MYKOLAS ROMERIS UNIVERSITY

IN COOPERATION WITH MIDDLESEX UNIVERSITY

BUSINESS AND MEDIA SCHOOL

EGLĖ BURBULYTĖ

SHADOW BANKING IN THE EURO AREA: THE ESTIMATION OF DEPOSIT SUBSTITUTES

A master's thesis

Supervisor

Dr. R. J. Vaicenavičius

VILNIUS, 2015

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ABBREVIATIONS

D&SD – Deposits and Shadow deposits

EAA – Euro Area Accounts

EBA – European Banking Authority

ECB – European Central bank

EEC – European Economic Community

EIOPA – European Insurance and Occupational Pension Authority

ESA – European System of Accounts

ESCB – European System of Central Banks

ESFS – European System of Financial Supervision

ESMA – European Securities and Markets Authority

ESRB – European Systemic Risk Board

EU – European Union

FAs – Financial Auxiliaries

FFA – Flow of Funds Accounts

FSB – Federation of Small Businesses

FSB – Financial Security Board

FVC – Financial Vehicle Corporations

GDP – Gross Domestic Product

HFs – Hedge Funds

IFs – Investment Funds

MFI – Monetary Financial Institutions

MMFs – Money Market Funds

OFIs – Other Financial Intermediaries

OMFIs – Other Monetary Financial Intermediaries

SB – Shadow Banking

Q1, Q2, Q3, Q4 – respectively first, second, third and fourth quarters

INTRODUCTION

Topic – estimation of deposits in shadow banking in the euro area.

Topicality and novelty of the research. After the financial crises in 2007-2009 many authors brought the attention to the phenomena of shadow banking or, in other words, non-banking sectors providing financial intermediation. In particular, the SB defines the intermediation system covering credit, liquidity and maturity transformations performed by non-banking sector. The shadow banking has drawn the attention, not only because the maturity mismatch of SB is considered to be one of the reasons of previous financial collapse, but also, by defining the part of it in financial market the level of financial stability could be determined.

According to N.Valckx (2014), the shadow banking is taking the part of one – fourth of the intermediation in the worldwide financial market. This resulted as an impact for recent financial sector growth. So, the estimation and evaluation of the shadow banking is a necessary step in forecasting and analyzing the overall financial and economical situation in the euro zone. Furthermore, an estimate of the deposits in the shadow banking would reveal an important aspect of the competing instruments for the deposits within traditional banking system.

Moving further, member states of the European Union from the September 2014 had started to use the European System of Accounts 2010 instead of ESA 1995. The financial institution sector in the ESA 2010 is split into nine components, instead of the previously used five sub – sectors (ESA 1995). These statistical improvements have substantial impact on how shadow banking is defined and estimated. Till now there are no published papers on the size of the shadow banking or the deposits side of the SB using the new revised data set.

Recent scientific research. The topics related to shadow banking were analyzed in several dimensions by many authors. The idea, that shadow banking activities are one of the reason of the financial instability and crises was represented by S. Luck and P. Schempp in their research “Banks, shadow banking, and fragility” in 2014. The same thoughts on the role of SB were analyzed by P. Lysandrou and A. Nesvetailova in 2014. The importance on the regulations of shadow banking was reviled by G. Gorton and A. Metrick in 2010. The International Monetary Fund in 2010 October released the report, that discuses the size and riskiness of Shadow banking in the euro area. Shadow credit is the main part of C. A. Zabala and J.M. Josse research, 2014. The overview of shadow banking in the euro area was published by the ECB (paper prepared by K. Bakk-Simon and others) in 2012. At

the same year the European Commission presented the analysis on the overall importance of SB in the European Union in the report - "Green paper: Shadow banking". In 2014, the Bundesbank made similar overview in a paper "The shadow banking in the euro area: overview and monetary policy implications".

The problem of the research is how to evaluate the deposits in shadow banking in the euro area using the new data set on the financial sector within the framework of the European System of Accounts 2010.

The object of the research is the shadow banking, focusing on deposits of the shadow banking.

The aim of the research is to estimate the share of the deposits in shadow banking in the euro area using the new detailed data set of ESA 2010. To show the structure and structural changes of the shadow banking deposits over last six years. To analyze shadow deposits as a competitor to the deposits of commercial banks.

The objectives of the research:

1. To analyze the theoretical aspects of the European Union financial system and the euro zone
2. To analyze the theoretical aspects of shadow banking.
3. To analyze the applicability of enriched national accounting datasets for deposits in shadow banking estimates.
4. To prepare the methodology for evaluating the structure of the deposits in the SB in the euro zone countries.
5. On the basis of the new data set to assess the share of the deposits in shadow - banking system in the euro zone.
6. To get new and more detailed data about the deposits in the shadow banking.
7. To analyze the competition between the deposits in SB and deposits in the traditional banking system.

The hypothesis of the research.

1. The share of the deposits in the shadow banking is growing
2. The deposits in shadow – banking sector are creating persistently growing competition to the deposits of the traditional banking sector

The methods of the research. Writing the research work the methods below were used:

1. Systematization, comparison and summarizing of the results of scientific literature.
2. Comparative analysis.
3. Descriptive statistics.
4. Correlation analysis.
5. Analysis of simple moving averages.

The structure of the work. In the first part of the master thesis an introduction of the financial system in the European Union and the euro zone is presented. The second part is related with the main concepts of shadow banking in the euro area (definition, main components, statistical sources of the SB, the ESA, the importance and challenges of the shadow banking, regulation and etc). In the third part the methodology on the estimation of the share and structure of deposits in the SB is introduced. In the forth part the analysis, estimations and the results of the data sets used in the research of the share of deposits in the shadow banking and competition between banking deposits and substitutes to them are included. The fifth part is the conclusions and recommendations of the master thesis.

1. THE FINANCIAL SYSTEM IN THE EUROPEAN UNION

In this introductory part of the work intends to outline the main underlying concepts of this research, including the concepts of the European Union, the euro area, as well as financial institutions and system of the financial supervision in the EU. These concepts are closely related with the ways the shadow banking is defined.

1.1 The European Union and EU economy

The beginning of alliance today known as European Union started after the Second World War. Avoiding conflicts between countries that, due to trading, were economically related, in 1958 the economic cooperation between six countries (France, Belgium, Italy, Luxemburg, Germany and the Netherlands) was created. This union was named as the European Economic Community. Over the time the EEC started to have interest not only to economical relationship between countries, but also to the issues related with politics, environmental laws and the aid for development of the member states. That to mark these changes and the different path of conglomerate the European Economic Community changes its name to the European Union in 1993.

Nowadays the EU consists of 28 member states that cover the biggest part of the Europe continent. The main law of the European Union is that all decisions made in the EU should be defined in treaties and should be, following the democratic tradition, voluntarily agreed by all member states. The purpose of the union is to advertise human rights, equality, democracy, transparency and freedom not only within the European Union, but also all other the world.

Focusing on the economic side of the EU, working together countries became stable and wealthy union with the rising living standards, single (internal) market, open borders and single currency – euro. The internal market helps for the European Union to become one of the biggest players in the world's trading system. Reaching constant economic growth and becoming even more competitive the EU is continually investing in researches, energy and transport sectors. Moreover it, also, concentrates on improvements of environmental programs. Even less than one - third of the European Union countries' trades are outside the EU, according to europa.eu, after the financial crises it still was the biggest exporter in the world.

1.2 The euro area

The euro area unites all states that decided to change their national currencies to euro. Eleven of the EU countries introduced the singlet European Union currency – euro in 1999. Up to day euro became the currency of nineteen members of the EU. In addition to that, such countries as the Vatican City, Andorra, Monaco and San Marino had introduced euro as their currency even they are not in the European Union. The members of the euro area are more integrated and have the specific monetary and economic - policy management.

The main objective of the monetary system, which is coordinated by the European Central Bank and the Central banks of the euro area member states, is to maintain price stability. Even the main responsibility of economic - politics is held by national governments, but it is necessary to coordinate it among member states. That to align the strategies, countries rely on the Stability and Growth Pact that defines rules and limitations for fiscal sector.

In order to join the euro area each country should match five convergence criteria:

1. Price stability – the consumer price inflation rate should not be more than 1.5 per cent higher than the rate of three best performing member states.

2. Exchange rate stability – it is measured by deviation from central rate. Without strong fluctuations country should participate in Exchange Rate Mechanize II for at least two years.

3. Sound public finances – Government deficit as a percentage of GDP should not exceed 3 per cent.

4. Durability of convergence – Long - term interest rate cannot reach more than 2 per cent of three best performing member states of price stability.

5. Sustainable public finance – Government debt as a percentage of GDP should not exceed more than 60 per cent.

The member states benefits from participation in the euro area. It gives more choices and stability in prices for consumers, improves economic stability and growth, provides more opportunities for business and markets, and helps the EU to create the European identity and to become stronger competitor in the world's economy. In addition to that, one currency makes single market to work more efficiently, as it helps to increase transparency for cross border transactions and to eliminate costs for exchanging the currencies and makes prices easily comparable between the member states.

1.3 Financial institutions in the EU

The European Central Bank defines three groups of financial institutions in the EU: monetary financial institutions, financial vehicle corporations and investment funds.

1.3.1 Monetary financial institutions

As defined by the European Union law monetary financial institutions are resident credit institutions that receive deposits or similar products to deposits from other than MFIs and work with allocation of credits and investment in securities. In other words, monetary financial institutions are any institutions, which belong to following sectors:

- Central banks – the European Central Bank and national central banks of the European Union members.
- Credit Institutions – institutions that are defined in requirements of credit institutions and investment firms by the European Parliament.
- Other deposits taking corporations – businesses engaged in financial intermediation and/or receiving deposits or the substitutes of them, plus electronic money institutions.
- Money market funds – businesses involved in collective investment.

The list of monetary financial institutions is being updated on daily bases by the ECB. The available monthly numbers of MFIs in the euro area for 2015 is represented in the Table 1.

1.3.2 Investment funds

Investment funds are defined as institutions focusing on collective investment in financial and non - financial assets using capital risen from the public and are established under national laws. According to the ECB definition of the IFs, they undertake units that are under request of the holders, repurchased or redeemed out of the assets of institution. Plus businesses that have a fixed number of issued shares and the shareholders that have to buy or sell existing shares to enter or leave the fund. To draw the attention, pension funds and market funds are not the part of investment funds as they take part in monetary financial institutions. The list of IFs that are participants of the European Union financial system is updated and released quarterly by the European Central Bank.

Table 1 Number of MFIs in the euro area in 2015

	January	February	March	April	May	June	July	August	September	October
All MFIs	6541	6524	6511	6501	6495	6477	6444	6427	6407	6393
Central bank (ECB included)	20	20	20	20	20	20	20	20	20	20
Credit Institutions	5616	5600	5574	5564	5563	5543	5520	5513	5527	5469
Money Market Fund	710	708	703	701	697	700	690	681	687	690
Other Institutions	195	196	214	215	215	214	214	213	173	214

Source: Prepared by author using ECB statistics

1.3.3 Financial vehicle corporations

The FVCs are defined as businesses established under community or national law that works with the securitization transactions and which are securitized from the bankruptcy and the default risk of producer. They are, also, covering corporations that are taking business of securities, units of securitization funds, other debt securities and financial derivatives that are sold for public or are sold on the basis of private placements. It is important to mention that, in this context the securitization should be understood as an asset or pool of assets that are transpired to the undertaking that is separate from the producer and is created for the purpose of security.

The releases of the ECB's updated list for financial vehicle corporations are released once in the quarter.

1.4 Financial Supervision in the European Union

The European System of financial supervision consists of three main authorities: the European Banking Authority, the European Securities and Markets Authority and finally the European Insurance and Occupational Pension Authority. In addition, the European Systemic Risk Board and the Joint Committee of European Supervisory Authorities and national supervisory authorities, also, support the ESFS. The main task of the European system of financial authorities is to create, supervise and make efficiently working and harmonized mechanism of regulation and supervisory in Europe.

1.4.1 The European Banking Authority

The EBA is the authority that works independently to establish effective regulation and supervision within the European banking sector. The main task of this institution is to ensure the financial stability in the EU. The major assignment of the European Banking Authority is to create the European Single Rulebook, that to establish harmonized prudential rules for financial institutions in the European Union.

The EBA provides the guidelines for regulations and policies in many topics that varies from accounting and auditing, anti - money laundering, credit risk, financial conglomerates to the reviewing and guaranteeing transparency of second and third pillars of national pension systems.

1.4.2 The European Securities and Markets Authority

The ESMA as well as the EBA, also, is independent authority in the EU. It works to insure, that security markets would be transparent, integrative and correctly functioning. In addition to that, the European Securities and Market Authority is responsible for the protection of investors.

The ESMA tries to develop the single rulebook for the EU to establish homogenies treatment and protection for all investors within the European Union. The second role of the authority is to ensure fear competition for all providers of financial services. The European Securities and Markets Authority as all authorities in the ESFS works for the same main task: to ensure financial stability in the European Union.

1.4.3 The European Insurance and Occupational Pension Authority

As other two authorities of the ESFS, the EIOPA independently works that to advice for the European Union institutions and member states. So, it is natural that the main task for it is the financial stability. In addition to that, the European Insurance and Occupational Pension Authority tries to insure the transparency of the financial products and markets related with insurance and pension systems, as well as, to protect the customers participating in this kind of activities in the EU.

The intensions of the EIOPA are to make regulatory system to ensure the high level and homogeneous rules set for all the European Union countries, that to insure the worth trust financial system, especially in insurance and pension sectors.

1.4.4 The European Systemic Risk Board

As name of the ESRB propped it is responsible for the forecasting, controlling and avoiding of systemic risk in the financial system of the European Union. Moreover, one of the main tasks of the Systemic Risk Board is to guarantee smooth and continues economic growth in the EU.

That to insure the completion of tasks the ESRB has persistently collect and make analysis on significant data that to determine and protect the EU structures from systemic risk and in the case of such risk they have to make announcements to inform relevant bodies. In addition to that, the European Systemic Risk Board should make necessary actions that to put down the risk and to protect all member states.

Summarizing the first chapter, as the main task of this work is to analyze and estimate shadow banking deposits in the euro area, first of all, it is significantly important to understand the structure of the European Union, which unites 28 countries having different economies and laws. The treaties between member states help to create one united and internal economy with the single currency euro. That to become a member of the euro area, countries has to match five convergence criteria. Moreover, the EU has a strict list of financial institutions, which lately will help to identify the sectors belonging to shadow banking. As well as, understanding of the European financial supervisory authorities will help to understand the regulation of financial institutions in the EU.

2. THE MAIN CONCEPTS OF SHADOW BANKING

2.1 The definition of shadow banking

The definition – shadow banking is one of the most arguable objects in financial world. First of all, it is necessary to mention that the term "Shadow banking" is not related with terms like shadow economy or shadow business. The chief economist of Pacific Investment Management Co. – McCulley only in 2007, created the definition – shadow banking. The term was brought to the existence having the parallel with the shadow created by sun, not to the underground economy, so it defines the institutions and activities similar to the traditional banks or banking activities, as the shadows of them.

As it is mentioned before, there is no universally accepted definition of shadow banking. The difficulty to agree on one - term rises from the fact that different countries do not have the same list of activities defined as shadow banking. In the brought sense the SB is non - banking institutions or actions related with the credit intermediation. Shadow banking usually has less restrictions and regulations comparing with the traditional banking sector, also, it lacks formal safety net. In the advanced economy countries the SB connects and defines financial institutions and activities that destroy normal process of credit intermediation between borrowers and lenders into several separated operations - they discretize the process of crediting (see Figure 1).

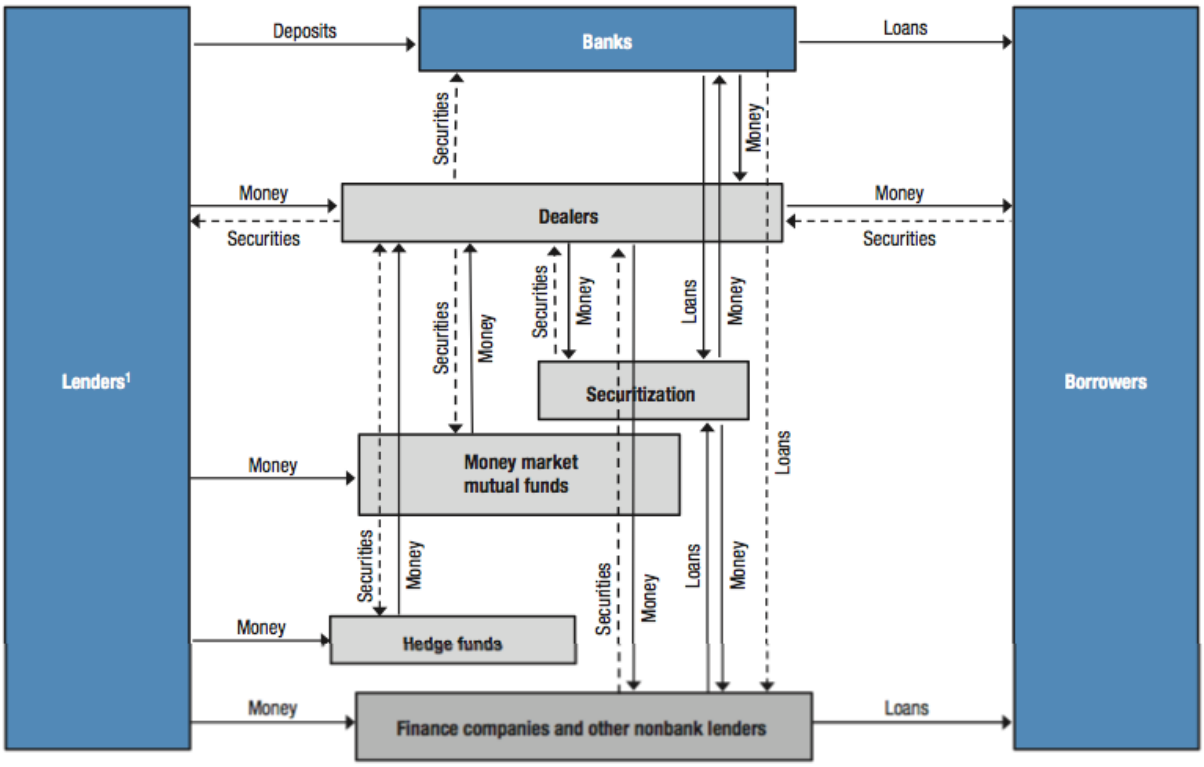
The shadow banking consists of financial market participants as hedge funds, pension funds, money market funds, independent investment banks, finance companies, insurance companies, special purpose vehicles, vehicles involved in actions related with different kind of securitization and etc. all of them are analyzed in the further parts of the paper.

The European Central bank in an overview of shadow banking in the euro area in 2012 defines the SB as an indicator of financial stability. The ECB brought the attention that the risk for the stability of financial market comes from lack of regulation and probable regulatory arbitrage. The shadow banking usually operates on uninsured, short-term funds that possibly could lead to possible bankruptcies of the banks and liquidity risks.

The Financial Security Board agreed on the definition of shadow banking as "activities related to credit intermediation, liquidity and maturity transformation that take place outside the regulated bank system". The credit intermediation is usually explained as any action where the lender or/and borrower uses any kind of intermediary that to lend and/or to borrow. The maturity changes, which are mentioned above, usually involve usage of short-term liabilities for funding the long - term assets. This

usually is supplemented by investing in liquid assets and even more liquid liabilities – liquidity transformation.

Figure 1 Traditional versus Shadowing Banking Intermediation



Source: International Monetary fund, 2014 October, "Global financial stability report: risk taking, liquidity, and shadow banking – curbing excess while promoting growth" (Blue color reflects the process of the usual banking system, the blue together with grey shows the discretization of the lending\borrowing process)

2.2 The main components of shadow banking

As the shadow banking is related with maturity and liquidity transformations and credit intermediation, that to make this financial sector more understandable it is necessary to define the exact market segments participating in the shadow banking.

There are four main shadow - banking activities and sectors in the euro area:

- Securitization activities;
- Money market funds;
- Repo market;
- Hedge funds;

2.2.1 Securitization

The securitization allows funding of long-term assets with the short-term liabilities – maturity transformation, liquidity transformation and the discretization of credit intermediation process. The objective of securitization is to separate financial assets, which are supporting payments for asset back securities. This is used to make sure that, restitutions for asset - backed securities come from the pool of assets and not directly from the body holding the assets. In the most general way the securitization is related to any asset that has the certain value or which could generate revenue in the future and that could be used as a security for lending or borrowing.

There are several basic factors that help to identify the securitization transaction:

1. Origination and servicing of assets – firstly underling assets of securitization are created, after that the lender lends funds to the borrower that to finance usage or buying of assets.

2. Credit improvements – the pools of assets usually are backed by at least one of the liquidity and credit improvements. Depending on the description of the pools and the quality of the payments and assets in them. The main aim of the backing is to achieve wanted level of the risk for the security.

3. Hedging against floating interest rates – in the European Union it is not a rear case that asset backed securities could be denominated in more than one currency. That to avoid mismatches and losses due to negative changes in interest rates and currency's exchange rates investors are usually arranging the interest and currency rates swaps.

4. Ratings – at the time of the issuance of the asset - backed securities, that are traded in the public markets, one of the internationally recognized agencies, such as S&P, Moody's, Fitch and etc., give the rating, which helps investors to have better overview and grade of securitization.

5. Underwriter – the person who is the link between the issuer of asset backed security and buyer of it. They help for individual investors to find the best way to allocate the funds to different securities, which are suitable for the investors' "taste" in the length of maturity, risk and liquidity in the most cost efficient way.

The main securitization activities and funding methods for them are represented below (see Table 2).

Table 2 Main activities and funding methods of securitization

Activity	Funding method
Asset backed security origination Asset backed warehouse security	Asset backed commercial paper Asset backed securities Repo
Asset backed security issuance	Commercial paper
Asset backed Security Intermediations	Asset backed commercial paper Medium term note Capital notes Repo
Wholesale funding	Asset backed commercial paper Repo

Source: Compiled according to K. Bakk- Simon, 2012

2.2.2 Money Market Funds

The money market funds are defined as funds having just a basic risk, due to they are fixed income mutual funds investing in short time debt securities and commercial papers. MMFs usually pay dividends and are characterized by high liquidity and stability. It is common view to consider the money market funds as a substitute to bank deposits, but usually they have higher yields.

According to Securities and Exchange Commission money market funds have several economic characteristics:

1. Money market funds could be a great choice for different types of the investors regarding the tolerance for risk. For example the investor who has low tolerance for risk can invest it the money market funds investing in the government MMFs as they have low default risk.

2. As MMFs are usually highly liquid, so the investors have possibility to use them as a good substitute for cash management. There are three origins to fulfil requests for the withdrawals: cash on hand, cash from the shares purchased by investors and the last, cash from the securities in maturity.

3. One of the most important things in the money market funds is that they use pricing techniques letting them to hold stable price for the share on the normal conditions of the market.

4. MMFs have a lack of transparency, as the investors are not aware of the structure and underlying holdings in the portfolio of them.

2.2.3 The Repo Market

The repo or, in the other words, repurchase agreement is an agreement between borrower and lender, which indicates that for the specific time the borrower, is selling an asset to the lender, which will be bought out in the agreed time for the agreed amount of money, usually including interest. Repos have similarities with secured loans, but in the repo market asset legally changes owner, so it is more secured for the moneylender. This market is usually used as an instrument for funds rising. The market of repurchase agreements is one of the biggest and has one of the highest volumes in the markets of short - term credits.

In the most common case scenario repos are with the maturity for next day. In the scenarios when repurchase agreements have longer maturity they are called as term repos. The third and the last category of repurchase agreements, referring to the maturity, are named open repos, as they do not have maturity date and the seller or buyer of them have the possibility to end the agreements at any time.

Repo has two primary types of contracts. The first one is collateral repos. These contracts are related with the securities, which should be chosen from concrete group of securities – basket. Collateral Repos are cash - driven and are related with liquidity and funding aim .The second type is securities - driven repos that could be related with short - selling strategies. From the view of shadow banking it is important to take interest in liquidity and funding, so collateral repos are more popular in this sector.

2.2.4 Hedge funds

Hedge funds include wide number of different business models and activities. One of the main targets of them is high return, so that to achieve it they are commonly using aggressive portfolio

management strategies. Usually, hedge funds are using limited number of private investors and they have to pay very large initial minimum investments. In the most common case scenario, the required time for investing in hedge funds is not less than for a year.

Due to the very high diversification and absolute returns the number of hedge funds, since the end of twentieth century, have a tendency to grow. As the clients of HFs are looking for different investing positions, hedge funds provide wide diversity of assets and risks. Mainly, managers of the hedge funds seek to outperform the averages of some of market indexes, showing to the investors absolute returns and the success of their funds.

In not very rear cases hedge funds uses borrowing as a tool to increase the higher returns. For this kind of activity they uses borrowings from the bank, repos, short – selling of the borrowed securities with the intention to use gained money for long - term investments, derivatives and etc.

Due to information provided by the European Central bank the hedge funds in the euro area do not take an important part in the financial market, so naturally, the role of the hedge funds for the shadow banking in the euro zone is debatable. Even knowing that, it is necessary to mention that hedge funds are in a complicated way working financial intermediaries involving secularization activities, repo market transactions and these are one of the most popular activities in the shadow banking.

2.3 Statistical sources of shadow banking in the euro area

Not having a strict definition of shadow banking not only makes difficulties in explaining the nature, structure, entities and activities of it, but, also, causes problems to compile and define the statistics necessary to estimate the SB.

For the estimation of shadow banking macroeconomics and financial statistics could be used. It is necessary to draw the attention to the fact, that this work is not as easy as it could look at the first sight. Even the financial statistics is used for the calculating SB appearance, most of the time provided data is not modelled for such work. Macroeconomic and statistics are usually based on the criteria that do not always exclude all necessary parts of financial intermediation and risk evaluation which is necessary to estimate shadow banking.

The European Central bank defines two parts of statistics particularly useful for the estimation of shadow banking: the quarterly euro area accounts and monetary statistics.

2.3.1 Other Financial Intermediaries

Till the implementation of new ESA 2010, the first step seeking to estimate the share of shadow banking was made using financial accounts, as these accounts separate financial intermediaries to two big groups: commercial banks and non – bank financial intermediaries. Moving further, non – banking financial intermediaries were separated into two groups. The first one was an insurance corporation and pension funds and the second one - other financial intermediaries.

The most useful data for the statistics of shadow banking in the euro zone is in the quarterly euro area accounts, relied in the other financial intermediaries' part. This category contained all financial institutions not included under monetary financial institutions and insurance corporations and pension funds sectors. The part of financial institutions adds up the central banks, commercial banks, money monetary funds and credit institutions. It is necessary to note, that not only institutions related with the shadow banking were included in OFIs. For example, the regulated investment funds felt into this category, but they are not considered as a part of the SB or insurance companies and pension funds just partly participates in the shadow banking activities. Moreover, such categories as money market funds are consider participating in shadow banking but were not included in the sub – sector of other financial intermediaries.

2.3.2 Monetary statistics

The monetary statistics data is used to describe money market funds and some institutions not included in OFIs, such as investment funds and financial instruments related with securitization, also, it contains numbers related with deposits and loans and is consider to be high frequent statistics.

The attention should be drawn to the fact that, the data of the quarterly euro area accounts and monetary statistics could not be compared with each other because they were collected and processed using different methodologies and criteria of evaluation.

2.3.3 The Flow of Funds accounts

The Federation of Small business (organization representing the small and medium enterprises in the United Kingdom) named the flow of funds accounts as a powerful tool, which could be used for recognition of trends of one of the biggest parts of shadow banking – credit intermediation. This resulted to the more careful and responsible collection of the statistical FFA data of financial flows from non – bank financial intermediaries.

Focusing on non – banking financial institutions raising funds from activity not related with deposits or substitutes to them, for example life insurance companies as they take an important part of

financial flows as institutional investors, the flows of bonds held by insurance companies are taking the part in flow of funds accounts. The fact that flows of bonds could be evaluated by different methods and the fact that the only method incorporated in FFA is historical cost method should be taken in consideration

2.3.4 Macro mapping

In 2011 the leaders of G20 decided to request to measure and define the role of shadow banking. For this purpose there were created the procedures of macro - mapping the trends, share and impact of SB.

The SB consists of the maturity and liquidity transformations and the maturity transformation is defined as the usage of short – term liabilities for the funding of the long – term assets, the liquidity transformation is the usage of liquid instruments for the funding of not liquid assets. Additionally, shadow banking may take place in the credit risk transfer as well. Usually, credit risk transfer is defined as risk transformation via derivatives, guarantees as moving the credit risk through the assets or the systemic securitization.

The data in the balance sheet of the European System of Central Banks for the macro mapping approaches has some leading benefits as the concepts of data reporting, collecting and defending are harmonized between the European Union countries. In addition to that, the biggest part of balance sheet information is publicly available. Harmonized data works as a great tool for the information exchanges between national authorities. On the other hand, it is important not to forget some limitations: the data for banks and other opponents not residential in the Europe is not publicly available. Moreover, the balance sheet is created in such way that all institutions are the separate units taking residency in the country they were established. This may translated to the problem that some multinational institutions could be recorded in one country even the parent corporation is the resident of another country and this could lead to some statistical errors.

Moving to the statistical side of the macro – mapping there are, also, two main sources for data collection. The first one could be find in the balance sheets of financial sector of the monetary financial institutions. Using this data it is very important to take in consideration that composition of it is constantly changing due to the new joiners in the euro are. The second type of data is coming from the euro area Financial Accounts providing the flow of funds of monetary union. Contrary to the first source this data consist fixed composition as it refers to all back data of the euro area even the country was not a member at that time.

2.4 The European System of Accounts

The European system of Accounts is the harmonized set of rules for the national accounts records keeping and collecting for the member countries of the European Union. This system is an assistant for making the accounting framework of total economy to become more detailed, systemic, reliable and comparable with other economies. The importance of the ESA rises from the fact that the several of most important indicators, such as gross domestic product, gross domestic income and even shadow banking, which have significant role for the economic and financial analysis are based on the national accounts.

In the September of 2014 the updated and revised methodological framework for the national accounts named the European System of Accounts 2010 replaced the European System of Accounts 1995. This revision and adaptation for the accounting rules for the national accounts is the result of the implementation of the System of National Accounts 2008 as it is a framework for all national accounts followed by all other the world.

The ESA 2010 has several main improvements and differences from the ESA 1995. The first one is related with the spendings on research and development (R&D). The European System of Accounts 2010 identified that this type of expenditure has the actual nature of investment and due to that they should be counted as gross fixed capital foundation and as current expenditure as in the ESA 1995. In the ESA 2010 the attention is drawn not only to the fact that R&D expenditure has the nature of investment, but weapon system expenditure has too, as they no longer could be recorded as immediately consumed due to they are used for the guaranteeing the security of the country during extensive period of time. Moving further, the updated set of rules defines that goods sent abroad for disposing are not impacting the export and import data as the changes in ownership is based not on physical movements. The ESA 2010 includes more detailed analysis of pension schemes, improved formula for the non-life insurance output calculations. Finally, the data of financial corporations sector was divided in more detailed and accurate sub - sectors.

As the division of financial corporations sector has an impact on the estimations of shadow banking, so the next paragraph will present these changes between the ESA 1995 and ESA 2010 and the structure of the new implementations.

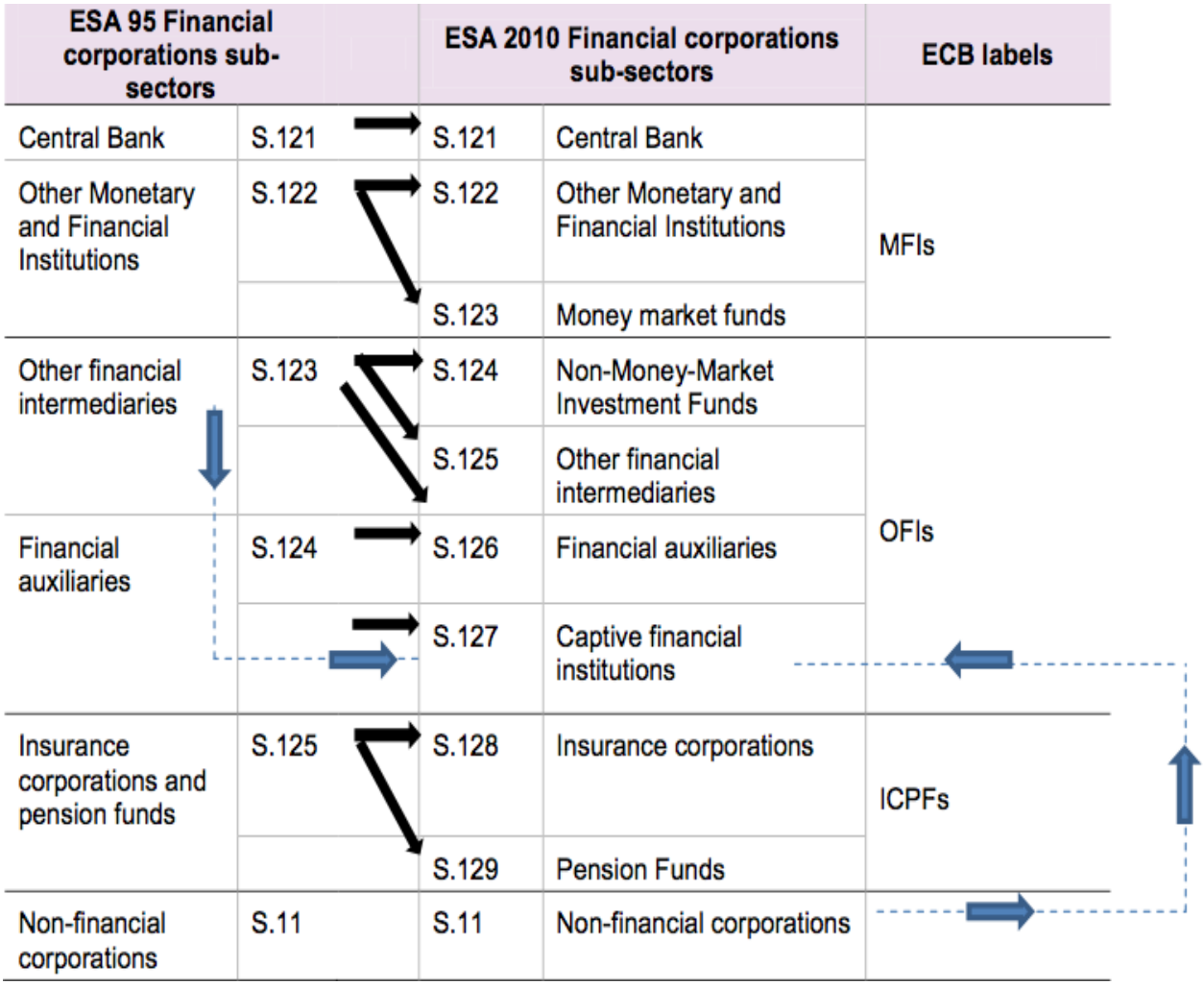
2.5 The sector of financial corporations

The financial corporations sector has the main role in the estimation of the shadow banking, so the changes made for this part in the European System of Accounts 2010 could make differences in

previously established calculations. Considering that, it is important to analyze and understand changes and current structure of the sector of financial corporations.

It was already mentioned, that in the ESA 2010 the financial corporation sector is more detailed and divided into nine sub – sectors (to compare in the ESA 1995 financial corporation sector had only five sub - sectors). By the cause of that, provided information became more detailed and more correlated with the system of financial statistics of the ECB and the MFIs.

Figure 2 Correspondence between ESA 95 and ESA 2010 financial corporations sub - sector



Source: Eurostat, Manual on the changes between ESA 95 and ESA 2010, 2014

Following the tradition of the ECB there is provided the diversification and changes in the main three sectors (see Figure 2): Monetary Financial Institutions, Other Financial Intermediaries and Insurance corporations and pension funds. In the ESA 1995 sector of the MFIs had only two sub – sectors: Central Bank (S.121) and Other Monetary and financial Institutions (S.122), but in the ESA 2010 the sub - sector of OMFIs breakdown into two: Other Monetary Financial Institutions (S.122)

and Money Market Funds. The sector of Other Financial Intermediaries in the European System of Accounts 1995 had only two sub - sectors: Financial auxiliaries (S.124) and other financial Intermediaries (S.123). After the improvements in ESA 2010 OFIs are divided into Non - Money – Market Investment funds (S.124) and Other Financial Intermediaries (S.125). Financial auxiliaries, also, breakdown into two parts: FAs (S.126) and Captive financial institutions (S.127). Moving to the sector of Insurance Corporations and pensions funds (S.125) it was separated and became two different sub – sectors: Insurance corporations (S.128) and Pension Funds (S.129).

2.5.1 Central bank

By the definition of the Eurostat, the central bank sub - sector is made of all financial corporations or quasi – corporations with the main responsibilities as the issuance, care and development of the currency. In addition to that, such corporations have the holdings of international reserves of the country. All central banks that are in the European system of central banks and independently working central monetary agencies fall into Central bank sub - sector.

2.5.2 Other Monetary and Financial Institutions

This sub - sector includes all financial corporations and quasi – corporations which are not in the sub – sectors of central banks and MMFs and they are participating in the financial intermediation of credits, they are receiving deposits and close substitutes to them, also, companies in this sector provide loans and invest in the securities. In this subsector fall: giro institutions and banks, saving banks, commercial banks, universal banks, all – purpose banks, rural and agricultural credit banks, credit unions, cooperative credit banks, electronic money institutions principally engaged in financial intermediation and mortgages institutions.

2.5.3 Money market funds

The MMFs sub - sector contains all corporations that do not fall into sub – sectors of central banks and other monetary and financial institutions, but are participating in financial intermediation by issuing shares or units of investments funds that to invest in shares of MMFs, short – term debt securities and deposits.

2.5.4 Non – Money Market Investment Funds

The sub – sector of non – MMF investment funds is made from all collective investment schemes without those that fall into the sub - sector of MMFs. They are, also, participants of financial intermediation, but differently from the money market funds they issue such shares of investment funds that are not close substitutes for deposits and invest not in short – term financial assets or non

financial assets at all. In this sub – sector it is found such corporations as open - ended and closed - ended investment funds, funds of funds, real estate investment funds and hedge funds.

2.5.5 Other Financial Intermediaries

Corporations and quasi - corporations that are participating in financial intermediation by collecting debts in not traditional forms as deposits, shares of investment funds and currencies are in the sector of OFI. This sub – sector contains intermediation that mostly related with long – term financing. The ESA 2010 distinguishes four main types of corporations engaged in activities that fall into Other Financial Intermediaries sector: Financial vehicle corporations engaged in securitization transactions, dealers of securities and derivatives, financial corporations engaged in lending and specialized financial corporations. Activities as financial leasing, factoring, hire purchase and provision of personal or commercial finance and corporations as venture and development capital, export and import financing companies are in OFI sub – sector.

2.5.6 Financial Auxiliaries

The sector of financial auxiliaries is related with the corporations and quasi – corporations that are participating in activities that could not be consider as financial intermediation, but are complementary to it. The ESA 2010 advises these corporations in the sector of Financial Auxiliaries: insurance and pension consultants and brokers, loan and securities brokers, corporations providing infrastructure for financial markets and etc.

2.5.7 Captive financial institutions

The sub – sector of captive financial institutions is for all financial corporations that are not falling into financial auxiliaries sector and is not participating in financial intermediation. Corporations as trusts, estates, some holding companies, corporations that administrate financial services only with own funds, sovereign wealth funds and etc. are in the ESA 2010 under the sub – sector CFI.

2.5.8 Insurance corporations

The sub - sector of insurance corporations is made from the corporations and quasi – corporations which main responsibly is related with the guarantee of the premium after experiencing some losses, damages, illnesses and etc. in the exchange of some payments, they are providing the service of insurance or reinsurance. In this sub – sector falls both life and non – life insurance corporations insuring individuals, groups or other companies.

2.5.9 Pension funds

The corporations and quasi – corporations operating as the organizations responsible for the income in the age of retirement and income in the case of the death of the close relatives or the disability as a part of social insurance schemes are in the sub – sector of pension funds. The schemes of pension funds could be organized both by the national government and the employers of the private corporations.

2.6 The growing and increased importance of shadow banking

According to the Bundesbank there is an important increase in the part of the assets of non-banking financial intermediaries in the euro area from 1999 till nowadays. It was caused by the expansion of the assets in the other financial intermediaries sector. Do to this and the financial crises the importance of the commercial banks is recently shrinking.

Due to the financial crises commercial banks had to introduce some strictly rules for the supply of credits. This became a really important springboard for shadow – banking activities, as they had to fill the gap of the credits' supply as they are less regulated in the European Union. The second factor of the increasing share of the SB is that it provided the substitutes, such as shares of money market funds or securitized, short – term securities, for traditional deposits of commercial banks as the demand of them is constantly growing.

During recent years the synergy between the commercial banks and shadow banks is increasing. In the first place this could be noticed in the repo market, as usually commercial banks uses clearing houses that to finish repo transactions. Another example of the close interaction between shadow and commercial banks is the market of loans and securitization. Even before the crises commercial banks started to transmit loans through the securitization vehicles that to protect their capital.

To stress the most important benefits and the reason of the growing importance of shadow banking there is four main functions of it: Shadow banking provides the alternatives for the investors for the short time credits and substitutes for commercial banks deposits, it creates the hire specialization and diversification for investors with specific needs (tolerance to risk, liquidity and etc.), the SB creates the surrogate financing for the real economy, this could be really handy in case traditional markets and banking system would be temporary dysfunctional and finally shadow banking could be used as a tool for the diversification of risk which is impacting traditional banking system.

2.7 Risks of shadow banking

Even there are undeniable benefits of the shadow banking, but, as well, we have to take into consideration risks that could be caused by it.

First of all we have to consider that as the shadow banking provides substitutes to the deposits of commercial banks it, also, is facing same financial risks as them. The main risk related with such activities is the sudden extensive withdrawals of short – term deposits by the customers that may lead to the bankruptcy of the shadow banking institution.

One of the sources of systemic risk caused by shadow banking is the high level of masked leverage. As the activities of shadow banking have the possibility of high leverage due to the supplementary funding is being used more than once, despite the limitations of supervisory authorities and regulations.

The third type of risk rises from the fact that shadow - banking activities might be used as a tool to avoid the regulations and supervision, which is applied to traditional banks. The discretization of regular credit intermediation is used as the mechanism for this avoidance.

As there was already discussed, that traditional commercial banks are closely related with shadow banking activities, any big problems in the SB could lead to the crises in the regular banking system and be a cause of systemic risk.

2.8 Regulation of shadow banking

In 2012 V. Constancio - former vice president of European central bank gave the speech regarding the need of implementing regulatory system of shadow banking. There was stressed that the regulation of shadow banking is very important as absence of it could raise a dangerous situation for financial stability, it could cause asset price bubbles or even be a reason for systemic risk. Due to such importance the EU established three main levels of the regulation of shadow banking: indirect regulation, prudential regulation and direct regulation. In addition to that, some states of the European Union have national rules for the activities defined as shadow banking.

2.8.1 Indirect regulation

This type of control is established by using the additional regulation for commercial banking and insurance sector. The EU taken actions by requiring for originators and underwriters of assets, that are securitized, to own the biggest part of risk, they also defined the limits for liquidity and credit risk. The other measure related with indirect regulation of shadow banking is related with the requirements

for commercial banks to save more capital for covering the risk due to the investments in re - securitization products. Moving further, the EU Commission decided to make the securitization vehicles more transparent and consolidated and finally, they decided to apply the some rules for the insurance companies participating in activities related with securitization vehicle as it is applied for the commercial banks.

2.8.2 Prudential regulation

The main idea of the second step towards the improvement of the regulation of shadow banking is to increase the capacity of the existing prudential regulations for the SB. The main goal of this is to cover higher spectrum of activities related with shadow banking that to avoid the possibility of systemic risk and escaping of the regulations, to make non – equity instruments more transparent.

2.8.3 Direct regulation

Seeking transparency and higher level monitoring for the shadow banking activities, asset managers of investment funds are required closely supervise the management system of the liquidity by monitoring the risk of it. In addition to that, they had to implement new requirements for calculating the leverage and reporting such activities as repos, securitization and others related with the SB. It is important to mention that the EU Commission made some changes that to make credit rating process stronger as they have an important impact for the credit intermediation.

2.8.4 The regulations for repo

Moving further, as repo contracts have an important role in the SB the necessity for monitoring them is clear. As the biggest part of repo market is handled over the counter, so it is difficult to know the real rates and volumes of repurchase agreements in the real time. Moreover, there are no strict rules or limitations for collecting data related with the repo transactions. Data is usually not complete and for this reason not trustworthy for analysis. Due to that there was suggested that database for the repo market in the Europe should be created. Taking in the consideration the example of US market: some voluntary surveys on trading activities could be taken, but even this is doubtable to make the impact on creating the wider net of information on non – banking sector. This is the main reason why V. Constancio proposed to create the EU Central Data base on the euro repos. In order to accomplish that, the basic rules for data collection and reporting needs to be created that to fulfil the picture of repo market in the Europe.

P. Hakkarainen the Deputy Governor of the bank of Finland stressed: it is very important to separate shadow and regular banking activities, as it should be clearly noted that the SB do not share

the same safety net rules (insurance for deposits, government bailed-outs and etc.), as regulated banking sector.

The regulation of shadow banking and the regulation of the link between the SB and regular banking sector is really important, because the failure of it could cause systematic risk to the real economy, as the shadow banking has an important impact on financial system. Some actions were already taking moving towards the regulation system of the shadow banking. The risk retention rule is one of the examples. It obligates the originator to take part of the risk to his balance sheet. The diligence requirements help to reduce the level of information asymmetry and made securitization structures more transparent. Moreover, the more strictly rules were applied for rating agencies. It is necessary to add that it is considered that using the example of Volcker-rule from USA to implement rules that would put restrictions not only on trading, but also set on property trading engaged by shadow banking institutions as hedge funds and institutions supporting hedge funds.

Summarizing the second chapter of the theory where was discussed that definition of the shadow banking is not exclusively named and depending on the country it could differ. In the broadest sense the shadow banking is the activities related with credit intermediation, discretization of it and transformations of maturity and liquidity. The absence of strict definition of the shadow banking is not the only problem rising from this topic. It is, also, difficult to collect and represent the statistics of it, as there is no particular statistics collected for this cause. In the EU two main sources of data are consider to be extremely useful for the calculations of the share of the SB: data of OFIs and Monetary statistics. In addition to that, all European Union countries from the September of 2014 had to start using new European System of Accounts 2010. The main difference that could make an impact for the estimation of shadow banking in the EU is that five financial corporations sub - sectors which were in the ESA 1995 breakdown into nine sub – sectors, so the data now is collected in more accurate, but different way. Due to that, estimations of the shadow banking made before September 2014 should differ from the ones made after that date. There were, also, discussed that the SB covers four main activities in the European Union: hedge funds, securitization, money market funds and repurchased agreements. As the shadow banking activities are becoming the close substitute to the deposits of commercial banks, they give the investors higher level of the diversification and orientation to their needs, also, as the commercial banks are dealing with the stronger regulations the popularity of the SB is constantly growing. The enlarging popularity of shadow banking, also, aggregates to growing risks related to it. For this reason, the more strict regulations of the SB are necessary in the European Union. At the

moment the regulating process of the shadow banking is through three main levels: direct, indirect and prudential regulations. In addition to that, some countries have additional regulations for the specific activities related with the SB, for example regulations for repo market and etc.

3. THE METHODOLOGY OF THE ESTIMATION OF DEPOSITS IN THE SHADOW – BANKING SECTOR IN THE EURO AREA

The following part of the research paper represents the methodology of the estimation of shadow deposits – the substitutes of the traditional bank deposits, in the euro area. For this reason, both components of the deposits in the SB are analyzed. Moreover, it, also, consist the details regarding the data availability and structure which was used for the analytical part of the master thesis.

3.1 The estimation of shadow – banking deposits in the euro area

As there is no universally acceptable definition of the shadow banking deposits first of all it is necessary to defined what is consider as a deposit of the SB in this paper. The substitutes of the traditional bank deposits participating in the discretization of the deposits' marker are in the interest of this research.

The main idea before the construction of the formula for the calculations of the deposits in shadow banking was to find all close substitutes for the deposits in commercial bank sector. Using the main understanding of the SB of the European Union Central Bank, that the shadow banking is the activities and institutions related with the credit intermediation, securitization and credit discretization, also, adding the knowledge, that such activities are less regulated than traditional banking sector, plus knowing the parts of financial corporations sectors and sub - sectors and financial instruments participating in them, the shadow – banking deposits could be defined as in the Formula 1.

$$SBD = MMFs + BFs \quad (1)$$

Here: SBD – deposits in the shadow banking in the euro zone;

MMFs – shares/units of MMFs in the euro zone;

BFs – shares/units of bond funds in the euro zone.

For the meaningful usage of the Formula 1 it is necessary to explain the reason why each of the components are considered to be the substitutes to the traditional bank deposits and how they participate in the deposits market.

3.1.1 MMFs

As it was already discussed in the theoretical part of this paper, due to the improvements of the European system of accounts the way in which the money markets funds are defined recently changed. That to remind in the ESA 2010 the sub - sector of MMFs are defined as corporations and quasi corporations that are not included in sub – sectors of central banks and credit institutions, but still are participating in financial intermediation and which are producing units or shares of investment funds that are close substituted for deposits from institutional units. The money market funds usually invest in short time debt securities and commercial papers, so they are consider being high liquidity and stability and could be treated as close substitutes to the short - term banking deposits. On the other hand, as MMFs are discretizing the deposits market and are not belonging to the sector of traditional banking, so they could be considered as a part of the shadow banking.

3.1.2 Bond funds

Universally recognized definition of bonds states that they are the debt instruments that are designed in a way where the writer of it owes to the holder of the bond. Usually the issuer promises to pay the agreed interest, plus to repay the principal amount to the investor at the time of maturity. On the other hand, the definition of the banking deposit states that it is money put in the banking institution for the purpose of saving. Deposit is the bank's liability to the owner of the instrument; also, depending on the contract, banks usually pay interest for the depositor. Analyzing both definitions the similarities between these two instruments could be defined. Both of them are paying interest and giving back the principal amount at the particular, agreed time and in both of them the holder of the product is lending money to some institution. Moreover, as the bond funds are not taking a part in traditional banking system and they are participating in the discretization of the lending process, they could be considered as the participants in the shadow banking.

To use the assumption that bond funds are the substitutes for banking deposits it is not enough to use the similarities in the definitions of the products, it is, also, necessary to show that traditional deposits and bond funds have similar structure. For this purpose, the index of growth rates of products will be used. If the similar tendencies will be noticed comparing the indexes of growth rates of the bond funds and traditional deposits and the same correlations will be seen between them and stocks, bond funds will be considered as the substitutes to traditional deposits (also, considering the similar definitions).

For the calculations of the index of growth rates of bond funds and traditional deposits it is used the formula (see Formula 2) recommended by the ECB.

$$g(t) = g(t-1)(1 + \frac{F(t)}{S(t-1)}) \qquad (2)$$

Here: *g(t)* – index of growth rate at the time t;

F(t) – the transactions (flows) during the time t;

S(t) – stocks at the period t.

For analysis of the correlation between bond funds, traditional deposits and stocks, the stock index - SX5E is used. The full name of the index is the Euro Stoxx 50 Index; it reflects stocks of fifthly leading blue – chip companies of the twelve euro area countries (Austria, Belgium, France, Finland, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal and Spain). The SX5E is licensed to the financial institutions to be used as an underlying for the financial instruments as exchange traded funds, options, futures and structured products.

3.2 Correlation coefficient

For some analysis the correlation coefficient will be used. It represents the dependence between two analyzed items. The strong positive correlation means that the growth or decrease of one of the investigated objects strongly impacts the growth or decrease of other investigated object. Strong negative correlation between two investigated objects says that the growth or decrease of one analyzed item impacts the opposite movements in the other item. The scale used for the decision - making is represented in the Table 3.

Table 3 The scale of the correlation coefficients

Negative correlation coefficient	Dependence	Positive correlation coefficient
-1	Very strong	1
from -1 to -0.7	Strong	from 1 to 0.7
from -0.7 to -0.5	Average	from 0.7 to 0.5
from -0.5 to -0.2	Weak	from 0.5 to 0.2

Source: Prepared by the author

Table 3 is continued in the next page

Continuation of Table 3

from -0.2 to 0	Very weak	from 0.2 to 0
0	None	0

Source: Prepared by the author

3.3 Data availability, structure and the software used for the analysis

The statistical data used for the analytical part of the paper is taken from the European Central Bank statistical data warehouse. Mainly monetary aggregated statistics of the euro area countries are used. Changing composition of the euro area is used for all of the estimations and analysis. It means that the statistics cover the member states of the European Union that had adopted euro at the time the statistic is related. In addition to that, the statistical warehouse of the ECB provides neither seasonally nor working day adjusted data. Moreover, it is important to draw the attention to the fact, that all the data is related not only with the residents of the EU. As the main idea is to find out the competition between the deposits of commercial banks and shadow deposits, so it is more informative to look to all deposits, not only to deposits of the residents of the EU.

The data used for the calculations of the size of money market funds is taken from the balance sheets of money market funds that are located in the sub - part of the monetary statists called credit institutions.

Data necessary for the calculations related with the outstanding amounts and flows of bond funds was taken from the Monetary and Financial Statistics sub – sector of Investment funds. There are represented not only the aggregated euro area statistics, but also the statistics of the separate European Union countries. The attention should be drawn to the fact, that choosing bond funds as an investment funds by investment policy do not cover all bond funds existing in the euro zone. The part of the mixed funds, as well, belongs to the bond funds. For the estimation of bond funds part in the mixed funds, in this paper, it is used a proportional calculations: first of all, the part of the whole investment funds which is taken by bond funds is calculated and the same proportion of the mixed funds is consider to be a part of the bond funds.

The growth rates of the stock index - SX5E were taken using the charged Bloomberg platform, which is used for the analysis and statistics of financial instruments.

The analysis made on the bank deposits was made using the data of the balance sheet of monetary statistics sub – sector of MFI. The chosen statistics were represented for each financial sector

and type of the deposits (considering time segmentation) separately, so that to get aggregated data the simple addition was used.

Finally, as the used data was not usually provided in the quarterly format in many cases recalculations were used that the data comparability would be possible.

All the calculations and graphics were made using Microsoft office software – Excel.

4. THE ESTIMATION AND ANALYSIS OF THE DEPOSITS IN SHADOW BANKING IN THE EURO ZONE

The main task of the following part of the master thesis is to find the answers to the hypotheses defined in the beginning of the paper. So first of all, there are represented the estimation and analysis of shadow banking deposits, which, as it was predicted, for the last six years are persistently growing. The second part of the research is showing the changes and structure of competition to the traditional bank deposit.

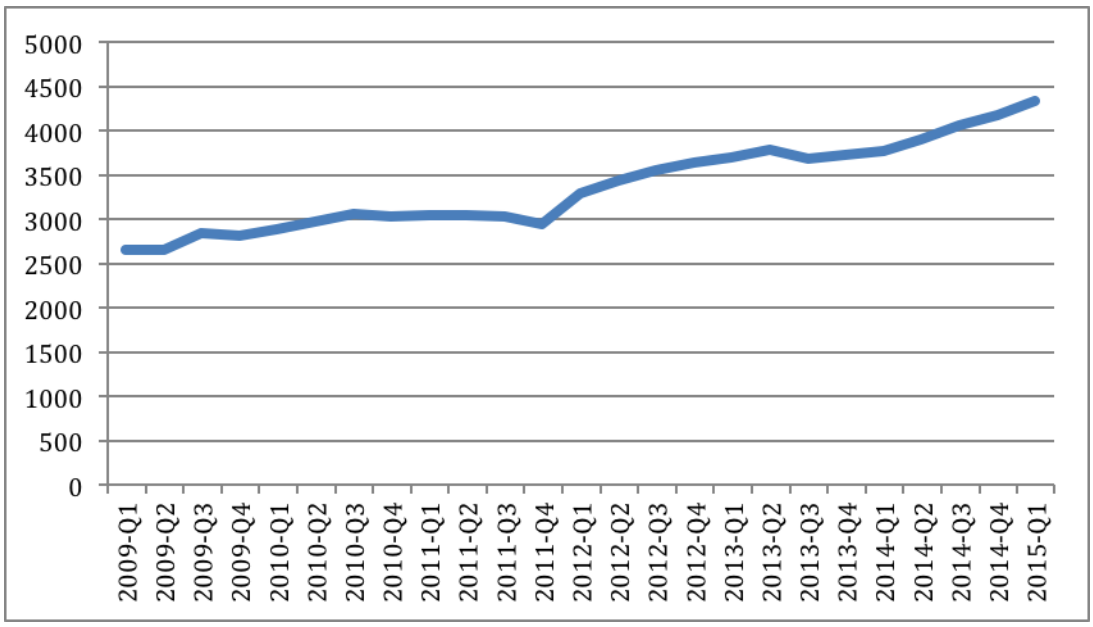
4.1 The estimation of shadow banking deposits

In the following part the representation of the estimation of the shadow banking deposits is provided. As it was already stated shadow - banking deposits could be calculated using the Formula 1 as the sum of money market funds and bond funds.

4.1.1 The size of outstanding amounts of the deposits in the shadow banking

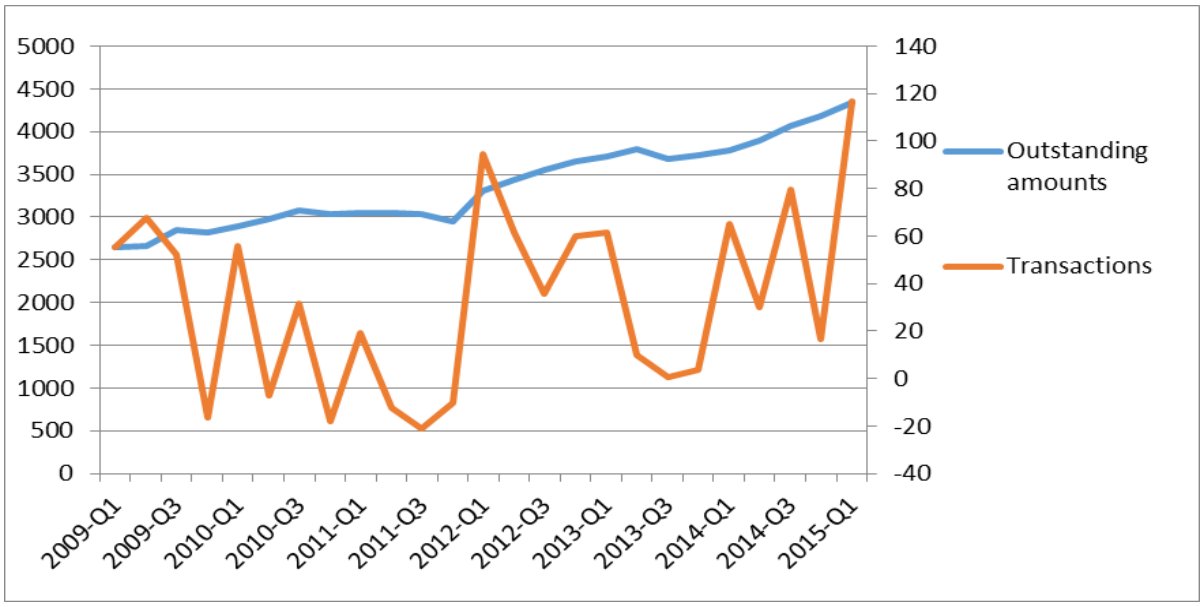
In the figure below there is represented the justification for the first hypotheses that the size of shadow deposits is constantly growing. Due to limited data availability the investigated period is represented in quarters and contains time frame from the first quarter of 2009 till the first quarter of 2015. All numbers are provided in billions euro.

Figure 3 The shadow banking deposits in the euro zone



Source: Prepared by the author using ECB statistics

Figure 4 The transactions (flows) and outstanding amounts of the shadow deposits in the euro area



Source: Prepared by the author using ECB statistics

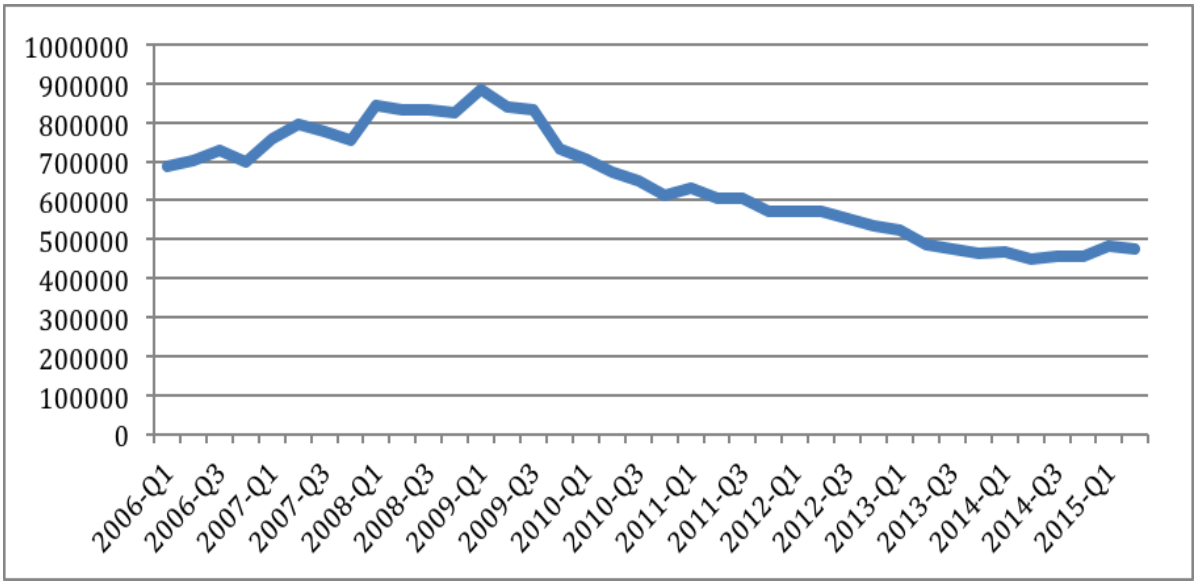
Looking to the line chart of outstanding amounts of the deposits in the shadow banking (see Figure 3) the clear uptrend is visible. Considering the period of the research, the lowest point in the outstanding amounts of deposits in the shadow banking was in the first quarter of 2009 and was equal to more than 2647.44 billion euro and the highest point of the outstanding amount was reached in the end of analyzed period – the first quarter of 2015 and was equal to around 4341.07 billion euro. Due to this, the shadow deposits, over the last six years grown, by almost 40 per cent. Analyzing the growth from quarter to quarter the average growth over the research period is 1.9 per cent. The highest growth for 10.78 per cent was reached in the first quarter of 2012 and it was related with the drop for a bit more than 2.7 per cent of the value of outstanding amounts in the previous quarter. For the past four quarters of the research period the growth rates are higher than average and are equal to 3.2, 4.21, 2.49, and 3.82 per cent showing the stable uptrend for the recent periods.

On the other hand, analyzing the line chart of the transactions of the deposits in the SB (see Figure 4, the scale on the right) it is not possible to see any clear trend line for the period of the research. For the most time of the research period the numbers of the transactions are positive. The lowest point of transactions (-20.92 billion euro) is related with previously mentioned drop down by 2.7 per cent. The highest point that is equal to 116.51 billion euro is reached at 2015-Q1, when the highest outstanding amount of the last six years is present. To understand what was happening in the market it is necessary to analyze each component of shadow deposits separately.

4.1.2 Money Market Funds

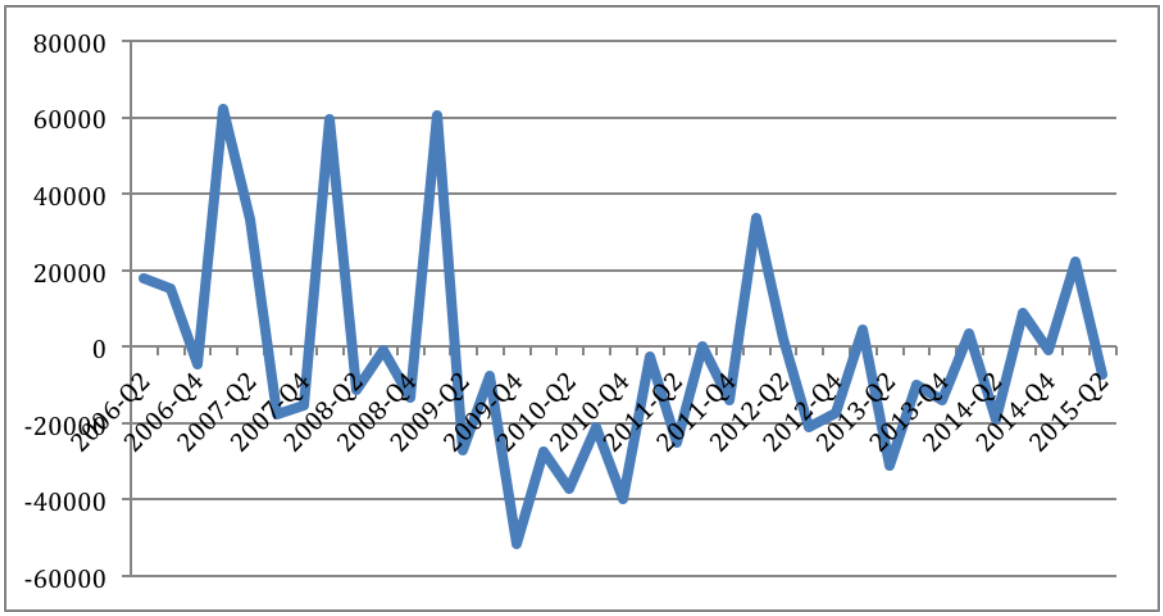
The analysis of the components of the deposits in the shadow banking is started from study of the money market funds. As data for the MMFs is available for the longer period than the last six years the comments are made for the whole possible period. The numbers in the charts are in millions euro.

Figure 5 The outstanding amounts of the money market funds in the euro zone



Source: Prepared by the author using ECB statistics

Figure 6 The transactions of MMFs in the euro zone



Source: Prepared by the author using ECB statistics

Analyzing data of the outstanding amounts of the MMFs, two trend lines (see Figure 5) are seen: the first uptrend line from the first quarter of 2006 to the first quarter of 2009. At the 2009-Q1 the outstanding amounts of the money market funds reach the highest level of a bit more than 885.2 billion euro in the market. From the highest top in 2009-Q1 to the 2015-Q2 the value of the shares in money market funds declined by almost 47 per cent. This huge drop down is mainly caused by sovereign debt crises in the Europe and the euro zone countries. As the result of that, money market funds rapidly decreased their holdings to commercial banks. In addition, as the MMFs took the important role in the financial crises (2008) the strict regulations were implemented, on behalf of that, the part of funds invested in the money market funds moved to the bonds sector.

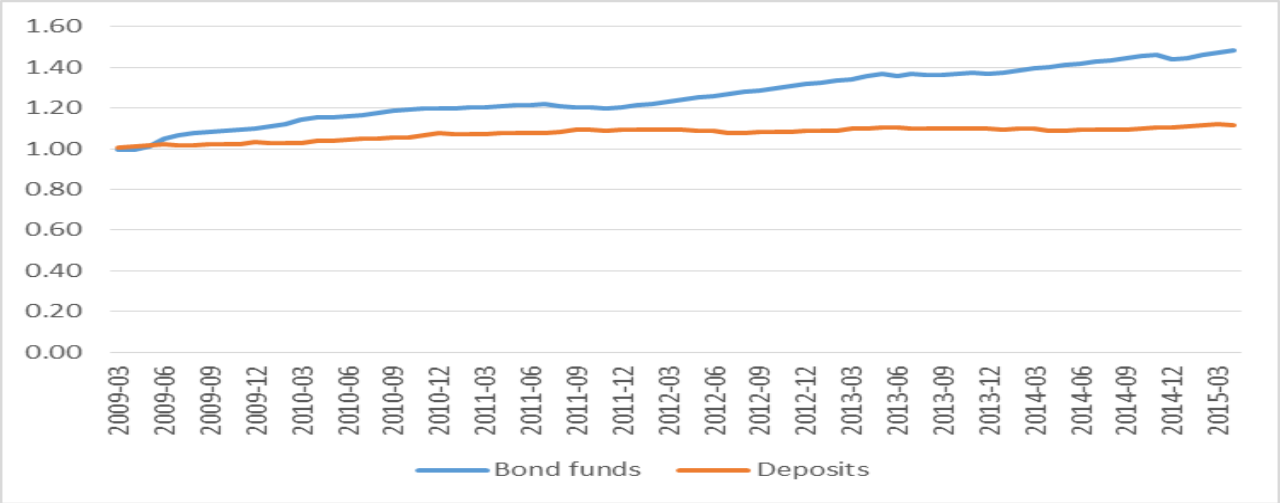
In the line chart of the transactions of the money market funds (see Figure 6), as in the chart of the transactions of shadow deposits it is not possible to find clear trend lines. On the other hand, from the first quarter of 2009 to the first quarter of 2015 it is seen that the numbers of transactions in money market funds most of the time are negative. Also, this time the highest number of transactions (62.28 billion euro) reached in the first quarter of 2007 is not related with the highest outstanding amount in the MMFs that was in the 2009-Q1 (see Figure 5). The lowest point in the transactions of money market funds was reached in the fourth quarter of 2009 and it was equal to – 51.58 billions euro. It could be associated with the implementation of regulations to the MMFs.

4.1.3 Bond funds

As it was mentioned in the methodological part, the bond funds were chosen, as a close substitutes to the commercial bank deposit. The idea of the substitution comes from the main definition of the bond, as it is the debt instrument, where the investor invests money for the specified period of time at usually fixed or sometimes variable interest rate and, also, bond has a similarities with the definition of a deposit.

In the next two figures below there is represented the evidence that bond funds could be considered as the substitute to the deposits of the commercial banks as not only the definition, but, also, their indexes of growth rates are exhibiting the similar behavior.

Figure 7 The index of growth rate of the bond funds vs. the index of growth rate of the traditional deposits

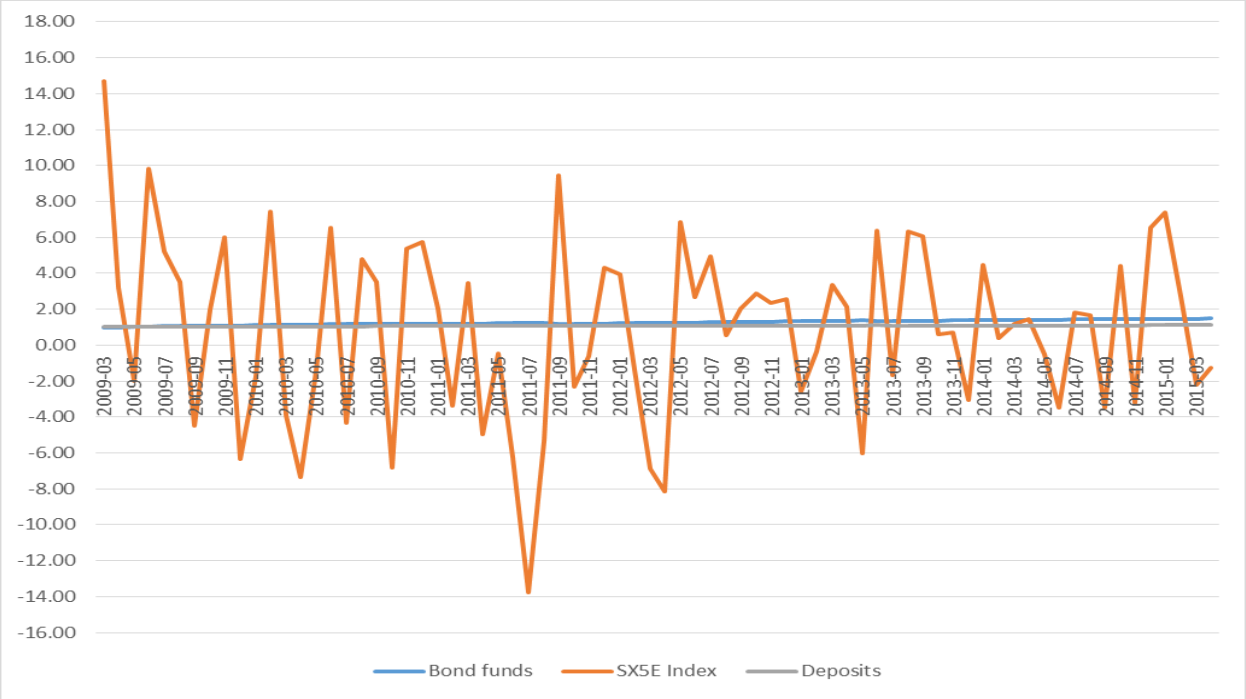


Source: Prepared by the author using ECB statistics

The line chart of the indexes of growth rates of bond funds and deposits (see Figure 7) shows, that, for the represented period, the clear uptrends for the both indexes are visible. The index of growth rate of the deposits from the March of 2009 to the April of 2015 changed from the 1.00 to 1.12 and it means that it grown by the 12 per cent. On the other hand, we see that the bond funds for the same period moved from 0.99 to 1.49, so it moved up more that 50.5 per cent. The highest difference of 33 per cent between the indexes of growth rates was reached in the April 2015.The correlation between these two indexes is strong as the correlation coefficient is equal to 0.89. Even the bond funds have higher growth tendency, but both of the indexes are moving to the same direction.

The following chart presents the behavior of the indexes of growth rates of the bond funds and deposits comparing with the index of growth rate of the stock index.

Figure 8 Comparison of the indexes of growth rates of bond funds, SX5E and deposits



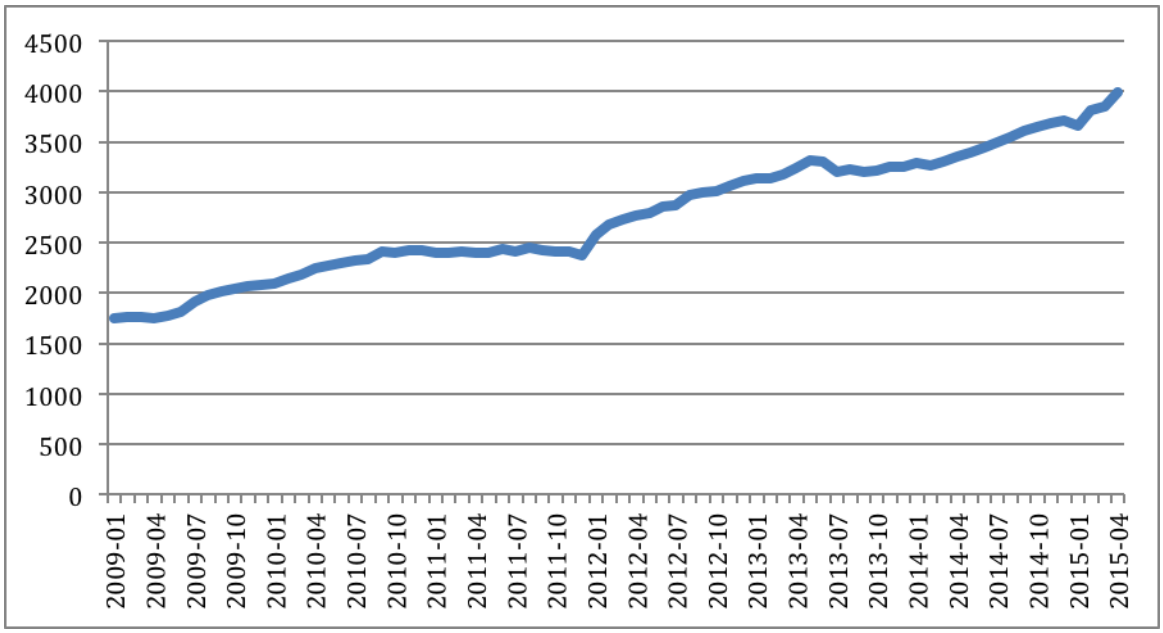
Source: Prepared by the author using ECB and Bloomberg statistics

Looking to the chart (see Figure 8) it is seen that the index of growth rate of bonds (blue line) and the index of deposits (grey line) are almost coinciding and not fluctuating for all the period between the March of 2009 and the April of 2015. The value of previously mentioned indexes never crossed the tunnel with the limits of 0.99 and 1.50. On the contrary, the index of growth rate of the index – SX5E, reflecting fifthly stocks of the most trusted companies in the euro zone, was very fluctuating in mentioned period. The highest value, almost 15 per cent, SX5E reached on the April 2009 and the lowest, almost -14 per cent, reached on the July of 2011. At the same time, neither bonds nor deposits have reached any particular highs or lows at those particular months. The same information is confirmed by the correlation coefficients as the coefficient between bond funds and SX5E index is equal to -0.06 and between the index and deposits is equal to -0.1, so both of them shows very weak negative correlation. Moreover, the growth tendency of the stocks index has no trend lines; both bonds and deposits have the uptrends for the period of the research.

An analysis of the two latest figures leads to the conclusions that the deposits and bond funds have to fall into the same "drawer" and could be called as the substitutes to each other, as we see that they have strong correlation between and are behaving in the same way comparing with the stocks.

The following figure corresponds to the data of the outstanding amounts of the bond funds, which take the biggest part of the outstanding amounts in the deposits of the shadow banking. All data in the Figure 9 is represented in billions euro.

Figure 9 The outstanding amounts in the euro zone bond funds

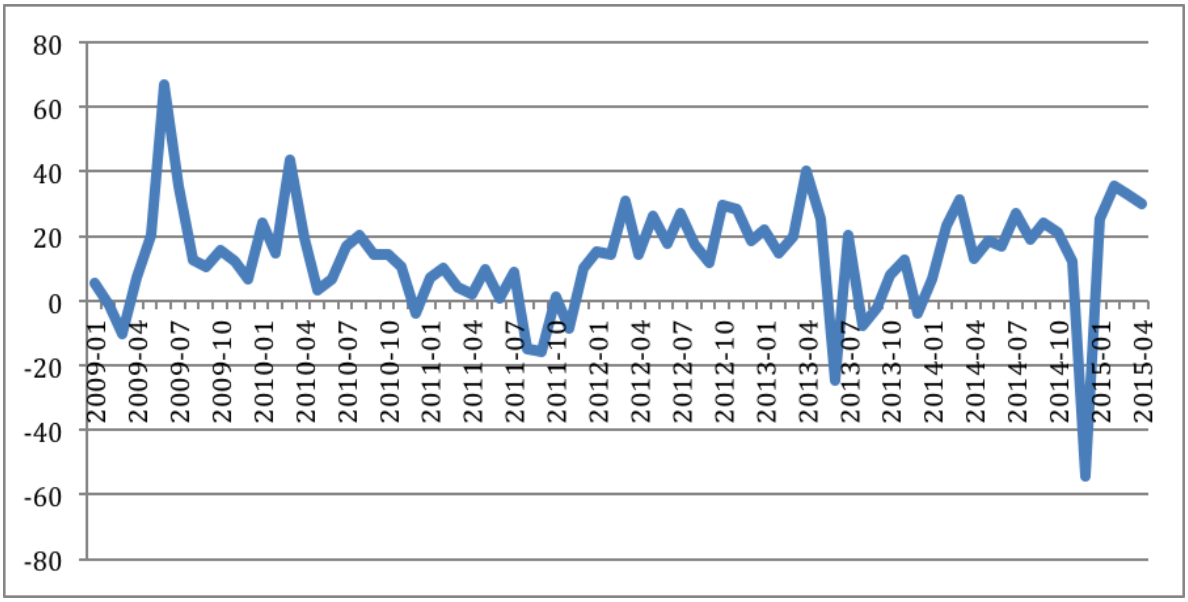


Source: Prepared by the author using ECB statistics

Over the period from 2009-01 to 2015-04 bond funds, same as shadow deposits, have the clear uptrend (see Figure 9). On the other hand, at the same period MMFs have the downtrend (see Figure 5). The outstanding amounts of the bond funds, over the represented period, grown from 1758.9 (2009-01) billion euro to 3995.83 (2015-04) billion euro. This resulted to almost 56 per cent growth of the bond funds over the research period. For the same time segment, the average monthly growth rate is equal to 1.06 per cent. The highest monthly growth rate – 7.68 per cent was reached on the January of 2012. It was resulted by the drop by almost 7 per cent, visible from August to the end of November of 2011, due to the ECB announcement on the 4th of August that it is needed to recover the lending program for the banks of the euro zone, this resulted to the buying of the government bonds of the euro area countries.

On the other hand, the average quarterly growth rate for the research period over the last six years is equal to 3.03 per cent. The same growth rate for the shadow deposits is equal to 1.9 per cent. It is smaller as it is decelerated by the average quarterly money market funds growth, which is -2.6 per cent.

Figure 10 The transactions of bond funds in euro area, bn euro



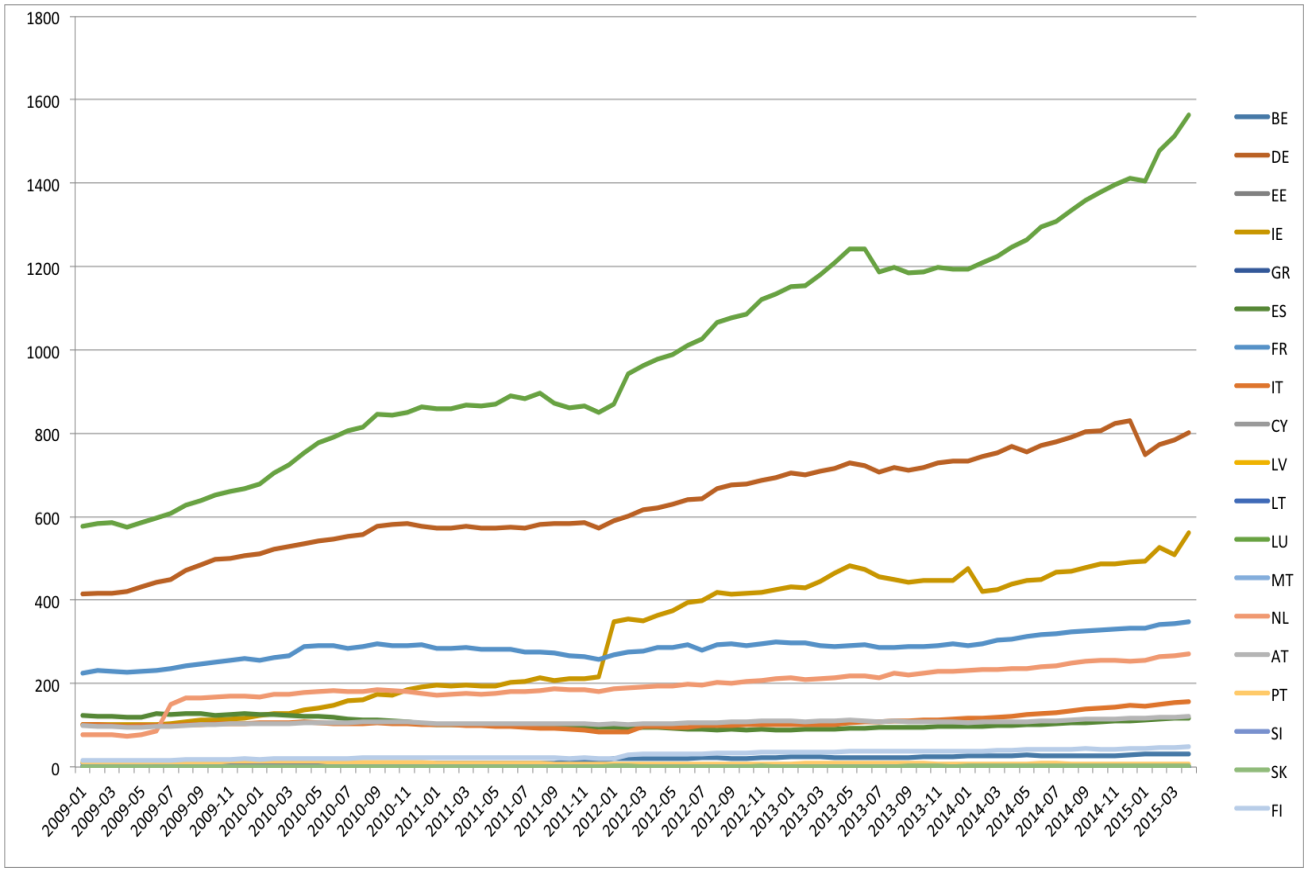
Source: Prepared by the author using ECB statistics

The chart of the transactions of the bond funds (see Figure 10), as well as, the previous line charts of the transactions does not have any clear trend line. For the most of the period the transaction number was positive and the same tendency is visible in the chart of transactions in shadow deposits (see Figure 4). Due to this and the fact that the numbers of transactions in bond funds are higher than in the MMFs, plus the outstanding amounts is, also, significantly bigger in the bond funds the main impact to the shadow deposits is driven by them.

Analyzing the highest (67.08 billion euro in 2009-06) and the lowest (-54.42 billion euro in 2014-12) points of transactions any significant growths or collapses in the outstanding amounts of the bond funds are not noticed.

Considering the fact that outstanding amounts of bond funds are bigger that outstanding amounts in the money market funds and that data for the amounts in bond funds is available for the each euro zone country separately, the next figure is representing the distribution of the bond funds within the euro area.

Figure 11 The outstanding amounts of the bond funds in euro area countries in billions euro



Source: Prepared by the author using ECB statistics

The main part of the bond funds in the euro zone belongs to the Luxembourg (see Figure 11). At the beginning of 2009 the country covered almost 33 per cent and in the April of 2015 it took almost 40 per cent of the bond funds in the euro area. Till the December of 2011 the second and the third place belonged to Germany and France. At the end of 2011 bond funds of Germany took 24.1 per cent and France 10.9 per cent of the whole bond funds in the euro zone. Moving further from this date France "gave its place" to the Ireland. The rapid growth of the Irish bond funds was the reaction to the extension of Eligible Liabilities Guarantee, as it is specialized on the issuance of specific financial products and one of them is the senior unsecured bonds, notes and unsecured debt instruments with the maturity from overnight agreements to five – year obligations. Over the period from the end of 2011 to the end of our scope period (2015-04) Ireland and Germany were rotating between the second and the third place in the bond funds market in the euro area. In the April 2015 Ireland had the 14.1 per cent and Germany 20 per cent of it and respectively took the third and the second places in the bond funds.

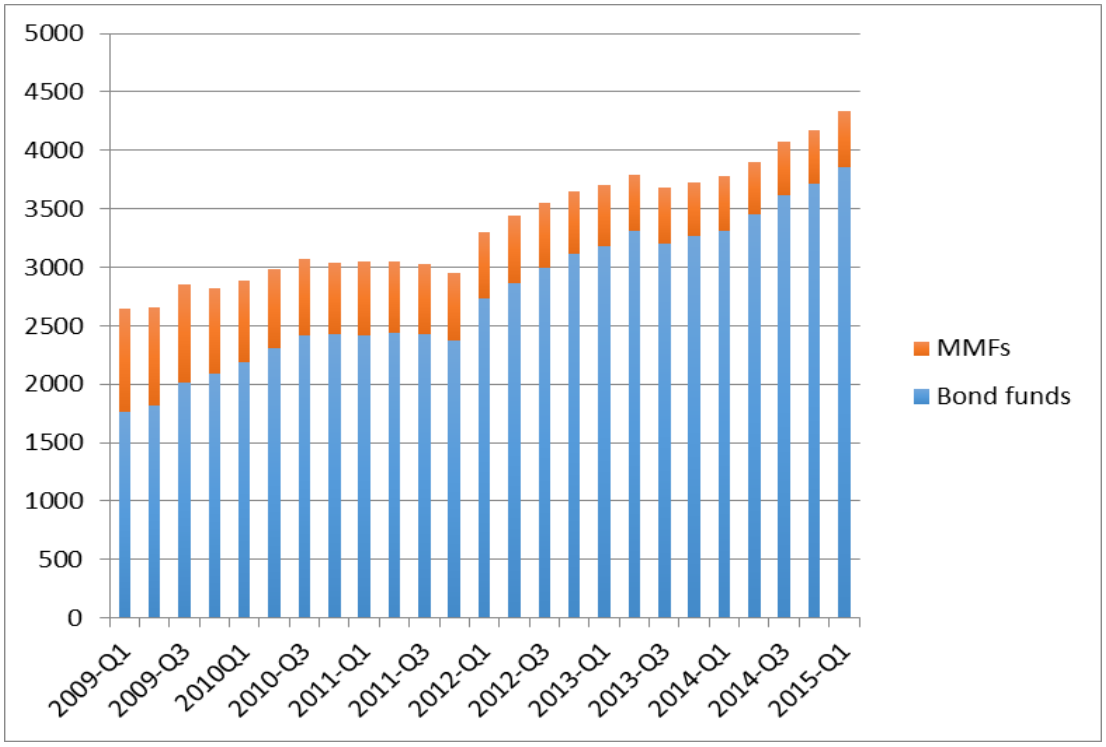
Over all represented period France and the Netherlands has quite stable growing tendency and are impacting the euro zone bond funds in a very similar percentage. In the April of 2015 they consisted respectively 8.7 and 6.8 per cent of the bond funds.

Considering countries that are not having such a significant impact on the total amount of bond funds it is noticeable that they are having the same growing tendency as previously mentioned countries or are sufficiently stable for the period from January of 2009 to April of 2015. Looking to the newest data, for the considered period, the bond funds of Spain took a bit less than 3 per cent, Austria – 3 per cent, Italy – 3.9 per cent, Finland – 1.2 per cent and Belgium 0.8 per cent of the whole bond funds market in the euro area. On the other hand, the part of such countries as Greece (0.03 per cent), Estonia (0.003 per cent), Cyprus (0 per cent), Latvia (0.005 per cent), Lithuania – (0 per cent), Malta (0.04 per cent), Portugal (0.2 per cent), Slovenia (0.004 per cent) and Slovakia (0.06 per cent) is very close or equal to zero, so they are not really giving an impact to the changes of the euro zone bond funds.

4.1.4 The structure of components of the deposits in shadow banking

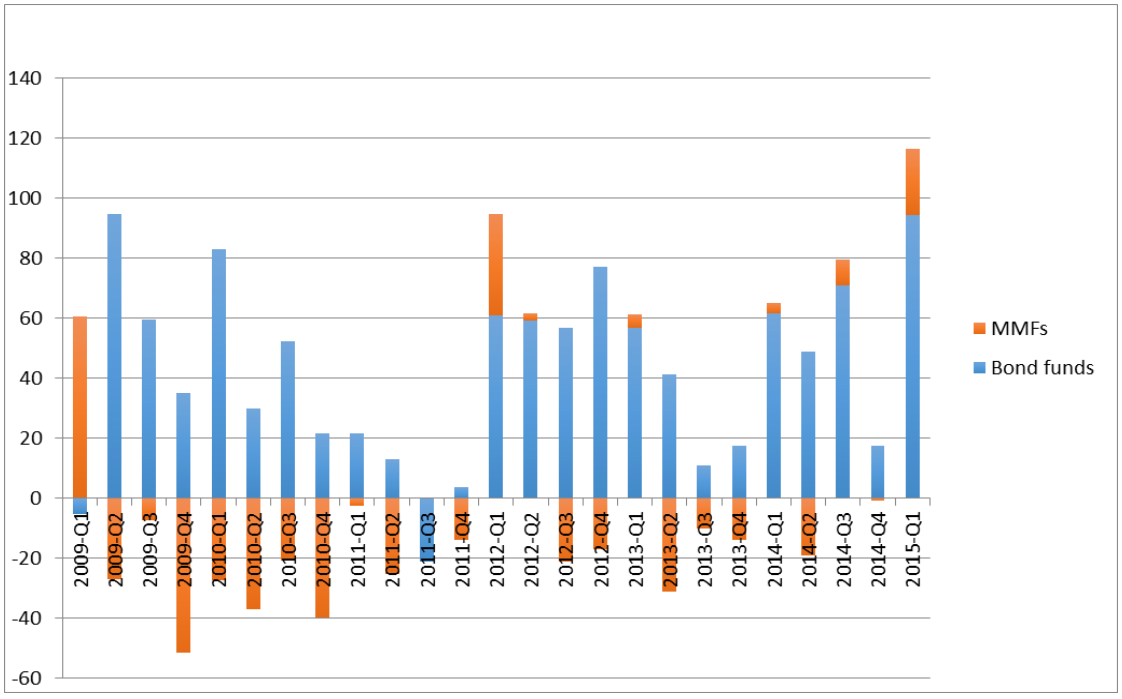
Using the previously made analysis the attention is drawn to the fact, that the bond fund is making the bigger impact to the deposits in shadow banking. In the following part there is represented the structure and changes of the components (MMFs and bond funds) of the shadow banking deposits. The chart below represents the outstanding amounts (in billions euro) of the deposits in the shadow banking that are split into two parts – outstanding amounts in the money market funds and outstanding amounts in the bond funds.

Figure 12 The outstanding amounts of the deposits in the shadow banking



Source: Prepared by the author using ECB statistics

Figure 13 Transactions of the deposits in the shadow banking



Source: Prepared by the author using ECB statistics

The column chart presents (see Figure 12) the clear uptrend not only for the whole outstanding amounts of deposits in shadow banking, but, also, the growing impact of one of the components - outstanding amounts of the bond funds. Even it is see that for the last six years the effect given by the outstanding amounts of the money market funds is mainly decreasing, but it still made an impact on the total size of outstanding amounts of shadow deposits.

In the first quarter of 2009 the bond funds covered a bit more than two thirds of the whole shadow deposits market. At the same time money market funds had been covering the biggest part, it ever took, and that was equal to a bit more than 33 per cent. Even during all the period we see the uptrend, but the bond funds reached the highest coverage not in the last quarter of the period from 2009-Q1 to 2015-Q1. It was reached in 2014 fourth quarter and was equal to almost 90 per cent of all shadow deposits. At that time, the importance of the money market funds, compering to the start time of the research, decreased approximately 3 times and almost lost all the importance on the outstanding amounts of shadow banking deposits.

Considering the transactions of deposits in the shadow banking (see Figure 13) it is seen, that till the end of 2011 money market funds had a significant impact to the number of transactions, as due to the implementation of strictly regulations many investors started to sell the shares of the MMFs and some of them moved to the bond funds. From the beginning of 2012 the interest in the bond funds was growing and the amounts of transactions of them started to increase overtaking the main impact to the whole shadow deposits market.

Summarizing the estimation and analysis on the deposits in the shadow banking in the euro area, for the last six years, the share of the shadow deposits has significantly grown up (by almost 40 per cent). This rapid growth was mainly driven by the increase of one of the components of the shadow deposits. Over the period of the investigation, the outstanding amounts in the bond funds were constantly growing. On the other hand, the outstanding amounts of other component of shadow deposits - the MMFs were decreasing over the period from 2009-Q1 to 2015-Q1. The bond funds overtook, almost, 90 per cent of the outstanding amounts of the shadow deposits in the end of the research period. Considering the transactions of the shadow deposits till the middle of the research period both components equally participated in the market, but in the second part of the research period the leading position of the number of the transactions was taken by the bonds funds. Due to this the bond funds became autocratic leader in the shadow deposits market.

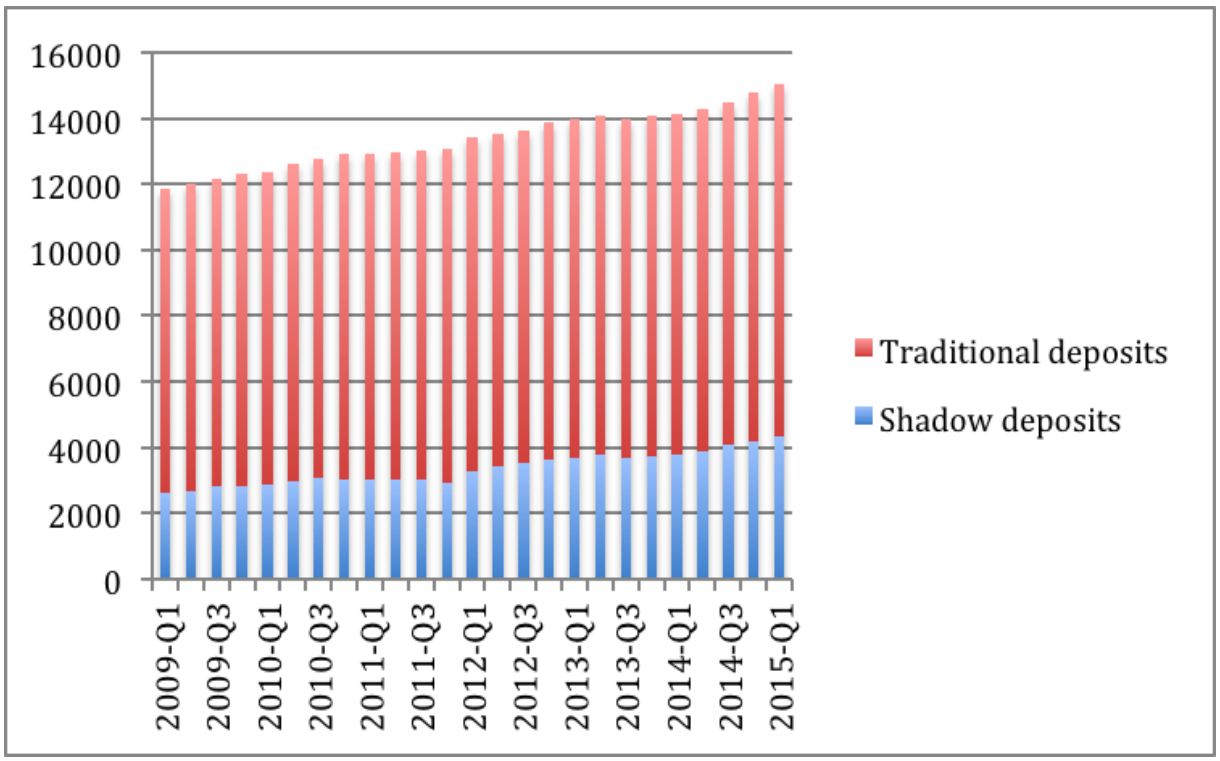
4.2 Shadow banking deposits as a competitor to the bank deposits

This part of the analytical research represents the competition between the deposits and shadow deposits. Here the definition whole deposits market refers to the shadow deposits and traditional deposits together. In the following chart there is the justification for the second hypothesis that the competition, created by the shadow deposits, to traditional deposits is persistently growing over the period of the last six years.

4.2.1 Competition between shadow deposits and traditional deposits

First of all, there is characterized overall situation of the competition between the shadow deposits and traditional – banking deposits. Lately, there is shown detail composition and changes in the components of the whole deposits market. All data in the figures are provided in the billions euro.

Figure 14 The deposits and shadow deposits in the euro area

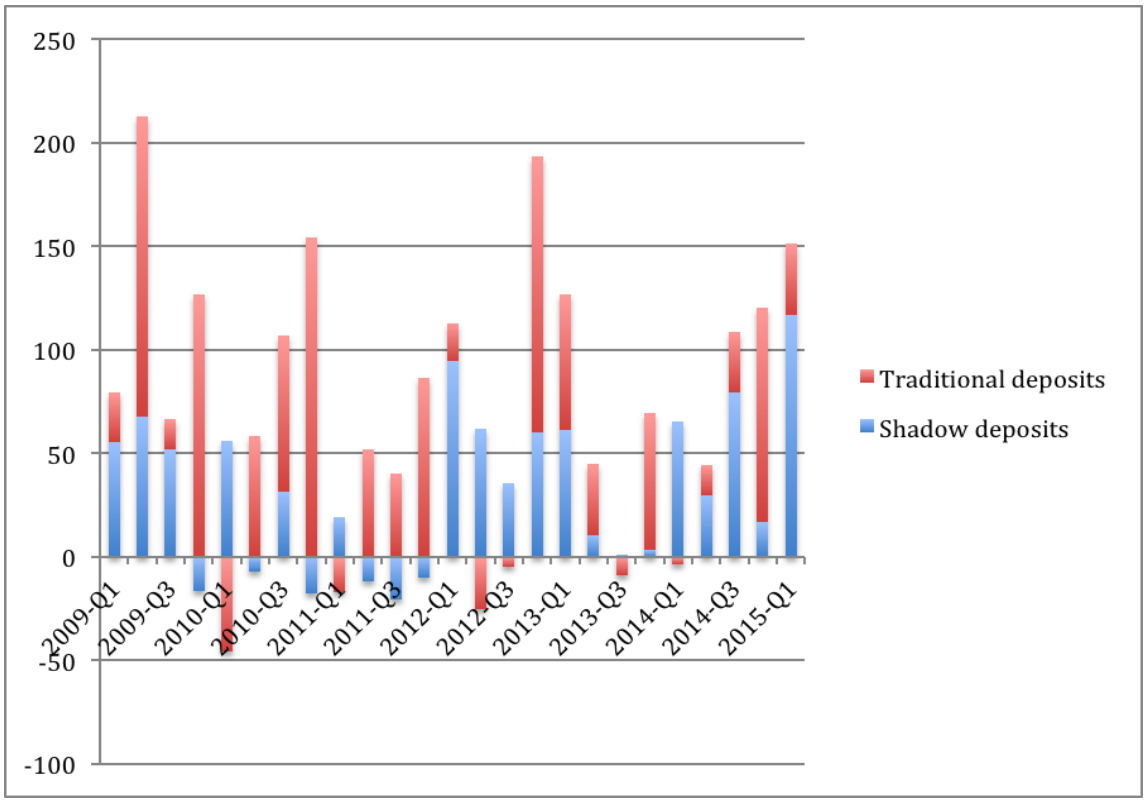


Source: Prepared by the author using ECB statistics

From the first sight to the outstanding amounts of D&SD together (see Figure 14) it is seen that the biggest part of them belongs to the bank deposits. On the other hand, over the period from the 2009-Q1 to the 2015-Q1 the traditional deposits grown by 13.98 per cent and the shadow deposits by

39.01 per cent. So it is natural to expect that the part of the shadow deposits as a competitor to traditional deposits grown over last six years.

Figure 15 Transactions of the deposits and shadow deposits in the euro area



Source: Prepared by the author using ECB statistics

Over the investigated period, the average percentage of the outstanding amounts taken by the deposits in the shadow banking is 25.04 per cent of a whole deposits. In the first quarter of 2009 shadow deposits had the lowest part that was equal to 22.35 per cent of the whole deposits. The biggest competition to the bank deposits was created in the end of the first quarter of 2015 and it was equal to 28.87 per cent. From the 2012-Q2 till the end of the research period the deposits in the SB outperformed the average competition part and have a stable growing tendency.

Analyzing the data of the transactions in the D&SD (see Figure 15) it is seen that none of the components are taking the leading role during the research period. Even the shadow deposits is taking the significantly lower part in the outstanding amounts of the whole deposits market, but in more than half of analyzed quarters (2009-Q1, 2009-Q3, 2010-Q1, 2011-Q1, 2012-Q1, 2012-Q2, 2012-Q3, 2013-Q1, 2013-Q3, 2014-Q1, 2014-Q2, 2014-Q3) the amount of transactions taken by the deposits in the SB was bigger comparing with the traditional deposits. Moreover, after the calculations of the correlation

coefficient it is found that correlation coefficient between the transactions of the traditional deposits and shadow deposits is equal to -0.29. Even it is showing weak relation between the both types of deposits, but the negative meaning is clearly presenting that the traditional deposits and deposits in the shadow banking is the competitors to each other, as the growth of one of them translates to the decrease of the another.

4.2.2 The overview of the whole deposits market in the euro area

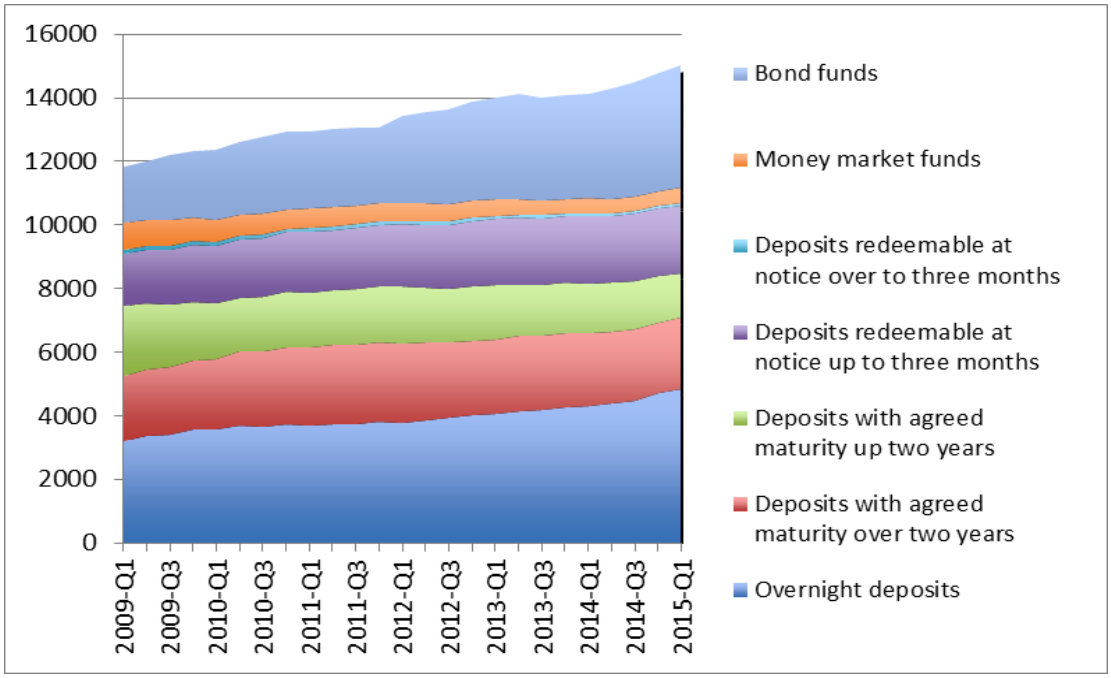
Over the period from 2009-Q1 to 2015-Q1 the outstanding amounts of the whole deposits market (see Figure 14) were steadily growing. In the beginning of the period, the outstanding amounts were equal to 1845.57 billion euro and in the end of the period the maximum amount 15034.55 billion euro was reached. This translated to the more than 21.21 per cent total growth.

The average growth over one quarter for the outstanding amounts of the whole deposits is equal to 0.95 per cent. The highest growth for one quarter, equal to 2.03 per cent is noticed at the fourth quarter in 2010. The lowest negative growth of -0.27 was in the end of the first quarter of 2010. As for the last nine quarters (not including the 2014-Q4 1.63 per cent), the growth rate between quarters is less than the average and for the last 4 of them it is growing (2014-Q2 0.18 per cent, 2014-Q3 0.45 per cent, 2014-Q4 1.63 per cent and 2015-Q1 0.90 per cent), so due to that, the further growth could be expected.

4.2.3 The short - term and long - term bank deposits and the substitutes to them

The traditional deposits could be divided into two big groups: short - term deposits and long - term deposits. The substitutes to them, in this research, respectively are money market funds and bond funds. In addition to that, considering the data availability, in this research paper, short - term deposits consist of overnight deposits, deposits with agreed maturity up two years, deposits redeemable at the notice over and up to three months. Long - term deposits are equal to the deposits with agreed maturity over two years.

Figure 16 The Outstanding amounts of D&SD in the euro zone



Source: Prepared by the author using ECB statistics

Analyzing the structure of outstanding amounts in the whole deposits, over the period from the first quarter of 2009 to the first quarter of 2015, it is seen that, the two main components of them are overnight deposits and bond funds. In the beginning of the research period the biggest part of the outstanding amounts in the whole deposits belonged to the overnight deposits and it was equal to 27.01 per cent. The second place belonged to the outstanding amounts of the deposits with agreed maturity up two years and it was 18.69 per cent of the whole deposits. The third part equal to 17.28 per cent of the outstanding amounts in whole deposits was taken by deposits with agreed maturity over two year. The bond funds part, which was equal to 14.88 per cent, was in the fourth place. The fifth place covered 13.68 per cent of market and belonged to the outstanding amounts of deposits redeemable at notice over three months. Money market funds covering 7.47 of the whole deposits market took the sixth place. Finally, the last place was taken by the deposits redeemable at notice over to three months and it was equal only to 0.99 per cent. In the end of the research period only three of the components of the whole deposits overtook bigger market place. In the first quarter of 2015 overnight deposits, bond funds and deposits redeemable at the notice up to three months took respectively 32.22, 25.67 and 14.09 per cent and first, second and fourth places in the market. The part of the deposits with agreed maturity over two years and up two years, deposits redeemable at notice over three months and money market funds shrunk to respectively 14.78 (third place), 9.47 (fifth place), 0.57 (seventh place) and 3.21 (sixth place) per cent.

So, at the 2009-Q1 long - term deposits covered 17.28 per cent of the whole deposits and substitutes to them (bond funds) had 14.88 per cent of the market. In the end of the investigated period long - term deposits took 14.78 per cent and bond funds - 25.67 per cent. The competition created by the long - term shadow deposits for the traditional long - term deposits rapidly grown and overtook leading position in the market. Moving to the short - term deposits the size of the taken market, also, decreased from 60.37 to 56.35 per cent, but the market part taken by the substitutes (money market funds) decreased from 7.47 per cent to 3.21 per cent over the last six years. Due to that, the competition to the short - term deposits was shrinking over the research period.

Table 4 Correlation coefficients between the transactions of different type of deposits and the bond funds

	Overnight deposits	Deposits with agreed maturity over 2 years	Deposits with agreed maturity up 2 years	Deposits redeemable at notice up to 3 months	Deposits redeemable at notice over 3 months
Normal	0,21774562	-0,094776205	-0,121495076	0,187574553	-0,048163449
Moving avarage of two periods	0,468058944	0,171459626	-0,439499973	0,423438512	0,033965816
Moving avarage of three periods	0,600370919	0,177786344	-0,488470191	0,425173876	0,044154857
Moving avarage of four periods	0,770880053	0,221950438	-0,530647535	0,399648774	-0,019775766

Source: Prepared by the author using ECB statistics

Table 5 Correlation coefficients between the transactions of different type of deposits and money market funds

	Overnight deposits	Deposits with agreed maturity over 2 years	Deposits with agreed maturity up 2 years	Deposits redeemable at notice up to 3 months	Deposits redeemable at notice over 3 months
Normal	-0,28886833	-0,25005332	-0,070429554	0,195447743	0,039346665
Moving avarage of two periods	0,278385633	-0,169521171	0,072784754	-0,180070582	0,100576194
Moving avarage of three periods	0,215273061	-0,421480025	0,206230424	-0,32714012	0,061411287
Moving avarage of four periods	0,370099825	-0,540934603	0,338623941	-0,480518321	-0,042036472

Source: Prepared by the author using ECB statistics

Analyzing the transactions of the traditional deposits and the substitutes to them the most important part is to check if changes in the transactions of any type of traditional deposits were impacted by the changes of the transactions of the components of the deposits in shadow banking, in other words, to find which of the traditional deposits have the biggest competition with the shadow deposits. For this purpose the correlation coefficients (see Table 4) are used. The coefficients are calculated for data of all quarters from the 2009-Q1 to 2015-Q1 (marked as normal in the table) and for the moving averages of the two quarters (marked as moving average of two periods in the table), three quarters (marked as moving average of three periods in the table) and four quarters (marked as moving average of four periods in the table).

First of all, the competition between bond funds and all types of traditional deposits is considered. In the line representing the normal correlation coefficient (see Table 4) it is seen that the competition exist only between the bond funds and deposits with agreed maturity over and up two years and deposits redeemable at notice over three months, as the correlation coefficients are negative. Moreover, as the biggest negative coefficiant is between the bond funds and deposits with agreed maturity up two years, the conclusion could be made that bond funds create the biggest competition to them. Analyzing the same coefficient for the data of moving avarages of diffrent periods the growing negative dipendence, or in other words, competition is seen. In the contrary, other negative relations disapear. This is confirming the fact that the biggest competition created by the bond funds as a part of shadow deposits is for the deposits with agreed maturity up two years.

Likewise, analyzing the data of the correlation coefficients between money market funds and traditional deposits (see Table 5), it is seen that the MMFs create the competition to the overnight deposits and deposits with agreed maturity of over and up two years. The biggest compettion is for the overnight deposits, not only because of the most negative coeficient, but, also, because of the similar nature of the products (very liquide and short term). Drawing the atention to the coefficients related with the moving averages of diffrent time periods, it is noticed that the opposit, than in the relations with the bond funds, tendencies are visible. This is related with the decresing importance of the MMFs during the research period (2009-Q1 - 2015-Q1) and growing influence of the bond funds.

To sum up, the analysis and estimation of the competition between the shadow deposits and traditional deposits, over the period of the last six years, shows that the whole deposits market had the tendency to grow. Both components of it (shadow deposits and traditional deposits) increased the outstanding amounts in the whole deposits, but the growth of shadow deposits is more significant. This

sharper increase translated to the constantly growing competition to the traditional deposits. Analyzing and calculating the part of the substitutes to the long – term and short - term – deposits the attention was drawn to the fact that the competition created by the deposits in shadow banking is growing only to the long – term deposits, while the competition for the short – term deposits created by the money market funds decreased. Analyzing the separated types of the traditional deposits was noticed that the biggest competition created by the bond funds was for the deposits with agreed maturity up two years and MMFs mostly compete with the overnight deposits.

CONCLUSIONS

1. The financial system of the European Union is a very complicated, but with thoroughly organized regulation within the EU. The statistical classification defines three main groups of the financial institutions: monetary financial institutions, financial vehicle corporations and investment funds. Two of them – MFIs and IFs are particularly important for the estimation of the shadow deposits as the statistics of MMFs fall under the statistics of sub – sector of monetary financial institutions – credit institutions and the bond funds are the part of investment funds.

2. There is no universally acceptable definition of the shadow banking. Considering, all definitions suggested by many different authors in the brought sense shadow banking could be defined as the non – banking actions or institutions related or participating in the credit intermediation, credit discretization, maturity and liquidity transformations.

3. As there is no universally agreed definition of shadow banking, also, there is no agreed list of the components and activities involved in it. The European Union defines some main activities and sectors that could be consider as the SB: securitization, money market funds, hedge funds and repurchase agreements. But some activities that are related with the credit discretization as bond funds, some of the activities related with the pension funds are forgotten and not include in the list of the shadow banking even they are the participants of the SB.

4. The specified statistics for the analysis of the shadow banking do not exist in the European Union. For the purpose of the estimation of the SB could be used several types of statistics: financial accounts, monetary, flow of funds, balance sheet statistics of the member states of the EU. As all of these statistics are collected for the different purposes they are not harmonized between each other and none of them has all necessary information relating all shadow banking activities. Due to that, till now there are no accurate calculations of shadow banking in the European Union. After the implementation of the ESA 2010 the new and more accurate division of financial corporations was provided. It helps to estimate shadow banking more accurately as the sub – sectors of money market funds; other financial intermediaries now are separated.

5. For more than fifteen resent years the importance of the shadow banking is growing. This was caused by the shrinking popularity of the traditional banking system due to the introduction of

some strictly rules for the credit supply after the financial crisis. The shadow deposits gave a great impact to the growth of the SB, as they are the substitutes to the traditional deposit. Growing importance of shadow banking brought to the light some important risks related with it. As the SB is lacking of safety net it could be the reason of some financial shocks or even the cause of the systemic risk. Due to this the necessity of the regulations became very important. The European Union decided to implement three level regulations for shadow banking: indirect, direct and prudential regulation. Moreover, some of the countries have additional regulations, for example, some regulations for repo market.

6. The shadow deposits could be calculated as a sum of the bond funds and the money market funds. This formula is defined by searching of the substitutes to the traditional banking deposits. The MMFs are the substitutes to the traditional deposits as the definition provided by the ESA 2010 stays that sub – sector of MMFs unites corporations and quasi – corporations participating in the financial intermediation and producing the shares of investment funds that are close substitutes to the bank deposits. The bond funds are the substitutes to the bank deposits as the definition of them has the similarities with the definition of the traditional deposits and there is shown that the indexes of growth rates of the bond funds and the indexes of growth rates of the deposits have the strong positive correlation between each other. Moreover, the behavior of the growth rates of bond funds and deposits comparing with behavior of the growth rates of stock index is similar.

7. The size of outstanding amounts of the deposits in shadow banking over the period for the last six years is persistently growing. From the first quarter of 2009 to the first quarter of the 2015 the outstanding amounts of shadow deposits grown by 39.01 per cent. This growth is mainly driven only by one of the components of the deposits in the SB. During the research period the outstanding amounts of the money market funds lost around 47 per cent of their value, but the outstanding amounts of the bond funds increased their value by almost 56 per cent. Moreover, considering the overall structure of the shadow deposits in the beginning of the research period the bond funds took 66.6 per cent of the whole shadow deposits and in the end of the research it became an autocratic leader by taking 89.9 per cent of the deposits in shadow banking. The same leading position of the bond funds is confirmed by the analysis of the transactions of the shadow deposits. Till the midterm of the research there was no clear leader and the amount of transactions was divided between both components of the deposits in the SB, but from 2011 the regulations of the money market funds were already implemented, as a result the market of the

MMFs “calm down” and the bond funds took leading positions in the transactions of the shadow deposits.

8. The main outstanding amounts in the bond funds in the euro area are held by the Luxembourg. From the beginning of the research the part of the Luxembourgish bond funds grown from the 33 per cent to 40 per cent of the shadow deposits. At the end of the investigated period Germany with the 20 per cent and Ireland with the 14.1 per cent of the outstanding amounts of the shadow deposits and been in the second and third places. The impact on the deposits in shadow banking is, also, made by the bond funds located in France and Netherlands as they respectively had almost 9 and 7 per cent of the deposits in the SB in the euro area. On the other hand, other fourteen euro zone countries do not have a significant part of the shadow deposits in the euro area.

9. The competition, created by the shadow deposits, to the traditional deposits grown in the resent six years. From the first quarter of 2009 to the first quarter of 2015 the part of the outstanding amounts of the whole deposits taken by the outstanding amounts of the deposits in the shadow banking increased from 22.35 to 28.87 per cent. After the deeper analysis the attention was drawn to the fact that the competition created by the substitutes to the long – term deposits (the bond funds) is the only reason of the overall growth of the shadow deposits part in the euro are. At the same time the outstanding amounts of the substitutes to the short – term traditional deposits decreased from 7.47 to 3.21 per cent. In general, during the time of the research, the long – term deposits decreased the outstanding amounts in the whole deposits by 2.4 per cent, but the substitutes to them – bond funds increased by 10.89 per cent. On the contrary, the outstanding amounts of the short – term deposits decreased by 1.02 per cent and the money market funds, as well, shrunk by 4.26 per cent.

10. After the investigation of the competition between the components of the shadow deposits and all types of traditional deposits was noticed that not all of the elements are competing between each other. The bond funds create the competition to the deposits with the agreed maturity up and over two years and to the deposits redeemable at notice over three months. The strongest negative relation is noticed between bond funds and deposits with agreed maturity up two years. The MMFs compeats with the overnight deposits and deposits with agreed maturity over and up two years. Consigering the MMFs, they create the strongest competition to overnight deposits.

RECOMMENDATIONS

1. As the statistics of the MMFs are provided in the quarterly basis and the statistics of the bond funds are provided on a monthly basis, I would recommend both of them to provide on a monthly basis, that more detailed estimations could be made on the deposits in the shadow banking.

2. The international commission of the financial specialist should be formed that to agree on one universally acceptable definition of shadow banking. The definition of the SB as "activities related to credit intermediation, liquidity and maturity transformation that take place outside the regulated bank system" which is recommended by the Financial Security Board could be used as a foundation.

3. The list of the main activities and participants in the shadow banking in the euro area should be revised and supplemented. All activities related to the credit discretization, maturity and liquidity transformations, credit intermediation (such as bond funds, securitization, repos, hedge funds, some activities related with insurance and pension funds, leasing corporations and etc.) should be revised and, if needed, should be included in the new list.

4. The separate, harmonized statistics for the shadow banking activities should be collected, that the estimation and analysis on the SB could be accurately made. As a start, the European Union could use the USA example and prepare some volunteering questionnaires regarding the activities of the financial sector participants considered as shadow banking.

5. At the moment the regulation of shadow banking activities is not giving the expected results, as there is no strict rules of which activities have to fall under the regulations of the SB, so it is necessary to define them and to implement the regulations.

6. The monthly or quarterly statistic on the shadow deposits should be collected, as it could be useful for the analysis of the competition for traditional deposits and overall financial situation.

REFERENCES

1. Bakk-Simon K. et al. Shadow banking in the euro area an overview. Occasional paper series No 133.- ECB, 2012 April

2. Gorton G. et al. Shadow banking. Brookings Papers on Economic Activity, 2010, 261-312p.

3. Zabala C. A., Josse J.M. Shadow credit and private middle market. The Journal of Risk Finance, 2014

4. Global Shadow Banking Monitoring Report 2014 // http://www.financialstabilityboard.org/wp-content/uploads/r_141030.pdf?page_moved=1 [viewed on 14-01-2015]

5. Luck S., Shempp P. Banks, shadow banking and fragility // https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1726.pdf [viewed on 14-01-2015]

6. Valckx N. et al. Global financial stability report: risk taking, liquidity, and shadow banking – Curbing excess while promoting growth. – IMF, 2014 October // https://www.imf.org/external/pubs/ft/gfsr/2014/02/pdf/c2.pdf [viewed on 14-01-2015]

7. Jackson C., Matilainen J. Macro-mapping the euro are shadow banking with financial sector balance sheet statistics // http://www.bis.org/ifc/events/6ifcconf/jacksonmatilainen.pdf [viewed on 03-09-2015]

8. Constâncio V. Shadow banking – the ECB perspective, Brussels, 2012 // http://www.bis.org/review/r120430d.pdf [viewed on 03-06-2015]

9. Bankers warn on new shadow lenders in US mortgage rule changes// http://www.ft.com/cms/s/0/cd74ccae-7939-11e3-91ac-00144feabdc0.html#axzz3SmBenH89 [viewed on 26-02-2015]

10. Delamaide: Throwing light on 'shadow banking' // http://www.usatoday.com/story/money/2015/02/17/shadow-banking-too-big-to-fail/23564005/ [viewed on 26-02-2015]

11. Shadow Lenders Fuel Risk as Canadian Home Prices Soar // http://www.bloomberg.com/news/articles/2015-01-21/shadow-lenders-fuel-risk-as-canadian-home-prices-soar-mortgages [viewed on 26-02-2015]

12. Konno S., Teramoto A., Mera Y. Compiling statistics of shadow banking // http://www.bis.org/ifc/events/6ifcconf/konnoteramotomera.pdf [viewed on 06-06-2015]

13. Gelos G., Valckx N. The growth of shadow banking, 2014// http://blog-imfdirect.imf.org/2014/10/03/the-growth-of-shadow-banking/ [viewed on 06-06-2015]

14. Hakkarainen P. Shadow baking – what kind of regulation for (European) shadow banking?, 2014 http://www.bis.org/review/r141114g.htm [viewed on 07-06-2015]

15. European Central Bank Banking structures report, 2014 October // https://www.ecb.europa.eu/pub/pdf/other/bankingstructuresreport201410.en.pdf [viewed on 22-08-2015]

16. List of financial institutions // https://www.ecb.europa.eu/stats/money/mfi/html/index.en.html [viewed on 22-08-2015]

17. Number of monetary financial institutions // https://www.ecb.europa.eu/stats/money/mfi/general/html/mfis_list_index.en.html [viewed on 22-08-2015]

18. The history of European union// http://europa.eu/about-eu/eu-history/index_en.htm [viewed on 22-08-2015]

19. About the European Union// http://europa.eu/about-eu/basic-information/about/index_en.htm [viewed on 22-08-2015]

20. Sapanci B., Sener K., Goc S. Financial system of European Union. Capital markets & Financial institutions, 2014 University of Dokuz Eylul

21. EBA About Us // http://www.eba.europa.eu/about-us [viewed on 23-08-2015]

22. Regulation and policy // http://www.eba.europa.eu/regulation-and-policy [viewed on 23-08-2015]

23. ESMA in short // https://www.esma.europa.eu/page/esma-short [viewed on 23-08-2015]

24. EIOPA: Missions and tasks // https://eiopa.europa.eu/about-eiopa/missions-and-tasks [viewed on 30-08-2015]

25. Regulation & Supervision // https://eiopa.europa.eu/regulation-supervision [viewed on 30-08-2015]

26. ESRB: Mission, objectives and tasks // https://www.esrb.europa.eu/about/tasks/html/index.en.html [viewed on 30-08-2015]

27. European securitization. A resource guide // http://people.stern.nyu.edu/igiddy/ABS/resourceguide.pdf [viewed on 31-08-2015]

28. Securities and Exchange commission Money Market Fund Reform, 2014 // http://www.sec.gov/rules/final/2014/33-9616.pdf [viewed on 01-09-2015]

29. BlackRock Understanding repurchase agreements, 2014 // https://www.blackrock.com/cash/literature/whitepaper/understanding-repurchase-agreements.pdf [viewed on 02-09-2015]

30. Stowell D. Investment banks, Hedge funds, and private equity / second edition – Walthman, MA, USA, 2013

31. The shadow banking in the euro area: overview and monetary policy implications, 2014, Deutsche Bundesbank // https://www.bundesbank.de/Redaktion/EN/Downloads/Publications/Monthly_Report_Articles/2014/2014_03_shadow.pdf?__blob=publicationFile [viewed on 03-09-2015]

32. European Commission Green paper: Shadow Banking, 2012, Brussels // http://ec.europa.eu/finance/bank/docs/shadow/green-paper_en.pdf [viewed on 08-09-2015]

33. ISTAT Main differences between Esa 2010 and Esa 95, 2014 // http://www.istat.it/en/files/2014/01/Istat-main_differences-between_Esa2010-Esa95.pdf [viewed on 26-09-2015]

34. European Commission Memo: Questions and Answers: European System of Accounts 2010, 2014 // http://europa.eu/rapid/press-release_MEMO-14-21_en.htm [viewed on 26-09-2015]

35. Eurostat Manual on the changes between ESA 95 and ESA 2010, 2014 // http://ec.europa.eu/eurostat/documents/3859598/5936825/KS-GQ-14-002-EN.PDF/b247b032-6910-4db8-8f29-cb71d575752f [viewed on 27-09-2015]

36. Eurostat Euro System of accounts; ESA 2010, 2014 // http://ec.europa.eu/eurostat/documents/3859598/5925693/KS-02-13-269-EN.PDF [viewed on 27-09-2015]

37. ECB Statistical Data Warehouse Statistics of Money Market Funds outstanding amounts and financial transactions // http://sdw.ecb.europa.eu/browseTable.do?node=bbn3507&SERIES_KEY=117.BSI.Q.U2.N.F.A42.A.1.U2.1000.Z01.E&SERIES_KEY=117.BSI.Q.U2.N.F.A42.A.4.U2.1000.Z01.E [viewed on 24-10-2015]

38. ICI Money Market Mutual Funds, Risk, and Financial stability in the wake of the 2010 reforms, 2013 // https://www.ici.org/pdf/per19-01.pdf [viewed on 24-10-2015]

39. ECB Statistical Data Warehouse Euro area flows and outstanding amounts of deposits liabilities // [viewed on 19-11-2015]

40. ECB, Statistics Euro area and national investment fund statistics – by investment policy and type of fund // http://www.ecb.europa.eu/stats/money/funds/html/investment_funds_index.en.html [viewed on 07-11-2015]

41. ECB Statistical data Warehouse Flows and Outstanding amounts of MMFs in Euro zone //http://sdw.ecb.europa.eu/browseTable.do?node=bbn3507&SERIES_KEY=117.BSI.Q.U2.N.F.L30.A.1.U2.0000.Z01.E&SERIES_KEY=117.BSI.Q.U2.N.F.L30.A.4.U2.0000.Z01.E [viewed on 07-11-2015]

42. Deposit Guarantee schemes // http://ec.europa.eu/finance/bank/guarantee/index_en.htm [viewed on 09-11-2015]

Burbulytė E. Shadow banking in the euro area: the estimation of deposit substitutes / Financial markets master thesis. Supervisor dr. R.J. Vaicenavičius. – Vilnius: University of Mykolas Romeris, Department of Economics and Finance Management, 2015.

ANNOTATION

In the master thesis is represented the analysis of the shadow banking in the euro area, the share of shadow deposits is calculated and the changes in the structure of it is shown. Moreover, the aspect of the competition between traditional banking deposits and shadow deposits is, as well, investigated. In the first chapter of the master thesis the financial system in the European Union is introduced. In the second part of the work the main concepts of shadow banking are analyzed according to the attitude of many scientists. The definition, components, statistical sources, importance, regulations and risk of shadow banking are discussed. The third part represents the methodology of the estimation of the deposits in shadow banking; the new, never before used formula is presented. In the fourth chapter of the thesis the analysis and estimation of shadow banking deposits in the euro zone is made, the competition between shadow deposits and different type of traditional deposits are researched and discussed. The fifth part or the paper presents the conclusions and recommendations of the master thesis.

Key words: Shadow banking, shadow deposits, substitutes to the traditional deposits, competition to the deposits.

Burbulytė E. Šešėlinė bankininkystė euro zonoje: indėlių pakaitalų vertinimas / Finansų rinkų magistro baigiamasis darbas. Vadovas dr. R.J. Vaicenavičius.- Vilnius: Mykolo Romerio universitetas, Ekonomikos ir finansų valdymo fakultetas, 2015

ANOTACIJA

Magistro darbe yra pristatoma šešėlinė bankininkystė euro zonoje, apskaičiuota šešėlinių indėliu dalis ir struktūriniai pasikeitimai rinkoje. Be to, yra nagrinėjamas konkurencinis aspektas tarp tradicinių ir šešėlinių indėlių. Pirmajame magistro darbo skyriuje trumpai pristatoma finansų sistema Europos sąjungoje. Antrajame, remiantis keliolikos autorių įžvalgomis, nagrinėjami pagrindiniai šešėlinės bankininkystės aspektai: apibrėžimas, statistiniai metodai, svarba, rizika, nuostatai ir kt. Trečioji dalis yra skirta supažindinti su magistro darbo metodika, naudotais statistiniais duomenimis, pristatoma dar niekada nenaudota šešėlinių indelių skaičiavimo formulė. Statistinių duomenų analizė ir skaičiavimai yra pristatomi ketvirtojoje magistro darbo dalyje. Paskutinė, penktoji dalis, tai magistro darbe padarytos išvados ir rekomendacijos.

Pagrindiniai žodžiai: šešėlinė bankininkystė, šešėliniai indėliai, tradicinių indėlių pakaitalai, konkurencija indėliams.

Burbulytė E. Shadow banking in the euro area: the estimation of deposit substitutes / Financial markets master thesis. Supervisor dr. R.J. Vaicenavičius. – Vilnius: University of Mykolas Romeris, Department of Economics and Finance Management, 2015.

SUMMERY

The master thesis “Shadow banking in the euro area: the estimation of deposit substitutes” is relevant as the topic of the shadow banking is very debatable and quite new in the financial world. Even many researchers investigated this topic, but till nowadays there are no universally agreed definition of the shadow banking, no list of activities that could be defined as SB, no special statistics or formulas that could help to estimate the size of it. So, this thesis represents one of the alternatives how the shadow deposits could be calculated, analyzes the changes in the structure of the SB deposits, also, focuses on the shadow deposits as a competitor to the traditional deposits.

Analyzing the statistical data of the ECB in the master thesis was discovered that, over the period of the last six years, the shadow deposits sector is persistently growing and that the competition to the traditional deposits created by the deposits in the shadow banking, also, increased.

The structure of the master thesis is as follows: in the first part of the paper the financial system in the European Union is introduced, in the second – the definition, main components, statistical sources, importance, risk, regulations and other main concepts of the shadow banking are defined. The methodology, statistical data sources, used techniques and software are presented in the third part of the thesis. In the fourth part the analysis and estimations on the shadow deposits and the competition between the shadow and traditional deposits are discussed. The conclusions and recommendations of the master thesis are in the fifth part of the paper.

Burbulytė E. Šešėlinė bankininkystė euro zonoje: indėlių pakaitalų vertinimas / Finansų rinkų magistro baigiamasis darbas. Vadovas dr. R.J. Vaicenavičius.- Vilnius: Mykolo Romerio universitetas, Ekonomikos ir finansų valdymo fakultetas, 2015

SANTRAUKA

Magistro darbas "Šešėlinė bankininkystė euro zonoje: indelių pakaitalų vertinimas" yra aktualus, kadangi šešėlinė bankininkystė vis dar yra pakankamai naujas ir neišnagrinėtas reiškinys finansų pasaulyje. Nors ir daug autorių jau nagrinėjo šią temą, tačiau iki šių dienų vis dar nėra sutarta dėl vieningo šešėlinės bankininkystės apibrėžimo, nėra bendro visų šešėlinės bankininkystės veiklų sąrašo bei jokia specifinė šios srities statistika, kuri galėtų padėti apskaičiuoti šešėlines bankininkystės dydį dar nėra renkama. Taigi, šis magistro rašto darbas, pateikia vieną iš būdų, kaip galima apskaičiuoti indėlius esančius šešėlinėje bankininkystėje, nagrinėja jų sandarą bei kaitą, bei aptaria šešėlinius indėlius, kaip alternatyvą tradiciniams indėliams.

Tiriant Europos centrinio banko pateiktą statistika, darbe buvo nustatyta, jog per pastaruosius šešis metus ne tik šešėlinių indėlių sektorius augo, bet ir jų sukurta konkurencija tradiciniams indėliams didėjo.

Magistro darbas yra sudarytas iš penkių pagrindinių dalių. Pirmojoje yra trumpai aptariama finansinė Europos sąjungos sistema. Antrojoje išanalizuojamos pagrindinės sąvokos, struktūra, statistinės duomenų bazės, rizikos, nuostatai ir kitos svarbios detalės susijusios su šešėline bankininkyste. Metodinės priemonės, statistiniai duomenys ir jų apdorojimo būdai yra pristatomi trečiojoje darbo dalyje. Ketvirtoji dalis pateikia pačią duomenų analizę, apskaičiuotus šešėlinius indėlius bei konkurenciją tarp tradicinių ir šešėlinių indėlių. Paskutinėje magistro darbo dalyje yra pristatomos viso padarytos išvados bei rekomendacijos.

ANNEXES

ANNEX 1

OUTSTANDING AMOUNTS AND TRANSACTIONS OF MONEY MARKET FUNDS SHARES/UNITS IN EURO AREA

	Outstanding amounts in millions euro	Transactions in millions euro
2006-Q1	686701	Not available
2006-Q2	703121	17927
2006-Q3	728013	15127
2006-Q4	698257	-4713
2007-Q1	758698	62278
2007-Q2	795599	33525
2007-Q3	778394	-17616
2007-Q4	754077	-15181
2008-Q1	843419	59644
2008-Q2	831828	-11229
2008-Q3	833366	-788
2008-Q4	825337	-13443
2009-Q1	885209	60733
2009-Q2	838761	-27206
2009-Q3	832494	-7432
2009-Q4	733385	-51581
2010-Q1	706070	-27315
2010-Q2	672987	-37140
2010-Q3	652089	-20898
2010-Q4	612347	-39741
2011-Q1	632868	-2465
2011-Q2	607572	-25210
2011-Q3	607591	159
2011-Q4	570603	-14012

ANNEX 1 is continued in the next page

Continuation of ANNEX 1

2012-Q1	571911	33780
2012-Q2	574184	2273
2012-Q3	553343	-21056
2012-Q4	534678	-17204
2013-Q1	523679	4609
2013-Q2	486852	-31222
2013-Q3	476772	-10079
2013-Q4	462875	-13898
2014-Q1	468693	3545
2014-Q2	449706	-18987
2014-Q3	458412	8706
2014-Q4	455614	-909
2015-Q1	481958	22149
2015-Q2	474492	-7401

ANNEX 2

OUTSTANDING AMOUNTS AND TRANSACTIONS OF BOND FUNDS IN EURO AREA

	Outstanding amounts in billions euro	Transactions in billions euro
2009-01	1758,90169	5,650193717
2009-02	1765,204137	-0,991895833
2009-03	1762,226197	-10,11877372
2009-04	1747,609343	7,111769231
2009-05	1773,47597	20,57538776
2009-06	1821,159973	67,07766231
2009-07	1918,573506	35,73069657
2009-08	1981,130009	12,90018
2009-09	2015,266061	10,88691803
2009-10	2042,718526	15,60434911
2009-11	2069,712396	12,23176382
2009-12	2090,60677	7,088233735
2010-01	2102,586709	24,45777358
2010-02	2152,513342	15,00621267
2010-03	2182,817423	43,62850746
2010-04	2249,161132	19,75390335
2010-05	2282,036499	3,347135802
2010-06	2308,028082	6,832923077
2010-07	2322,349798	17,22917209
2010-08	2342,710367	20,43833645
2010-09	2420,324166	14,646
2010-10	2409,32212	14,61531034
2010-11	2426,118618	10,80964286
2010-12	2426,387953	-3,661725275
2011-01	2404,361366	7,225985915
2011-02	2398,713065	10,17221854

ANNEX 2 is continued in the next page

Continuation of ANNEX 2

2011-03	2417,08843	4,208
2011-04	2399,753324	2,336397959
2011-05	2403,772019	9,664677419
2011-06	2439,570795	1,043853659
2011-07	2421,691129	9,204501916
2011-08	2453,134686	-14,89143672
2011-09	2424,232071	-15,39029825
2011-10	2418,403989	1,560525
2011-11	2419,731838	-8,162077922
2011-12	2378,18742	10,36530357
2012-01	2576,058056	15,53694545
2012-02	2682,843596	14,45259716
2012-03	2733,055066	30,87520107
2012-04	2775,098205	14,62295833
2012-05	2802,98963	26,5973516
2012-06	2866,497433	18,08426667
2012-07	2876,440158	27,43546218
2012-08	2979,39767	17,44416667
2012-09	2998,471934	11,8202515
2012-10	3013,707042	29,77689145
2012-11	3070,848263	28,69054015
2012-12	3111,189066	18,71389767
2013-01	3143,79351	21,94595329
2013-02	3137,348514	14,97933333
2013-03	3183,065491	19,89212903
2013-04	3239,184076	40,17418496
2013-05	3317,926339	25,42187342
2013-06	3308,878958	-24,34407059
2013-07	3208,352336	20,31805405

ANNEX 2 is continued in the next page

Continuation of ANNEX 2

2013-08	3236,146192	-7,327567568
2013-09	3206,754817	-2,2135
2013-10	3224,813288	8,253567723
2013-11	3257,3221	12,81977778
2013-12	3262,569968	-3,628420168
2014-01	3289,358731	6,971992308
2014-02	3264,351116	23,36691821
2014-03	3306,399745	31,33568191
2014-04	3360,646013	13,25598667
2014-05	3393,506205	18,548
2014-06	3450,258724	16,98918519
2014-07	3496,569596	27,39896774
2014-08	3553,309783	19,35018229
2014-09	3612,990254	24,10493233
2014-10	3648,622324	21,29233641
2014-11	3684,779678	12,26761404
2014-12	3719,777375	-54,41628571
2015-01	3662,326404	25,70952991
2015-02	3816,832502	35,59083511
2015-03	3859,112088	33,06486878
2015-04	3995,825702	30,0311028

ANNEX 3

THE INDEXES OF GROWTH RATES

DATE	Bond funds growth rate	SX5E Index growth rate	Deposits growth rate
2009-03	0,99	14,69	1,00
2009-04	1,00	3,20	1,01
2009-05	1,01	-2,02	1,01
2009-06	1,05	9,84	1,02
2009-07	1,07	5,19	1,02
2009-08	1,08	3,51	1,02
2009-09	1,08	-4,50	1,02
2009-10	1,09	1,96	1,02
2009-11	1,10	6,00	1,02
2009-12	1,10	-6,35	1,03
2010-01	1,11	-1,74	1,03
2010-02	1,12	7,43	1,03
2010-03	1,14	-3,90	1,03
2010-04	1,15	-7,33	1,04
2010-05	1,16	-1,42	1,04
2010-06	1,16	6,56	1,04
2010-07	1,17	-4,35	1,05
2010-08	1,18	4,76	1,05
2010-09	1,19	3,53	1,05
2010-10	1,19	-6,82	1,05
2010-11	1,20	5,35	1,07
2010-12	1,20	5,76	1,08
2011-01	1,20	2,01	1,07
2011-02	1,20	-3,39	1,07
2011-03	1,21	3,45	1,07

ANNEX 3 is continued in the next page

Continuation of ANNEX 3

2011-04	1,21	-4,96	1,08
2011-05	1,21	-0,47	1,08
2011-06	1,21	-6,25	1,08
2011-07	1,22	-13,79	1,08
2011-08	1,21	-5,32	1,08
2011-09	1,20	9,43	1,09
2011-10	1,20	-2,30	1,09
2011-11	1,20	-0,60	1,09
2011-12	1,20	4,32	1,09
2012-01	1,21	3,95	1,09
2012-02	1,22	-1,39	1,09
2012-03	1,23	-6,90	1,09
2012-04	1,24	-8,13	1,09
2012-05	1,25	6,88	1,09
2012-06	1,26	2,69	1,09
2012-07	1,27	4,94	1,08
2012-08	1,28	0,56	1,08
2012-09	1,28	2,01	1,08
2012-10	1,30	2,86	1,08
2012-11	1,31	2,36	1,08
2012-12	1,32	2,54	1,09
2013-01	1,33	-2,57	1,09
2013-02	1,33	-0,36	1,09
2013-03	1,34	3,35	1,10
2013-04	1,36	2,13	1,10
2013-05	1,37	-6,03	1,10
2013-06	1,36	6,36	1,11
2013-07	1,37	-1,69	1,10
2013-08	1,36	6,31	1,10

ANNEX 3 is continued in the next page

Continuation of ANNEX 3

2013-09	1,36	6,04	1,10
2013-10	1,37	0,61	1,10
2013-11	1,37	0,72	1,10
2013-12	1,37	-3,06	1,10
2014-01	1,37	4,49	1,10
2014-02	1,38	0,39	1,10
2014-03	1,40	1,16	1,10
2014-04	1,40	1,44	1,09
2014-05	1,41	-0,50	1,09
2014-06	1,42	-3,49	1,09
2014-07	1,43	1,83	1,09
2014-08	1,44	1,68	1,10
2014-09	1,45	-3,49	1,09
2014-10	1,45	4,42	1,10
2014-11	1,46	-3,21	1,10
2014-12	1,44	6,52	1,11
2015-01	1,45	7,39	1,11
2015-02	1,46	2,73	1,11
2015-03	1,48	-2,21	1,12
2015-04	1,49	-1,24	1,12

ANNEX 4

OUTSTANDING AMOUNTS OF DEPOSITS IN BILLION EURO IN EURO ZONE

	Overnight deposits	Deposits with agreed maturity over two years	deposits with agreed maturity up two years	Deposits redeemable at notice up to three months	Deposits redeemable at notice over to three months	Money market funds	Bond funds
2009-Q1	3199,65	2046,57	2214,16	1619,97	117,78	885,21	1762,23
2009-Q2	3350,79	2107,21	2084,76	1669,7	121,26	838,76	1821,16
2009-Q3	3403,24	2139,25	1956,05	1711,52	124,43	832,49	2015,27
2009-Q4	3551,83	2189,07	1853,09	1766,95	126,87	733,39	2090,61
2010-Q1	3554,69	2216,59	1751,36	1814,72	125,12	706,07	2182,82
2010-Q2	3694,28	2318,61	1692,65	1822,84	119,41	672,99	2308,03
2010-Q3	3660,09	2343,98	1719,92	1848,64	113,8	652,09	2420,32
2010-Q4	3727,67	2430,15	1738,85	1877,63	112,52	612,35	2426,39
2011-Q1	3685,64	2456,46	1737,68	1904,31	113,1	632,87	2417,09
2011-Q2	3730,63	2477,09	1724,75	1908,76	111,9	607,57	2439,57
2011-Q3	3721,49	2495,24	1776,32	1911,51	111,31	607,59	2424,23
2011-Q4	3791,76	2524,39	1756,61	1928,11	109,38	570,6	2378,19
2012-Q1	3769,59	2491,25	1791,45	1960,84	108,12	571,91	2733,06
2012-Q2	3864,24	2433,41	1714,8	1978	106,57	574,18	2866,5
2012-Q3	3926,74	2380,95	1689,13	1995,25	103,08	553,34	2998,47
2012-Q4	3995,2	2359,58	1704,32	2059,07	100,46	534,68	3111,19
2013-Q1	4038,26	2365,14	1694,1	2095,34	95,29	523,68	3183,07
2013-Q2	4135,67	2360,09	1623,77	2104,18	90,36	486,85	3308,88
2013-Q3	4165,59	2342,92	1601,6	2103,27	87,17	476,77	3206,75
2013-Q4	4260,17	2334,8	1576,82	2102,75	86,36	462,88	3262,57
2014-Q1	4284,93	2311,28	1560,32	2117,13	86,11	468,69	3306,4
2014-Q2	4395,93	2255,62	1526,39	2115,66	84,4	449,71	3450,26
2014-Q3	4469,94	2227,11	1530,25	2110,78	86,71	458,41	3612,99
2014-Q4	4701,14	2219,47	1484,01	2105,43	87,27	455,61	3719,78
2015-Q1	4844,22	2222,01	1423,54	2117,99	85,73	481,96	3859,11

ANNEX 5

TRANSACTIONS OF DEPOSITS IN BILLION EURO IN EURO ZONE

	Overnight deposits	Deposits with agreed maturity over two years	Deposits with agreed maturity up two years	Deposits redeemable at notice up to three months	Deposits redeemable at notice over to three months	Bond funds	MMFs
2009-Q1	0,46	132,09	-197,14	88,2	0,49	-5,46	60,73
2009-Q2	60,12	170,44	-138,83	50,6	2,81	94,76	-27,21
2009-Q3	11,52	77,03	-119,4	42,04	3,19	59,52	-7,43
2009-Q4	44,77	134,03	-110,03	55,33	2,43	34,92	-51,58
2010-Q1	-1,46	22,29	-111,59	46,61	-1,76	83,09	-27,32
2010-Q2	64,29	62,67	-76,36	11,25	-3,5	29,93	-37,14
2010-Q3	-1,15	12,2	40,71	26,14	-2,29	52,31	-20,9
2010-Q4	22,95	83,04	19,44	29,19	-0,18	21,76	-39,74
2011-Q1	-18,51	-23,31	-0,39	24,16	0,59	21,61	-2,47
2011-Q2	13,17	54,36	-17,1	2,58	-1,19	13,04	-25,21
2011-Q3	1,57	-9,27	46,03	2,52	-0,6	-21,08	0,16
2011-Q4	54,13	41,16	-15,64	7,86	-0,95	3,76	-14,01
2012-Q1	13,04	-61,75	35,33	33,65	-2,18	60,86	33,78
2012-Q2	23,64	14,35	-79,04	17,01	-1,57	59,3	2,27
2012-Q3	61,3	-49,95	-28,15	15,37	-3,49	56,7	-21,06
2012-Q4	39,74	28,48	23,23	44,64	-2,61	77,18	-17,2
2013-Q1	9,7	34,46	-9,82	36,12	-5,19	56,82	4,61
2013-Q2	33,35	66,09	-68,74	9,18	-4,88	41,25	-31,22
2013-Q3	18,2	-1,97	-22,45	0,34	-3,19	10,78	-10,08
2013-Q4	34,86	56,42	-24,79	0,19	-0,69	17,44	-13,9
2014-Q1	3,3	-2,59	-18,34	13,91	-0,25	61,67	3,55
2014-Q2	31,05	21,12	-35,05	-1,01	-1,78	48,79	-18,99
2014-Q3	43,16	-11,93	0,31	-5,11	2,29	70,85	8,71
2014-Q4	62,82	86,73	-41,98	-5,63	2	17,44	-0,91
2015-Q1	58,52	14,36	-48,98	13,38	-2,59	94,37	22,15

ANNEX 6

THE OUTSTANDING AMOUNTS OF BANK DEPOSITS AND SHADOW DEPOSITS PART IN PER CENTS IN A WHOLE DEPOSITS MARKET

	Overnight deposits	Deposits with agreed maturity over two years	Deposits with agreed maturity up two years	Deposits redeemable at notice up to three months	Deposits redeemable at notice over to three months	MMFs	Bond funds
2009-Q1	27,01	17,28	18,69	13,68	0,99	7,47	14,88
2009-Q2	27,94	17,57	17,38	13,92	1,01	6,99	15,18
2009-Q3	27,94	17,56	16,06	14,05	1,02	6,83	16,54
2009-Q4	28,85	17,78	15,05	14,35	1,03	5,96	16,98
2010-Q1	28,78	17,95	14,18	14,69	1,01	5,72	17,67
2010-Q2	29,25	18,36	13,4	14,43	0,95	5,33	18,28
2010-Q3	28,69	18,37	13,48	14,49	0,89	5,11	18,97
2010-Q4	28,84	18,8	13,45	14,53	0,87	4,74	18,77
2011-Q1	28,47	18,97	13,42	14,71	0,87	4,89	18,67
2011-Q2	28,7	19,05	13,27	14,68	0,86	4,67	18,77
2011-Q3	28,52	19,12	13,61	14,65	0,85	4,66	18,58
2011-Q4	29,04	19,33	13,45	14,76	0,84	4,37	18,21
2012-Q1	28,08	18,56	13,34	14,6	0,81	4,26	20,36
2012-Q2	28,54	17,98	12,67	14,61	0,79	4,24	21,17
2012-Q3	28,77	17,45	12,38	14,62	0,76	4,05	21,97
2012-Q4	28,82	17,02	12,29	14,85	0,72	3,86	22,44
2013-Q1	28,86	16,9	12,11	14,97	0,68	3,74	22,74
2013-Q2	29,31	16,73	11,51	14,91	0,64	3,45	23,45
2013-Q3	29,79	16,75	11,45	15,04	0,62	3,41	22,93
2013-Q4	30,24	16,57	11,19	14,93	0,61	3,29	23,16
2014-Q1	30,31	16,35	11,04	14,98	0,61	3,32	23,39
2014-Q2	30,79	15,8	10,69	14,82	0,59	3,15	24,16
2014-Q3	30,84	15,36	10,56	14,56	0,6	3,16	24,92
2014-Q4	31,82	15,02	10,05	14,25	0,59	3,08	25,18
2015-Q1	32,22	14,78	9,47	14,09	0,57	3,21	25,67

ANNEX 7

THE PART OF OUTSTANDING AMOUNTS OF THE BOND FUNDS AND MONEY MARKET FUNDS IN THE SHADOW DEPOSITS IN PER CENTS

Date	Bond funds	MMFs
2009-Q1	66,56	33,44
2009-Q2	68,47	31,53
2009-Q3	70,77	29,23
2009-Q4	74,03	25,97
2010-Q1	75,56	24,44
2010-Q2	77,42	22,58
2010-Q3	78,78	21,22
2010-Q4	79,85	20,15
2011-Q1	79,25	20,75
2011-Q2	80,06	19,94
2011-Q3	79,96	20,04
2011-Q4	80,65	19,35
2012-Q1	82,7	17,3
2012-Q2	83,31	16,69
2012-Q3	84,42	15,58
2012-Q4	85,33	14,67
2013-Q1	85,87	14,13
2013-Q2	87,17	12,83
2013-Q3	87,06	12,94
2013-Q4	87,58	12,42
2014-Q1	87,58	12,42
2014-Q2	88,47	11,53
2014-Q3	88,74	11,26
2014-Q4	89,09	10,91
2015-Q1	88,9	11,1

ANNEX 8

QUARTERLY GROWTH RATES IN THE PER CENTS

	Shadow deposits	MMFs	Bond funds
2009-Q1	Not available	-5,54	Not available
2009-Q2	0,47	-0,75	3,24
2009-Q3	6,6	-13,51	9,63
2009-Q4	-0,84	-3,87	3,6
2010-Q1	2,25	-4,92	4,22
2010-Q2	3,09	-3,2	5,43
2010-Q3	2,97	-6,49	4,64
2010-Q4	-1,11	3,24	0,25
2011-Q1	0,37	-4,16	-0,38
2011-Q2	-0,09	0	0,92
2011-Q3	-0,51	-6,48	-0,63
2011-Q4	-2,82	0,23	-1,94
2012-Q1	10,78	0,4	12,98
2012-Q2	3,94	-3,77	4,66
2012-Q3	3,13	-3,49	4,4
2012-Q4	2,58	-2,1	3,62
2013-Q1	1,64	-7,56	2,26
2013-Q2	2,34	-2,11	3,8
2013-Q3	-3,05	-3	-3,18
2013-Q4	1,13	1,24	1,71
2014-Q1	1,32	-4,22	1,33
2014-Q2	3,2	1,9	4,17
2014-Q3	4,21	-0,61	4,5
2014-Q4	2,49	5,47	2,87
2015-Q1	3,82	-1,57	3,61

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