by which legalised cryptocurrencies, ICOs, and smart contracts.[260] The decree (ordinance) makes Belarus one of the world's leading countries in terms of cryptocurrency development. The new decree allows smart contracts, iCOs, bitcoin and other digital currencies and their circulation in everyday life in Belarus. Individuals and entities will be able to mine, store, buy, donate, bequeath, bestow, monetize and also exchange cryptocurrencies

[256] Nica, Octavian, Karolina Piotrowska andKlaus Reiner Schenk-Hoppé. Cryptocurrencies: Economic benefits and risks, October 26, 2017: p.34.
[257] Forklog. The Chinese authorities will strengthen the regulation of the market of cryptocurrencies, March 29, 2018. Accessed April 15, 2018, https://forklog.com/tsentrobank-kitaya-vystupil-protiv-ispolzovaniya-kriptovalyut-v-kachestve-platezhnogo-sredstva/
[258] Reserve Bank of Australia, Media Release, February 2018 Meeting. Accessed April 15, 2018, http://www.rba.gov.au/media-releases/2018/mr-18-04.html
[259] Reserve Bank of Australia, Speech Opening Statement to the Inquiry into Taxpayer Engagement with the Tax System, October 27, 2017. Accessed April 15, 2018, https://www.rba.gov.au/speeches/2017/sp-so-2017-10-27.html
[260] Belarus' Digital economy development ordinance, December 21, 2017, No 8. Accessed April 15, 2018, http://pravo.by/document/?guid=12551&p0=Pd1700008&p1=1&p5=0

for Belarusian rubles, foreign currency or electronic money.[261]

Today, many countries around the world are competing to ensure that business related to the blockchain, cryptocurrencies, and ICOs will develop in their jurisdiction, so they are trying to create special legislation in order to become more attractive to investors. Countries that will prohibit activities related to cryptocurrency can miss the chance to become world economic leaders. The state will take the right position if it will monitor the situation, but not issue a ban. On the one side, there is no necessity to immediately enact a law. On the other side, states shall express their official position about the legal status of the cryptocurrency.

4.2 Framework for the Regulation of Cryptocurrency: Current Issues and Future Directions

One of the main functions of law is the coordination of social relations. Whether the state shall coordinate public relations within the framework of the cryptocurrency or not? The answer is yes. It is worth to develop a regulation in order to clarify how cryptocurrencies should be understood within a particular legal system. Also, one of the priorities of the policymakers and legislators shall be the removal from the legislation of old norms that will hamper development. There is a possibility to define the status of the cryptocurrency at the level of explanatory notes or official positions. However, the leading position of the country on a worldwide scale in the adoption of these new technologies can only come with the adoption of a new law.

Cryptocurrency gained significant publicity through the Silk Road and Mt. Gox fiascos, where cryptocurrency (mostly Bitcoins) were either exchanged for drugs or allegedly stolen from an online exchange.[262] Some scholars, such as Omri Marian, support the position that one of the possible variants of the cryptocurrency framework can include the following points. Firstly, in case of the illicit activity denominated in cryptocurrencies, the government can impose stricter sanctions than if the same gains will be denominated in fiat currencies. However, there is a normative difficulty with imposing different criminal sanctions on functionally identical offences only because the gains are denominated in different units of account.[263] Secondly, governments can require merchants to accept cryptocurrency only if another party of the transaction identified herself as the owner of the cryptocurrency address used in that transaction. In other words, to

[261] Kulakevich Tatsiana, January 25, 2018. Why would authoritarian Belarus liberalize cryptocurrencies? The Washington Post. Accessed April 15, 2018, https://www.washingtonpost.com/news/monkey-cage/wp/2018/01/25/why-would-authoritarian-belarus-liberalize-cryptocurrencies/?noredirect=on&utm_term=.9573123d8beb

[262] Bierer, Timothy. Hashing it out: problems and solutions concerning cryptocurrency used as Article 9 collateral, Journal of Law, Technology & the Internet ,Vol. 7, 2016: p. 84.

[263] Marian, Omri. A Conceptual Framework for the Regulation of Cryptocurrencies, 82 U. Chi. L. Rev. Dialogue 53, 68 (2015-2016): p. 53.

prohibit the use of cryptocurrency that had been transferred without adequate disclosure. This could be achieved by requiring purchasers to sign transactions receipts or another possible option can be the use of a private identification number like it is in credit and debit card transactions. As a result, instead of providing information to a credit card company, the user would be allowed to provide information directly to the merchant.[264]

However, the abovementioned framework for the regulation has one important drawback. Individuals can create different addresses for criminal and legitimate activities because there are no limits on a number of cryptocurrency addresses per one person. As a result, they can use one wallet for the illegal activity and another wallet for legal one. But in that case, the use of the cryptocurrency in the wallet for illegal activities will be diminished and it can be used only to facilitate other criminal behavior. In order to use them in the open market, cryptocurrencies would have to be moved from hidden to known addresses, at which point the owner of the hidden address could be traced using the public ledger.[265]

Also, among regulatory decisions can be to impose regulation not on the users, miners or software developers, but on the exchanges. Regulation may require exchanges to register and collect identifying information on users exchanging cryptocurrency. However, a regulation that discourages users from adopting cryptocurrency, miners from processing blocks of transactions, or software developers from offering new programs to track, store, or transfer cryptocurrency likely will impose large costs and shall be avoided.[266] Technological change is the primary driver of economic growth. New technologies are often disruptive, but entrepreneurs often react by making improvements to the underlying technology or developing ancillary products and services. Regulators should encourage technological progress by committing to an environment of permissionless innovation.[267]

Some lawyers consider the possibility of self-regulation. They predict that national self-regulation organizations will emerge, such as already existing Association of Cryptocurrency Enterprises and Startups, Singapore or Korean Blockchain Industry Association in South Korea, both of whom have established codes of conduct initiatives. National or regional self-regulatory bodies shall develop an effective collaboration with regulators. After the creation of national self-regulatory bodies shall be created an international self-regulatory body for cryptocurrency market participants, taking as an example the approach of existing institutions such as

[264] Marian, Omri. A Conceptual Framework for the Regulation of Cryptocurrencies, 82 U. Chi. L. Rev. Dialogue 53, 68 (2015-2016): p. 62.
[265] Ibid., p. 65.
[266] William J. Luther. Regulating Bitcoin—On What Grounds?, Hester Peirce and Benjamin Klutsey, eds., Reframing Financial Regulation: Enhancing Stability and Protecting Consumers. Arlington, VA: Mercatus Center at George Mason University, 2016: p. 408.
[267] Ibid.

International Securities and Derivatives Association. The self-regulatory bodies' codes of conduct can help regulators to develop market standards.[268]

The legal analysis has determined such a problem as the lack of clarity concerning the applicability of taxation rules to cryptocurrency transactions.[269] The solution of the taxation problem can be that merchants shall accept cryptocurrency as a payment only on conditions that it will be subsequently converted into traditional currency with the following placement of the funds on the merchant's bank account. The tax amount to be paid should be calculated from these funds. Merchants also shall be obliged to implement know-your-customer and anti-money laundering policies.[270]

The ban on cryptocurrency is usually introduced not by countries with high GDP per capita, but by countries with an unstable economic situation. One of the reasons is that states shall have appropriate government bodies that are ready to deal with new technologies. Some regulators are willing to prohibit cryptocurrencies as something new and difficult to control. Others want to avoid the risks of cryptocurrency volatility, of their rapid growth, the possibility of speculative activity, financing of terrorism, money laundering. The decision to impose a complete ban can lead to the destruction of innovative projects in this field and transfer them to more transparent regulatory jurisdictions. Policymakers and regulators may take into account that it will be impossible to regulate, for example, the Bitcoin network, because of its decentralized nature. However, regulators can adopt legislation for cryptocurrency stakeholders as was described in this Chapter.

All cryptocurrencies and bitcoin, in particular, are a complex phenomenon. Cryptocurrency shall not be defined as a legal tender, because if the state recognizes cryptocurrency as a legal tender, consequently the bank can put it on the balance as money. Nowadays, the turnover of all the cryptocurrency is about 200 billion. Thus, 200 billion shall be taken from somewhere in order to be introduced into the system. The legal regulation shall be considered in three aspects, namely in terms of the financial law, tax law and anti-money laundering. There is no country in the world that has a separate law on the regulation of the cryptocurrency. Thus, the cryptocurrency is a large-scale project, and states cannot simply take and shut themselves off from it.

There are also supporters of the view that any regulation only harms the development of

[268] Keidar, Roy and Stephane Blemus. Cryptocurrencies and Market Abuse Risks: It's time for self-regulation, February 2018: p.3.
[269] Shcherbak, Sergii. How should Bitcoin be regulated?, European Journal of Legal Studies, 2014, Vol. 7, No. 1, 2014: p. 88. Accessed April 15, 2018, http://cadmus.eui.eu/bitstream/handle/1814/32273/183UK.pdf?sequence=1Abstract:The
[270] Ibid., p.89

emerging technology. Among facts in support for non-regulation is the introduction of BitLicense in the New York State when almost all participants of the cryptocurrency market left it. However, that does not lead to the conclusion that there is no need for regulation. The purpose of the regulatory framework for cryptocurrency is the protection of consumer rights, prevention of money laundering and terrorist financing, financial monitoring, taxation and declaration of income.

CONCLUSIONS

1. There is an absence of common opinion regarding the legal status of cryptocurrencies. It is difficult to regulate cryptocurrencies because this technology has the decentralized nature, it is based on the peer-to-peer network and operates according to a protocol that does not depend on one person. The establishment by the regulators of requirements for the functioning of the network will be impractical because the only way to amend the protocol is the consensus of the majority of the network. However, it is possible to regulate and control the activity and behavior of cryptocurrency market participants, such as cryptocurrency exchanges, wallet providers, merchants, miners, brokers etc.

2. Cryptocurrencies do not have a legal tender status in any country yet, also they cannot be considered as a fiat currency, foreign currency, and electronic money. Cryptocurrencies have some features of the currency, commodity, payment network, intangible digital asset, a separate type of securities, investment or financial asset. However, there is no unified view regarding cryptocurrencies' legal status. A lot of states take the position that they shall learn more about this new technology and look what will happen in the international area and what the position of the other states will be. It is obvious that every state and governmental authority understand that the cryptocurrency already exists, and most governments support the position that the state should stimulate the development of technologies, exercise legislative support, and determine the status of the cryptocurrency.

3. Some states already decided about the status of cryptocurrency, because the defining of the legal status of any phenomenon is a step towards the creation of a progressive and prosperous market. However, nowadays, there is no unified position how to regulate cryptocurrency, even within the EU, as a result in every jurisdiction different rules are applicable. EU Member States try to monitor what is happening around the globe in the cryptocurrency economy. A lot of states are supportive to the innovation but want to implement it in a risk control maner. Majority of states already made first steps towards cryptocurrency regulation by issuing explanatory notes or by amending legislation. Most of the EU Member States agree that the regulatory process shall include cooperation between the public and private sectors in order to achieve a consensus and to develop the most favorable regulatory policy. Some states have decided to create groups of officials, private sector representatives, and scientists, who are working together to review the legislation and identify what shall be done to increase legal certainty. There are also initiatives on self-regulation when not only governments but also private structures take part in the regulatory process by recommending possible models of the legal framework.

The absence of cryptocurrency regulation entails the increase of legal risks for the consumers, businesses, and governments. The legal framework establishes limits of what is permitted not only for cryptocurrency market participants but also for the state and its governmental agencies. Thus, the introduction of legal framework should be of high interest, because it may stimulate the economic growth of the state and reduce uncertainty and possible risks.

4. The majority of jurisdictions do not try to adopt the wide regulatory approach, in contrast, they want to understand the influence of cryptocurrency in each separate sector in order to propose the most suitable solution. States around the world started to think about the creation of the regulatory framework with the aim to develop the cryptocurrency market and allow the financial and intellectual capital to flow into their economy. Thus, after the adoption of a clear regulation the country can become the leader in the cryptocurrency economy, attract investment and as a result increase the quality of its citizens' live.

Results of the analysis showed that most of the regulators support the opinion that the regulatory framework shall be applicable to the cryptocurrency exchanges or to other participants of the cryptocurrency market, involved into the activities where cryptocurrency intersect with fiat currencies; or where no exchange services are provided, but the market participant performs the role of intermediary by storing, sending and/or receiving cryptocurrencies; traders of cryptocurrency for fiat and/or fiat for cryptocurrency; custodial wallet providers; cryptocurrency miners etc. Apart from the extending existing anti-money laundering and anti-terrorist financing rules to the cryptocurrency sector, the licensing is also considered as a very important tool which can be used to avoid possible risks, protect consumers, and financial sector itself. The license can be issued for the businesses which are engaged in the cryptocurrency transfer activity; cryptocurrency exchanges; custodial wallet providers; or any other business which provides cryptocurrency related services to the public. As a result, it shall be prohibited to conduct the abovementioned activities without obtaining the license.

RECOMMENDATIONS

1. It is necessary to specify the definition of “cryptocurrency” and “cryptocurrency exchange services” in order to provide participants of the cryptocurrency market with the clear understanding of the legal status of these terms. The absence of definition will lead to the legal uncertainty, speculations, volatility and to the increase of legal risks for consumers, businesses, and governments.

2. Adopt regulations to the cryptocurrency exchanges by enacting a new law regarding cryptocurrencies or by amending anti-money laundering and counter-terrorist financing laws. These legislative changes are necessary in order to impose obligatory requirements for cryptocurrency exchanges, such as verification and identification of customers; keeping customers’ identities for a specified period of time; reporting about suspicious transactions; and impose obligatory registration (licensing) for cryptocurrency exchange services, etc.

3. Take a focus on anti-money laundering and counter-terrorist financing legislation by extending its scope to the persons who conduct businesses related to cryptocurrency activities. The scope of national legislation shall cover not only those who located in the territory of the specific jurisdiction but also those who are located outside of it but provide cryptocurrency-related services to the local citizens.

4. To establish working groups or organizations of regulators, government officials, law enforcement, industry representatives, and scientists in order to discuss issues related to cryptocurrency economy and possible regulatory framework for it; possible risks of investing and transacting in cryptocurrencies; and address questions from the EU institutions, industry, consumers and governments throughout the world.

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ANNOTATION IN ENGLISH LANGUAGE

The main problem that is raised in this master thesis is the following one - is there a need to determine the legal status of the cryptocurrency at the legislative level? This research outlines main features of cryptocurrency and mechanism how it works, clarifies the notion of "cryptocurrency", and shows its interrelation with a real economy. The author also discusses legal aspects of cryptocurrency, makes analysis whether this new technology fit to the existing legal framework by analyzing existing national and European Union legislation. Comparative analysis of official positions, warnings, draft laws regarding cryptocurrency of different states around the globe, including European Union Member States, was made in order to outline different approaches of these states to the cryptocurrency economy and their attitude to the regulation. In the final chapter, the author outlines the necessity in the defining of the legal status of the cryptocurrency in order to provide clarity to consumers, businesses and governments and demonstrates main reasons in support for such regulatory actions.

ANNOTATION IN LITHUANIAN LANGUAGE

Pagrindinė problema, kuri yra iškelta baigiamajame magistro darbe - yra poreikis nustatyti kriptovaliutos teisinį statusą teisėkūros lygiu? Šis tyrimas apibrėžia pagrindinius kriptovaliutos bruožus, kaip veikia jos mechanizmas, paaiškinama "kriptovaliutos" sąvoka, ir atskleidžiamas tarpusavio ryšys su realiąja ekonomika. Autorė taip pat aptaria teisinius kriptovaliutos aspektus atlieka analizę, ar ši nauja technologija atitinka esamą teisinę sistemą, analizuojant esamus nacionalinius ir Europos Sąjungos teisės aktus. Lyginamoji analizė oficialių pozicijų, įspėjimų, įstatymų, susijusių su kriptovaliuta skirtingose valstybėse visame pasaulyje, įskaitant Europos Sąjungos valstybes nares, buvo padaryta siekiant atkleisti skirtingus šių valstybių požiūrius į kriptovaliutos ekonomiką ir į reguliavimą. Paskutiniame skyriuje autorius atskleidžiac būtinybę apibrėžti kriptovaliutos teisinį statusą, siekiant užtikrinti aiškumą vartotojams, įmonėms ir vyriausybėms ir parodo pagrindines priežastis, dėl kurių palaikomi tokie reguliavimo veiksmai.

SUMMARY IN ENGLISH LANGUAGE
CRYPTOCURRENCY: THE NEED FOR LEGAL REGULATION AND POSSIBLE MODELS

In this master thesis examined the concept of cryptocurrency and proposed practical recommendations regarding the question of necessity to determine the legal status of cryptocurrency whether by adopting the new law or by making amendments to the existing regulatory framework.

On the basis of theoretical analysis detected an absence of the common approach regarding the legal status of cryptocurrency and the need for its regulation. Justified that the creation of a regulation which will cover all the aspects of cryptocurrency usage will lead to the impossibility to implement it in a real life, because of its decentralized nature, peer-to-peer network, and protocol that does not depend from one person. Regulators can adopt legislation for cryptocurrency stakeholders. Outlined the opportunity of licensing of operations with cryptocurrency as one of the most common methods by which regulators can legalize the cryptocurrency. Anti-money laundering, Know Your Customer, counter-terrorist financing rules are also the way of establishing state control while, for example, a person is willing to exchange cryptocurrency to fiat in cryptocurrency exchanges.

Pointed out the possibility to define the legal status of cryptocurrency and adopt the legal framework for cryptocurrency-related activities. Outlined existing tendencies and approaches to the cryptocurrency regulation in the European Union, as well as in other major economies. Formulated and proposed recommendations regarding possible models of cryptocurrency regulation. The following recommendations have been formulated: to set up the definition of “cryptocurrency” and “cryptocurrency exchange services”; to pass a new law or amend the existing legal framework in order to impose the regulation on the cryptocurrency exchanges; extend the scope of anti-money laundering and counter-terrorist financing legislation by including regulatory requirements to businesses related to cryptocurrency activities; and also to establish working groups of regulators, government officials, law enforcement, industry representatives, and scientists in order to examine questions related to cryptocurrency economy and to propose possible models of cryptocurrency regulation.

Key words: *cryptocurrency; regulation; cryptocurrency exchange services; cryptocurrency stakeholders; analysis; technology; anti-money laundering; counter-terrorist financing.*

SUMMARY IN LITHUANIAN LANGUAGE
KRIPTOVALIUTOS: TEISINIO REGULIAVIMO POREIKIS IR GALIMI MODELIAI

Šiame magistro darbe nagrinėjama kriptovaliutos sąvoka ir siūlomos praktinės rekomendacijos dėl būtinybės nustatyti kriptovaliutos teisinį statusą, priimant naują įstatymą arba keičiant esamą reguliavimo sistemą.

Remiantis teorine analize nustatyta, kad nėra bendro požiūrio į kriptovaliutos teisinį statusą ir jo reguliavimo poreikį. Paaiškėjo, kad reglamento, kuris apima visus kriptovaliutos naudojimo aspektus, sukūrimas neleis jį įgyvendinti realiame gyvenime dėl savo decentralizuoto pobūdžio, tarpusavio tinklo ir protokolo, kuris nepriklauso nuo vieno asmens. Įstatymų leidėjai gali priimti teisės aktus, susijusius su kriptovaliutos dalyviais. Apibūdinta galimybė licencijuoti operacijas su kriptovaliuta, kaip vieną iš labiausiai paplitusių būdų, kuriais įstatymų leidėjai gali legalizuoti kriptovaliutą. Kova su pinigų plovimu, žinok savo klientą, kovos su terorizmu finansavimo taisyklės taip pat yra būdas nustatyti valstybės kontrolę, pavyzdžiui, kai asmuo nori keisti kriptovaliutą į kitą kriptovaliutą.

Nurodyta galimybė apibrėžti kriptovaliutos teisinį statusą ir priimti su krptovaliuta susijusią veiklos teisinę bazę. Apibūdintos esamos tendencijos ir kriptovaliutų reguliavimo tendencijos Europos Sąjungoje, taip pat kitose didelėse šalyse. Suformuluotos ir pasiūlytos rekomendacijos dėl galimų kriptovaliutos reguliavimo modelių. Suformuluotos šios rekomendacijos: nustatyti "kriptovaliutos" ir "kriptovaliutos keitimo" apibrėžimus; priimti naują įstatymą arba iš dalies pakeisti galiojančią teisinę sistemą, kad būtų įvestas reglamentas dėl kriptovaliutos keitimo; išplėsti kovos su pinigų plovimu ir kovos su terorizmu finansavimo teisės aktų taikymo sritį, įtraukti reguliavimo reikalavimus įmonėms, susijusioms su kriptovaliutos veikla; taip pat sukurti įstatymų leidėjų, vyriausybės pareigūnų, teisėsaugos, pramonės atstovų ir mokslininkų darbo grupes, kad būtų galima išnagrinėti klausimus, susijusius su kriptovaliutos ekonomika, ir pasiūlyti galimus kriptovaliutos reguliavimo modelius.

Raktiniai žodžiai: *kriptovaliuta; reguliavimas; kriptovaliutų keitimo paslaugos; kriptografijos valiutos dalyviai; analizė; technologija; pinigų plovimas; kovos su terorizmu finansavimas.*

HONESTY DECLARATION

16/05/2018

Vilnius

I, Pashko Tetiana, student of Mykolas Romeris University (hereinafter referred to University), Faculty of Law, Institute of Private Law, European and International Business Law study program, confirm that the Master thesis titled "Cryptocurrencies: the Need for Legal Regulation and Possible Models":

1. Is carried out independently and honestly;
2. Was not presented and defended in another educational institution in Lithuania or abroad;
3. Was written in respect of the academic integrity and after becoming acquainted with methodological guidelines for thesis preparation.

I am informed of the fact that student can be expelled from the University for the breach of the fair competition principle, plagiarism, corresponding to the breach of the academic ethics.

_____ _____

(signature) *(name, surname)*