

University of Economics in Prague
Faculty of Finance and Accounting

Finance and Accounting



MASTER THESIS

Multicurrency System as a Way Out of the Eurozone
Debt Crisis

Author: Karina Repkina

Supervisor: doc. Ing. Karel Brůna, Ph.D.

Academic Year: 2018

Declaration of Authorship

The author hereby declares that he compiled this thesis independently, using only the listed resources and literature, and the thesis has not been used to obtain a different or the same degree.

The author grants to University of Economics in Prague permission to reproduce and to distribute copies of this thesis document in whole or in part.

Prague, date

Signature

Acknowledgments

I wish to express my sincere thanks to Karel Bruna, Head of Department of Monetary Theory and Policy, who agreed to become my advisor and provided me with all the necessary facilities for the research. I highly appreciate his advices and guidance during the course of work.

In addition, I am grateful to my parents, Oleg Repkin and Anzhelika Repkina, for the support, encouragement and attention.

Abstract

The thesis is devoted to the research of the primary causes of the Eurozone crisis and the possible solution. The purpose of this paper is to analyze the economic state of the Eurozone members before the single currency implementation and after to prove the issues of an unequal money distribution among the European Monetary Union. The thesis consists of two main parts: analysis of the crisis causes and possible solution. The theoretical part is devoted to the study of the Optimum Currency Theory and its implication. The following empirical research fully examines the economic indicators of the Eurozone member states and compare it with OCT criterions. The part of the money distribution explores the issues of the crisis, its factors and consequences. The second part is concentrated particularly on the search for the solution and the parallel currency implications. Moreover, the research analyzes European Commission attempts to decrease the crisis impacts which is the Fiscal Stimulus Plan, and the banking sector issues, particularly the importance of the local banks in providing the regions with money liquidity. Finally, the paper indicates the multicurrency system with territorial bases as a possible way to provide regions with money supply.

Key Words: Eurozone, debt crisis, cash flows, money supply, currency systems, optimum currency, trade flows, money distribution, euro, single currency.

Contents

1. INTRODUCTION.....	6
2. THE MAIN FACTORS THAT CAUSED THE CRISIS.....	8
2.1 Optimum Currency Area theory.....	8
2.2 History of the European currency area creation.....	11
2.3 The main advantages and disadvantages of a single currency.....	14
2.4 Dynamics of changes in key economic indicators before and after the introduction of a single currency in Eurozone.....	15
2.5 The causes of the situation: initial inconsistency with OCT and R. Mundell's criteria.....	30
2.5.1 <i>Distribution of the money supply by regions</i>	34
2.5.2 <i>Optimum currency area: expectations vs. reality</i>	37
2.5.3 <i>The money flows</i>	40
2.5.4 <i>Deflation as a consequence of the money shortage</i>	41
2.5.5 <i>Filling budgets issues and bank loans</i>	41
2.5.6 <i>Government bonds</i>	42
3. THE SOLUTION TO THE PROBLEM.....	44
3.1 Limitations of Fiscal Stimulus.....	44
3.2 Parallel using of the Euro and national currencies.....	47
3.2.1 <i>Possible problems with the parallel circulation of domestic currencies with the euro</i>	48
3.3 Multiple regional currencies inside the one country.....	49
3.3.1 <i>Hierarchy of the territorial market structures</i>	50
3.3.2 <i>Influencing of the money supply in different territories</i>	51
3.4 The importance of the local banks in the economy.....	53
3.4.1 <i>Dynamics of changes in lending volumes to the Eurozone non-financial sector</i>	55
3.4.2 <i>The dynamics of interest rates on loans to the non-financial sector</i>	55
3.4.3 <i>The dynamics of changes in the volume of household deposits in the euro area</i>	57
3.4.4 <i>The decreasing MFSs in Eurozone and private sector lending</i>	58
3.5 Model of the multicurrency system.....	60
4. CONCLUSION.....	63
5. REFERENCES.....	66

6. APPENDIX.....	69
6.1 Appendix 1: Performance of the member states in relation to convergence, 1995-1998.....	69
6.2 Appendix 2: Number of MFIs per country and percentage changes in recent periods.....	70

1. INTRODUCTION

The Eurozone debt crisis which began to gain intensity at the end of 2009 from Greece was the most serious challenge for the European Union courage in its entire history. It proved to be an important test for the adequacy of the European economic model, the effectiveness of the EU institutions and the most important vitality of the single European currency - the euro. The given problem is extremely actual for the research as on an outcome of current crisis will depend whether the European Monetary Union will remain in a former kind and in what direction it will develop.

By the summer of 2012, the debt crisis fully covered countries such as Greece, Ireland, Portugal, and Spain. All of them were forced to apply for financial assistance to European institutions, as well as an external creditors. This aggravated the levels of countries competitiveness and further deepened the economic differences between the Eurozone center and the countries of periphery. From the weak in the financial and economic terms of the periphery countries, the crisis gradually picked up to the Eurozone core which is also affected by the problems experienced by the periphery. Despite the enormous efforts, the authorities of Europe failed to stop the spread of the crisis. After periods of temporary stabilization, financial markets once again began to fever and problems were revealed all over a larger number of countries and banks.

The crisis 'persistence' and its confrontation to antirecessionary measures used by the Europe authorities are explained by neglecting of the deep debt problems of European countries, as well as by the fact that the European authorities could not to develop a strategy that quickly and to decisively eliminate the existing fundamental problems. And so, the search for the cause of these problems and ways of its resolution will be considered in this thesis.

The research question states as follows: What is the possible way out of the crisis for Eurozone countries? The thesis aims to examine the causes of the crisis and propose the possible solution for the Eurozone member states.

The paper could be divided on two major parts and proceeds as follows. First part studies the main factors which were the cause of the current crisis situation. It proves the first hypothesis that the directions and intensity of cash flows between the countries cause unequal money supply distribution in the euro area which is created due to transition to the single currency. To do that, it firstly describes the theoretical base on the Optimum Currency Area theory proposed by R. Mundell and analyzes its history and the essence of the single

currency implication. Then an empirical analysis of the statistical data (e.g. GDP, Government and Private debt, non – performing loans, inflation, cost of labor, real exchange rates, and current account balance) is conducted to see how the implementation of the currency affected the member states and what the situation was before. Also, a comparison of countries performance in accordance to the Optimum Currency Theory criteria is provided. Lastly, it analyses the money distribution issues and its influence on the Eurozone states.

The second part of the thesis propose the possible solution to the currency problem and testes the second hypothesis as that the implementation of a multicurrency system based on the territorial division of the countries can provide an equal distribution of money supply among the Eurozone and help the countries to overcome the crisis. In this part, an analysis of the fiscal stimulus and the banking sector crisis is conducted to show that the actions currently being taken by authorities are not sufficient enough. Finally, it proposes the scheme of the multicurrency multilevel system which is based on the trade flows both inside the countries regions and between them. The proposition of this hierarchical currency system allows to conclude that it is possible to fill the weak regions of Eurozone with the adequate amount of money and, therefore, to help them to overcome the crisis difficulties.

2. THE MAIN FACTORS THAT CAUSED THE CRISIS

2.1 Optimum Currency Area theory

The issue of the single currency formation has been at the spotlight of economists since the early 1960s. The author of the single currency idea is a well-known American economist R. Mundell, who presented his views in a number of works on the currency problem. Mundell persuaded the scientific community in his publications and public speeches that Europe was quite ready for the establishing of a common currency in the 1970s.

The basics of the research on this issue were laid down by R. Mundell in “A Theory of Optimum Currency Areas (1961), and “A plan for a European currency” (1973). Also, the famous economists as R. McKinnon and P. Kenen participated in the theory development in such studies as “Optimal Currency Areas” (1963), and “The theory of optimum currency areas: an eclectic view” by P. Kenen (1969).

In general, the problems that have been discussed within the framework of the theory of optimal currency areas can be represented as follows: Defining the conditions prompting to a single currency transition; finding the optimal size of the zone in which a single currency can operate; and the cost - benefit analysis of the transition to a single currency.

According to this theory, the creation of optimum currency area is possible if two fundamental conditions are met. The first condition assumes that some countries have similar external shocks (e.g. inflationary or demand shocks). The second condition in case of the different shocks was that there must be a high labor and capital mobility of production factors. This condition was considered by R. Mandell as the main one. (Mundell, 1961)

In the meantime “An optimum currency area refers to the 'optimum' geographical domain having as a general means of payments either a single common currency or several currencies whose exchange values are immutably pegged to one another with unlimited convertibility for both current and capital transactions, but whose exchange rates fluctuate in unison against the rest of the world. 'Optimum' is defined in terms of the macroeconomic goal of maintaining internal and external balance. Internal balance is achieved at the optimal trade-off point between inflation and unemployment (if such a trade-off really exists), and external balance involves both intra-area and inter-area balance of payments equilibrium” (Kawai, 1991, p. 526)

Therefore, the main idea defined by the term “optimum currency area” is that for some countries it may initially not be optimal to use its own currency for transactions both

within the country and with the outside world. According to R. Mundell, European countries had to become pioneers in the optimal currency zone establishment. The logic of his reasoning was based on the fact that within the framework of mutual trade, small countries¹ forming the majority of participants in European integration had to accumulate significant reserves to maintain a fixed exchange rate of their currencies. In other words, for small countries that now constitute the majority of the European Union, a currency system with a fixed exchange rate of the common currency should be advantageous since it was too expensive for them to provide a fixed exchange rate at the national level because of the high costs of forming foreign exchange reserves to maintain the stable exchange rate. Therefore, the advantages of the single currency were seen by R. Mundell primarily as a means of ensuring international trade.

According to another “founder” of the optimum currency areas theory R. McKinnon, who was in favor of similar proposals, the main benefits of the single currency adoption is creation of a policy which is able to simplify and reduce the cost of moving goods, labor and capital between the countries. These benefits were the main reason for the transition to the euro. The strategy was also to increase the degree of openness of the states’ economies (McKinnon, 1963).

In addition to a sufficiently high labor mobility, a relatively significant factor in the formation of a currency union and the transition to a single currency, is the increase in production diversification in the countries that make up the union (Kenen, 1969). Such diversification allows regions to resist demand shocks and to be competitive in a world economy when the possibility of home currency devaluation disappears by adoption of the single currency. An important indicator in this matter is the ratio of traded and non-traded goods produced in the region (McKinnon, 1963).

However, countries using the fixed exchange rate regime would have to maintain the interest rate at an unchanged level for a certain period of time, for example, a month, a quarter, or a year. Due to stability of the exchange rate during the period, a positive effects for the economy of the country can appear. At the same time, this currency regime does not allow the local governments to react quickly on emerging economic problems as the fiscal policy is becoming at the supranational level. So that the possibility of pursuing a policy of

¹ In economic theory, under a small country (small open economy) is meant a country whose economic and social changes do not affect certain indicators of the world economy (often referring to the world interest rate).

manipulating the exchange rates of the national currency which is required to maintain the balance of payments, and also the correlation of inflation and unemployment is lost.

Subsequently, the question is how high are the costs associated with this restriction caused by the fixed exchange rate regime. It is quite possible that prices for some tangible goods and services in certain countries will rise as a result of their leveling in the zone of a single currency during the transition period. Also, it should be noted that the companies that benefit from single currency increase wealth and income for their employees, pay taxes, invests to bigger capacity. All this allows the country to pay the cost of currency adoption but at the same time it requires that the country is competitive in the common currency area, if not, the problems will rise and cost of currency adoption as well. Therefore, these positive and negative effects are distributed depending on the economic conditions of the states.

Moreover, general losses should take into account the loss of the ability of the private sector to change the value of domestic money through devaluations in the economy, depending on the balance of payments in terms of floating or fixed rates of national currencies.

It should be noted that not all economists were adherents of the fixed exchange rate regime, considering the floating exchange rate as a more effective instrument of economic regulation. In particular, M. Friedman argued that in countries with harsh restrictions on prices and wages, floating rates are necessary to maintain both internal and external equilibrium in the economy. In case when a fixed exchange rate regime is created in these countries, any government actions to regulate the balance of payments will lead to an increase in inflation and unemployment. Likewise, with floating rates, the equilibrium of the balance of payments will be ensured automatically with subsequent adjustments to the real wages and the level of prices in the economy. Nevertheless, opponents of the floating exchange rate regime claimed that all countries are highly differentiated (in terms of integration in the world economy) and therefore, those that are most significantly involved in global economic transactions need a fixed exchange rate, since this exchange rate regime is optimal in a world trade conditions. However, that is the question which should be considered, maybe fixed exchange rate regime is optimum only in case of foreign trade but not for the internal economic balances.

2.2 History of the European currency area creation

Mundell believed that the countries of the European common market (the states that were the part of the European Economic Community (EEC)²) are ideally suitable to create an optimum currency area. He proposed the creation of a single European currency under the name of “Europa”. His views on this matter were stated in the work “A plan for European currency” (Mundell, 1969).

So that the first attempt to create a common currency market by the countries was made in Europe in 1970. The development and implementation of the plan for the monetary union creation was assigned to the Prime Minister of Luxembourg P. Werner. Therefore, the whole project was called the Werner plan. In accordance to which, the participants of the newly emerged union had to introduce a complete mutual convertibility of currencies, firmly fix the exchange rates and after that move to a single currency until the year of 1980. (The history of the Euro) It should also be noted that in the mid-1970s, the world economy was filled with a sense of uncertainty after the collapse of the Bretton Woods currency system based on a fixed exchange rate conditions. Therefore, the creation of a stable exchange rates area can also be understood as the reaction of leading European countries to this global shock. However, because of the global economic crisis that erupted in 1973-1974 years respectively, this plan was not implemented.

After the European countries emerged from the crisis, efforts in forming the monetary union were renewed. As a result, in March of 1979 year, the European Monetary System (EMS), which has almost no changes up to now, began to function. On the one hand, the basis of this system was the European Currency Unit (ECU), and on the other hand, a mechanism for regulation of the exchange rates (An Exchange Rate Mechanism (ERM)) with strict standards for permitted deviations. The mechanism for the formation of exchange rates and interventions was based with certain boundaries of fluctuations. Allowable fluctuations were within $\pm 2.25\%$ of the average (central) rate. (The history of the Euro)

The volume of the ECU emission or the amount of the currency issue was not set in advance, but changed depending on the gold-dollar reserves fluctuations of the EMU member states. ECU release was carried out by transferring the amounts expressed in it to special accounts. It should be noted that ECU was a monetary unit which did not have a physical form of banknotes or coins and, therefore, could not be used in private consumer

² In the 1960-1970s when the theory of optimal currency areas was formed, there were six countries in EEC: Germany, France, Italy, Belgium, Netherlands and Luxembourg.

market transactions. The ECU exchange rate in relation to other currencies of the union was determined by the basket of currencies of the member states as a weighted average value, which was established depending on the value and specific share of currencies in that basket. The quotas of the national currencies that made up the ECU's basket were determined by the economic potential of the countries, namely their shares in total Gross National Product (GNP) and were revised every five years. (Scott, 2003)

A distinguishing feature of the ECU emission was its discrete nature, which was reflected in the cancellation of the previous volume of emissions within the quota for each country at the end of each quarter. At the beginning of each new quarter, a new three-month renewable loans were issued to EMS member states. This was done in order to simplify the procedure for refusing to participate in the issue in case if the government of any country considered it is necessary.

The successful functioning of the ECU in economic relations between the member states pushed the Europeans to the idea of creation a single currency (a transition to a higher level of monetary integration). In 1990 year, the leadership of the European Economic Community (EEC) presented a plan of a single currency creation. One of the authors of which was a prominent European politician J. Delors, who was the head of EEC in 1985-1994 years. Therefore, the plan to create a single currency was named Delors Report. According to the report, the European Monetary Union was planned to establish in three phases. The first phase had to take place from 1990 to 1993 year, the second - from 1994 to 1996 year, and the third - from 1997 to 1999 year. (UNESCO, 2015)

The implementation of the plan began on July 1, 1990. From that moment, a complete liberalization of the movement of capital and currency transactions between the EEC member states was announced. In addition, the coordination of national policies and the activities of central banks has become steadily implemented. From December of 1991 to February of 1992, based on the Delors Report, the Maastricht Treaty on the European Union (EU) was issued, which also proposed the ways of formation of the monetary union. In February of 1992 year, in Maastricht, twelve³ EU countries signed an agreement on the European Union. Afterwards, it was ratified by the participant countries and entered into force on November 1, 1993. (The history of the Euro)

³ Belgium, Great Britain, Denmark, Germany, Greece, Spain, Italy, Ireland, France, Luxembourg, the Netherlands, Portugal.

In addition to deeper economic integration The Maastricht Treaty projected to make the transition to a monetary union in three stages. Chronologically, these stages did not coincide with the Delors plan but it corresponded to it in general content. The first stage involved the elimination of capital management both in the European member states and between the European Union and third countries. This strategy direction was also implied by Delors Plan. In these measures, the mobility of the production factors was increased. These was generally in line with the ideas of R. Mundell. The second stage was focused on establishing of organizational structures for the transition to a single currency. Specifically the European Monetary Institute which was the forerunner of the European Central Bank (ECB). The main task of the new institute was the formation of organizational prerequisites which were necessary for the functioning of the ECB in the following third stage. The third stage was adoption of a single currency by all EU countries. (Treaty on European Union, 1992)

The proposed plan was successfully implemented. The objectives of the first stage were achieved by July of 1990. Later, in 1994-1998 years, the second stage was effectively passed, during the course of which the countries were preparing to implement a single currency. What is more, finally it turned out that only the economies of eleven⁴ European countries corresponded the criteria of the Maastricht Treaty of 1992 which is going to be considered in more details later.

During the implementation of the third stage, a transition to non-cash circulation of the euro took place and fixed exchange rates for new currencies were established. Denominations and coins of the new currency were issued in January of 2002. Since the appearance of the euro and up today, when the debt issues of several European countries deteriorated, the attitude towards a single currency among politicians, economists and the general public was unambiguously positive.

The main positive aspect from the transition to the new currency was seen by many economists and politicians in the reduction of costs in the mutual trade of the EU member states. Especially in operating costs associated with the existence of many European currencies.

⁴ Currently, the Eurozone includes 18 EU countries.

2.3 The main advantages and disadvantages of a single currency

As a result of Delors Plan implementation, Europe received a common currency for all states that entered the Eurozone. Modern economy suggests that in any country only one currency that complexly performs all the functions of money (measure of value, a medium of exchange and means of payment) should exist. First of all, the financial and exchange sectors receive benefits from the existence of common currency. With that the economy sharply reduces the risks associated with the volatility of the rates of various types of money, and thereby reduces the transaction costs for the goods exchange, services provision, labor and capital movement. This is exactly what occurred when the euro currency was implemented in the EU. The stability of the common currency systems usually is based on the effectiveness of central monetary power to provide an objective influence. Also, most of the CB formally are independent from government in order to pursue a monetary policy.

In theory, monetary policy pursued by the European Central Bank should have an identical impact on the economy of all EU countries, since the interest rate throughout the euro area is the same. However, in each EU country, the formation of political and economic processes is still going at the national level (especially fiscal policy). The level of development of European countries is very different, and therefore, the use of a single currency is hardly justified as the effect of this is not the same for economies of different countries. Even within the framework of one economy, there is a serious differentiation of the economic development in different regions. Visibly, there is a similar picture in the EU which produces the competitiveness problem. The concentration of the money in circulation and accordingly the increasing levels of aggregate demand and supply is higher in developed countries than in less developed ones, which makes them more attractive for capital. Consequently, the more developed economies of the Eurozone obtain the advantage in this case.

As a result, instead of equalizing the level of economic development of various EU countries, there is a deepening in intercountry differentiation. First of all, the industry area suffers from the single currency due to the heterogeneity of business conditions in various sectors of the economy and low competitiveness. The fact is that with single currency, capital becomes very mobile and flows to countries with the highest possible profit, in other words where there is higher purchasing power of the euro.

That is why it is very important to conduct a deeper analysis of the economic performance and conditions of EU countries to see how the optimum currency theory works

in reality and to what consequences it leads the member states which accepted to use euro. The next part of the research aims to practically illustrate the changes in economic indicators of member states depending on particular time periods.

2.4 Dynamics of changes in key economic indicators before and after the introduction of a single currency in Eurozone

To understand the essence of the Eurozone crisis, it is necessary to start the observation for the origins of the present trouble in the early 2000s. That is immediately after the implementation of the euro (January 1, 2002) into the cash circulation.

To show the dynamics of changes, the following indicators are taken: GDP, unemployment, unit labor cost, changes in the debt burden on public budgets, debt of private sector and non – performing loans, real exchange rates and inflation differential, current account deficit. To make the data observed more structurally clear, it is grouped into five periods.

The first period (1996-2001 years), which is the base for subsequent comparisons. In this period, the last years of the national currencies existence are presented in eleven countries that issued a single currency in circulation in January of 2002 year.

The second period (2002-2003 years) is a transitional period during which both former national currencies and euro were in circulation. The first two periods actually reflect such an economic phenomena in the conditions of the multicurrency system in the Eurozone countries.

The third period (2004-2007 years) is the time of the formation of a new single currency system. During this period, the economies of the Eurozone countries have not yet fully restructured to operate under new conditions.

Fourth period (2008-2011 years) is characterized by the fact that the results of the transition to a single currency began to affect the economies of the Eurozone countries. Crisis situation have become quite noticeable at this time.

Fifth period (2012-2015 years). In the development of this period the consequences and trends of the transition to a single currency were quite obvious.

Table 1: The dynamics of the real GDP growth rate in some European countries (groups of countries) in 1996-2015., %

Country/group of countries	Average GDP growth rate				
	First period (1996-2001)	Second period (2002-2003)	Third period (2004-2007)	Fourth period (2008-2011)	Fifth period (2012-2015)
EU (28 countries)	2,6	1	2,3	-0,3	0,7
Euro area (18 countries)	2,9	0,8	2,5	-0,1	0,3
Ireland	7,5	2,9	3,3	-1,9	3
Greece	3,2	4,5	3,3	-4,9	-1,8
Spain	3,6	1,2	1,9	-1,6	0,2
France	2,2	0,2	1,5	-0,1	0,2
Italy	1,9	0,3	0,9	-1,5	-1,1
Netherlands	3,3	-0,3	2,6	-0,2	0,2
Austria	2,5	0,8	2,4	0,3	-0,07
Portugal	3,1	-0,5	1,4	-0,7	-0,1
United Kingdom	2,8	2,4	1,8	-1,1	1,5
Sweden	3,1	1,8	3,2	-0,07	1,1
Germany	1,8	-0,4	2,4	1,02	0,7

Source: based on Eurostat data

First of all, it is important to consider the dynamics of GDP in the European countries. In the Table 1, the averaged indicators of the GDP real growth rate are presented in five periods from 1996 to 2015 year respectively. The analyzed data shows the differences in the

dynamics of real GDP growth in the countries of the euro area and states which are not participating in monetary union.

It should be noted that in the beginning the PIIGS⁵ countries were ahead. In the period preceding the implementation of the single currency (1996-2001 years), the national currencies ensured commodity circulation within the states, and for the regional circulation between countries there was a non-cash ECU (the dollar was the international currency). The following countries demonstrated the most impressive growth rates of the economy: Ireland – 7.5% (unprecedented growth rates for the modern European economy); Spain – 3.6%; Portugal - 3.1%; Netherlands - 3.3%; Greece - 3.2%.

Italy showed not very high but positive growth rates during the first three periods. At the same time, the most significant GDP growth in this country was in the first period - 1.9%. In Germany, in the first period, the lowest growth rate of 1.8% was observed among the countries represented in Table 1.

However, starting from 2008, the picture of economic growth is becoming reversed. The two last periods, specifically the fourth (2008-2011) and the fifth (2012-2015) shows that real GDP growth in the countries under review (PIIGS) has changed. Greece became the leader in negative indicators of real GDP growth (-4.9% in the period of 2008-2011 years and -1.8% in 2012-2015 years). On the second place was the economy of Portugal (-0.7 and -0.1% respectively). Italy recorded -1.5% and -1.1% respectively. Ireland's economy was developing faster than all states in the European Union and maintained very high rates of economic growth in the second (2002-2003) and third (2004-2007) periods (7.5 and 2.9% respectively). However, in the fourth period, it was in a state of recession (-1.9%) and slightly raised the indicators to 3% in the fifth period. Also, the successful before Spain dropped into a recession with indicators of -1.6 and 0.2% respectively in two last periods.

At the same time, the countries that are not members of the Eurozone remained relatively prosperous. The economies of Great Britain and Sweden continue to operate in a multi-currency system. The United Kingdom operates in multiple currencies (pounds, euro, and dollar), and Sweden (Swiss franc, euro, dollar). In the first period, these two states demonstrated growth rates on average the same as those of countries that joined the Eurozone. However, during all subsequent periods, they generally maintained positive real GDP growth (taking into account the crisis period of 2008-2011). For example, in the fifth

⁵ PIIGS (Portugal, Italy, Ireland, Greece, and Spain) - Eurozone countries with the weakest economies in the region: Portugal, Italy, Ireland, Greece, and Spain.

period, the UK shows (although not so significant) but the highest growth rates among other countries (1.5%).

You do not need to be an expert to understand that the countries that are part of the Eurozone are losing on this indicator. Another significant fact is that in the first period the Eurozone states had slightly higher rates of GDP growth (2.9%) than the European Union as a whole (2.6%). This indicates that the difference in the growth rates of the economies of the first and second group of countries is even more significant. In the fifth period there is an opposite tendency. The Euro area gains lower growth (0.3%) compared to the European Union as a whole (0.7%).

General observation of these data allows to conclude that the countries that are part of the Eurozone have demonstrated a consistent decline in GDP growth rates. States that initially showed the highest rates of economic growth come into the recession striking by the most significant drop in GDP rates.

Table 2: The dynamics of the unemployment rate in some European countries (groups of countries) in 1996-2015., as a % of active population

Country/group of countries	Average unemployment rate, %				
	First period (1996-2001)	Second period (2002-2003)	Third period (2004-2007)	Fourth period (2008-2011)	Fifth period (2012-2015)
EU (28 countries)	8,8	9,1	8,4	8,8	10,2
Euro area (17 countries)	9,7	8,7	8,5	9,4	11,4
Ireland	7,1	4,8	4,8	12,3	12,8
Greece	11,2	10	9,5	12	25,8
Spain	15,1	11,5	9,2	17,6	24,3
France	9,6	8,2	8,6	8,8	10,2
Italy	10,6	8,5	7,2	7,8	11,8
Netherlands	5,1	4,3	5,2	4,5	6,8
Austria	4,4	4,6	5,3	4,7	5,4
Portugal	6,2	6,8	8,7	11,1	14,7
United Kingdom	6,2	5	5	7,3	6,7
Sweden	7,6	6,3	7,1	7,7	6,7
Germany	8,7	9,2	10	7	5

Source: based on Eurostat data

Another valuable indicator that highly affects further economic indicators is employment of labor. Considering the statistical data on the unemployment rate as a percentage of active population (Table 2), the same five periods were taken into account in which the annual unemployment figures are averaged for individual countries and groups of countries.

Regarding the unemployment rate, the Eurozone has worse conditions compared to the European Union. Throughout all periods (except the second), unemployment in the Eurozone was more significant than in the EU. This observation could be explained by unequal initial conditions in the first period. Nevertheless, in the second period, unemployment in the EU countries was higher. The difference in the performance of the Eurozone and EU countries which are not members of the euro area should be expected even more significant. It seems quite reasonable that the countries of the Eurozone which show the largest drop in GDP in the fourth and fifth periods, also, have the highest unemployment rates. This are Greece, Spain, Portugal, and Italy. It should be noted that compared to the first period preceding the transition to the euro currency, some states increased the value of the unemployment rate multiple times in the fifth period.

Specifically, there was an increase in unemployment by 2.15 times in Greece, by 1.3 times in Spain, by 1.5 times in Italy. Meanwhile, the growth of this indicator in other Eurozone countries was not so significant. However, it must be taken into account that the unemployment rate in the first period in some of these countries was not so great (close to the natural level of unemployment which can be approximately estimated at 6%). Italy initially had a rather high unemployment rate of 10.6% and this indicator reached 11% in the fifth period. In France, there was a slight increase in the unemployment rate in the fifth period in relation to the first (from 9.6% to 10.5%). In Ireland, unemployment in the first period slightly exceeded the natural level, amounting to 7.1%. In the fourth period, it increased to 12.3% (which is 73% of the original level). In the fifth period, unemployment has reached 12.8% which is almost twice higher of the initial level. Germany is an exception among the countries of the Eurozone. This country shows a significant reduction in unemployment approximately by 40%.

Another two countries that are part of the Eurozone (the Netherlands and Austria), only slightly changed during the observation and had initially very low rates of unemployment. Only in the fifth period the Netherlands had the value of unemployment increased from 4.5% to 6.8%, and Austria from 4.7% to 5.4%.

Sweden (which is not in the euro area) had an unemployment rate of 7.6% in the first period. During the observation there was a slight decrease in this indicator up to 6.7% in the last period. UK had the initial unemployment rate of 6.2% which slightly increased in the fifth period up to 6.7%.

There is one more feature that should be revealed. That is a slight decline in the unemployment rate in the second and third periods in many countries of the Eurozone (Ireland, Spain, Greece, Italy, France, and the Netherlands). The same happened in the euro area as a whole.

Table 3: The dynamics of the Nominal Unit Labor Cost in some European countries in 1996-2015., as % changes and index (2010 = 100)

Country/group of countries	Average nominal labor cost, %change				
	First period (1996-2001)	Second period (2002-2003)	Third period (2004-2007)	Fourth period (2008-2011)	Fifth period (2012-2015)
Germany	0,1	0,9	-0,8	2	2,1
Ireland	2,7	2,8	3,6	-2,1	-5
Greece	4,5	6,1	3,1	3	-3
Spain	2,5	3,1	3,4	1,1	-0,5
France	0,8	2,5	1,6	2,1	1,1
Italy	2	4,1	2,2	2,3	0,7
Netherlands	1,6	3,5	0,5	2,1	0,6
Austria	-0,05	0,8	0,8	2,3	2,3
Portugal	3,8	3,4	1,3	0,5	-0,6
Sweden	2,1	0,9	1	2,7	1,6
United Kingdom	3,1	1,6	3,2	2,2	0,8

Source: based on Eurostat data

Regarding the data on the cost per unit of labor (which is defined as a ratio of labor cost to labor productivity) in the given sample of countries, a highly negative trend can be observed in PGIS countries through the five considered periods. The most sharp decrease

compared to the first initial period before the single currency introduction has such countries as Ireland (-5% in the period of 2012-2015 compared to 2.7% in the first period), Greece (-3% compared to 4.5% in the first period), Spain (-0.5% compared to 2.5%), and Portugal (-0.6% to 3.8%). It is worth noting that these PGIIS countries had highest percentage of the cost per unit of labor measures before the euro running whereas such states as Germany, France and Austria had relatively low costs per labor unit which are 0.1%, 0.8% and -0.05% in the period of 1996-2001 years respectively. However, the same countries are in a much better condition and are competitive enough in this indicator during the last considered period.

During the second transitional period the cost per labor unit had an increasing positive dynamic for all the Eurozone countries, starting to deteriorate from the third period in such countries as Germany (an exception, -0.8% negative trend observed only in this period), Greece, France, Italy, Netherlands and Portugal, and showing the full inequality between the PIIGS countries compared to other euro area states from fourth to fifth periods.

Regarding two states outside the Eurozone, again it is clearly seen that Sweden and United Kingdom had quite stable measures of costs per labor unit during the considered period. However, UK shows a decreasing trend in the last period (0.8% compared to 2.2% in previous period), and also Sweden had a slight decrease to 0.9% in the second transitional period. Nevertheless, these countries did not show such different fluctuations from positive to negative numbers as the Eurozone states.

Table 4: The dynamics of the general Government Debt in some European countries in 1996-2015., as % of gross domestic product (GDP)

Country/group of countries	Average government consolidated gross debt				
	First period (1996-2001)	Second period (2002-2003)	Third period (2004-2007)	Fourth period (2008-2011)	Fifth period (2012-2015)
Ireland	49,8	30,2	25,4	75	105,1
Greece	101,5	103,2	104,2	138,6	173,2
Spain	60,9	49,4	40,5	55,4	95,2
France	59,7	62	65,3	78,4	95,2
Italy	110	101,2	101,1	111,7	128,9

Netherlands	59,8	49	46,6	58,1	67,3
Austria	65,4	65,9	66,2	78,1	82,7
Portugal	53,5	57,4	66,7	90,7	128,6
United Kingdom	40	35,1	40,3	67,7	86,4
Sweden	61,4	50	45,3	38,9	42,1
Germany	58,7	61,2	65,5	74,3	75,7

Source: based on Eurostat data

The changes of the general government debt reflected in Table 3 shows a noticeable deterioration of this indicator in the fourth and fifth periods.

Most of the Eurozone countries in the first period had a relatively small debt burden from the perspective of current debt levels. The smallest amounts of gross government debt accounts for Ireland, Portugal, France, and Germany. A somewhat higher level is observed in the economies of the Netherlands, Austria and Spain. Also, in the first period, Italy is the only country with a rather high (exceeding GDP) debt load. As for the two countries outside the euro area, the UK is characterized by the lowest initial level of debt burden (40%), and Sweden's debt is also not high (61.4%).

According to the fourth and fifth periods, a clearly negative trend in the growth of the debt burden could be observed for all countries in the Eurozone. The most significant increase could be seen in such countries as Portugal (1.4 times), Ireland (1.4 times), Greece (1.2 times), and France (1.2 times). None of the countries listed in Table 3 did not demonstrate a decline in the debt load in the last two periods. The smallest increase in the gross debt in the fifth period is typical for the budgets of Italy, Germany, and Netherlands. However, Italy initially had a very high debt burden which exceeded the country's GDP (110%).

Moreover, analysis of the dynamics of the gross government debt reveals an interesting feature that in some Eurozone countries the values of this indicator decreased in the second and third periods in comparison with the first period (Ireland, Spain, and Netherlands). Also, a small decrease was recorded in Italy. In other states it was stable or has grown to some extent (Greece, Germany, France, and Austria). Countries that are not part of the euro area show a decline in the debt burden in the second and third periods (a little bit for the UK and very visible for Sweden).

The general trend is that the Eurozone is rapidly increasing its governments' debt. However, it should be admitted that the growth of government debts in Eurozone countries (in particular, Greece) is a consequence, and not the cause of the crisis phenomena (S. Storm., 2015).

Table 5: The dynamics of the Private Sector Debt in some European countries in 1996-2015., as % of gross domestic product (GDP)

Country/group of countries	Average private sector debt (in percentage of GDP)				
	First period (1996-2001)	Second period (2002-2003)	Third period (2004-2007)	Fourth period (2008-2011)	Fifth period (2012-2015)
Germany	117,4	122,5	115,2	107,9	100,7
Ireland	139,3	139,3	177	255,6	283
Greece	45,05	65,8	88,3	121,9	128,6
Spain	90,5	121	165	198,6	171,5
France	95,4	103,4	110,5	129,9	140,4
Italy	71,05	84,5	99,4	120,6	120,2
Netherlands	195,7	212,4	214,5	223,9	225
Austria	113,5	123,5	123,1	130,0	126
Portugal	117,1	158,9	174,6	201,5	195,6
Sweden	130	146,2	154,5	192,6	192,2
United Kingdom	129,1	155	174,3	186,8	171,2

Source: based on Eurostat data

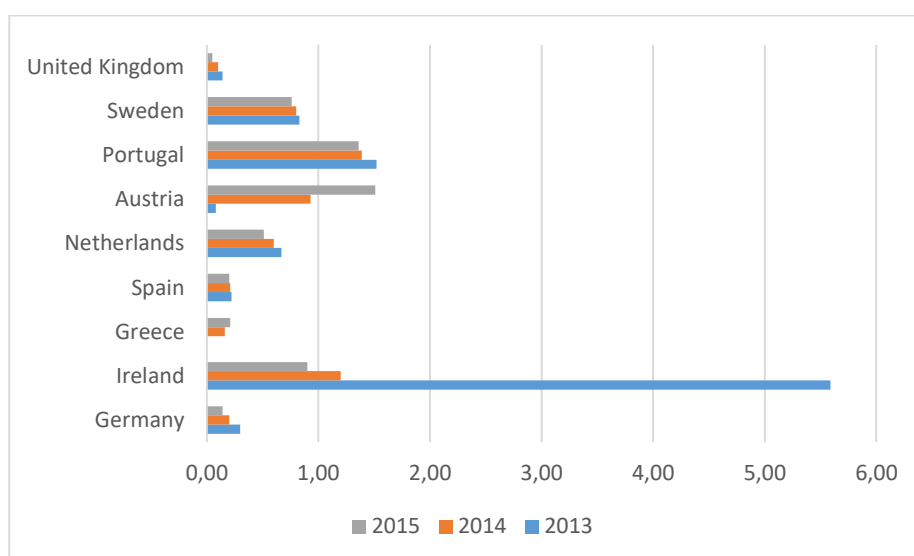
As for the private sector debt, the statistical data shows a significant distinction in the accumulation of the debt by private sector of the periphery countries compared to other Eurozone states in the sample. The most significant growth of the private debt shows such countries as Greece with the private debt of 45% of GDP in the first period and 128.6% in the last, Spain (90.5% in the first period and 171.5% in the last period), France (95.4% before the euro run and 140% in the last period), and Italy (71.05% in comparison to 120.2% in last years). At the same time these countries had the lowest indicators of private debt in the first

period compared to other states. The data shows that the rapid growth of such indicator started from the fourth period of 2008 -2011 years and continued to increase. However, Germany in these last two periods shows a decrease of the private sector debt, having 100.7% in the last period compared to 115.2% in the third one. Germany has the lowest private debt among all of the countries in the last period. Also, such countries as Spain, Austria and Portugal presented a slight minor decrease of the indicator in last period compared to the fourth one.

The second and third periods show a continuous increase of the private debt for all the countries in the sample without exception. Regarding Sweden and United Kingdom, these two countries does not demonstrate the stability as well, showing the same continuous growth of the private debt, however, the most significant increase in the numbers is also observed during the 2008 – 2011 years when the global economic slowdown affected the states' economies. So that, the private debt of Sweden raised up to 192.6% of GDP in the fourth period compared to the 154.5% in the previous one. United Kingdom has raised its private debt up to 186.8% compared to 174.3% of pre-crisis years.

Such an increase of the private sector debt, especially of PIIGS countries which was also reinforced by the global economic recession, increased the burden on the public sector of countries which is actually pay the cost of the crisis. The fact is that the government is a last main lender for banks and vice versa. In such a way, imbalances of private debt became an imbalances of public debt.

Chart 1: Stock of non-performing loans provided by group of countries' government as a % of GDP, in 2013 – 2015 years period



Source: Based on the available data of Eurostat

Therefore, based on the data available for non – performing loans of the governments, it is clearly seen that such countries as Portugal and especially Ireland have largest share of non-performing loans in comparison to other Eurozone states. Concerning Ireland, such a huge value of non-performing loans substantially increased the public debt. The acceptance of bank debt by the state led to an increase in public debt by approximately 40 percentage points in relation to GDP. The countries as Spain and Greece have relatively smaller numbers, however, they show an increasing dynamic through the available period in comparison with other states which have decreasing number of non – performing loans from 2013 to 2015. The most distinct year in the number of this indicator was 2013, especially for Ireland which had 5.59% of GDP for non-performing loans. United Kingdom shows the smallest share of these indicator during the three years period, also Sweden has no significant changes but shows a decreasing trend.

Table 6: The dynamics of Real effective exchange rate in 1996-2015., within euro area (19 trading partners, CPI deflator)

Country/group of countries	Average real effective exchange rates according to 19 trading partners in the euro area, base period = 100				
	First period (1996-2001)	Second period (2002-2003)	Third period (2004-2007)	Fourth period (2008-2011)	Fifth period (2012-2015)
Germany	107,86	103,34	101,79	100,17	99,39
Ireland	95,83	102,82	104,74	101,78	97,05
Greece	89,84	90,70	93,84	98,31	95,95
Spain	91,37	94,36	97,54	99,93	99,86
France	103,11	101,22	100,95	99,79	98,87
Italy	96,81	98,80	99,40	99,88	100,89
Netherlands	98,24	103,37	101,93	100,04	100,97
Austria	102,42	100,85	100,17	100,07	102,09
Portugal	96,35	100,67	101,73	100,58	100,22
Sweden	111,16	105,50	102,41	97,60	102,69
United Kingdom	127,23	125,88	120,34	99,57	111,55

Source: based on Eurostat data

The price competitiveness of the European export-oriented companies depends on the change in the real effective exchange rate which is taking into account not only fluctuations in the nominal rate, but also in the domestic and external prices. Thus, the decisions taken by the European Central Bank (ECB) to control the exchange rate have an effect on many key economic indicators such as current account. Moreover, rising level of real rate means real appreciation of specific country against other countries in the basket. These could be seen on the table above, the differentiation of the euro area center which have relatively higher real value and appreciated against the periphery members.

According to the data of the average real effective exchange rates based on 19 trading partners in the Eurozone, it is seen that especially PIIGS countries have an increasing tendency of the value of the effective real exchange rate during considered period but at the same time in lower amounts compared to others. The growth of value is observed in such countries as Greece (95.95 in the last period compared to 89.84 in the first period), Spain (99.86 vs. 91.37), Italy and Portugal showed relatively close values of 100.89 and 100.22 compared to 96.81 and 96.35 in the first period. The highest values of the real exchange rates accounted for the third and fourth periods when the crisis started to run intensively, however, such countries as Germany and Austria have relatively decreasing dynamics during these two periods.

As for countries outside the euro area, Sweden and United Kingdom shows high value of real exchange rates in the first period (111.1 and 127.2 respectively) which are decreasing all the following periods and have a slight increase in the last 2012-2015 years. The third and fourth periods are relatively stable for these countries.

Table 7: The dynamics of the Current Account in some European countries in 1996-2015., as % of gross domestic product (GDP)

Country/group of countries	Average net balance of current account				
	First period (1996-2001)	Second period (2002-2003)	Third period (2004-2007)	Fourth period (2008-2011)	Fifth period (2012-2015)
Germany	-0,9	1,6	5,3	5,7	7,5
Ireland	0,4	0,3	-3,8	-4,2	3
Greece		-7,6	-10,8	-12,2	-1,9

Spain	-2,5	-3,8	-7,9	-5,1	0,8
France	2	1	0,02	-0,9	-0,9
Italy	1,4	-0,4	-1	-2,7	1
Netherlands		7,7	6,5	9,3	
Austria	-1,8	1,8	2,8	2,9	1,9
Portugal	-8	-7,8	-9,6	-9,6	
Sweden	3,9	5,2	7,1	6,3	4,9
United Kingdom	-1,4	-2	-2,8	-3,6	-5

Source: based on Eurostat data

Observation of the current account allows to say that the strengthening of the real effective exchange rate of the euro against the currencies of major trading partners as a result of the tight monetary policy of the ECB led to a deterioration in the trade balance.

Especially from the third period of 2004-2007, when there was an increase in the real effective exchange rate among trading partners, a negative impact on exports is observed in PIIGS countries. Greece has the current account deficit through all the periods especially the third and fourth when the deficit is -10.8 and -12.2 respectively, which are the highest numbers among the euro area states. Ireland also obtained the deficit of -3.8 and -4.2 in the third and fourth periods of euro value strengthening. The same trend is observed in Spain, Italy, and Portugal. Rather Germany and Austria are showing the current account surplus. Sweden showed the stable current account surplus numbers through all the years, however the United Kingdom demonstrated the imports value predominance during all the periods.

Table 8: The dynamics of the consumer price inflation (HICP) in some European countries in 1996-2015., as an annual average rate of change

Country/group of countries	Average inflation rate annual changes				
	First period (1996-2001)	Second period (2002-2003)	Third period (2004-2007)	Fourth period (2008-2011)	Fifth period (2012-2015)
Germany	1,2	1,2	1,9	1,6	1,1
Ireland	2,8	4,3	2,5	0,2	0,6
Greece	4,4	3,6	3,2	3,3	-0,6

Spain	2,6	3,3	3,2	2,2	0,7
France	1,3	2,0	1,9	1,8	0,9
Italy	2,3	2,7	2,1	2,2	1,2
Netherlands	2,6	3,0	1,5	1,6	1,4
Austria	1,4	1,5	2	2,2	1,7
Portugal	2,7	3,4	2,5	1,7	0,8
Sweden	1,4	2,1	1,2	2,1	0,5
United Kingdom	1,5	1,3	2	3,4	1,7

Source: based on the Eurostat data

The observation of the inflation dynamics in the Eurozone countries under consideration shows the two main results. First, among the countries of the Eurozone, there is no uniform dynamics of inflation. The inflation fluctuations are very diverse for all the countries in the sample. Secondly, based on the presented data, it could be stated that transition to the single European currency did not have a positive impact on consumer prices in a way to boost the trade between the Eurozone countries. Likewise, on the basis of the data presented, it can be concluded that in countries with a historical propensity for high inflation (Greece, Ireland, Spain, Italy, Portugal) after entering into the monetary union, prices started to decrease but still remained higher values than in the Eurozone center led by Germany. This also contributed to increasing trade imbalances in peripheral countries.

Therefore, based on the results of the analysis, a certain conclusions could be written. Firstly, the weakening of the economies of the Eurozone countries in the fourth and fifth periods (especially in the fifth period) is much more observed in comparison with the countries that are not members of the Eurozone.

Secondly, there is a group of countries (among Eurozone members) which demonstrate a more distinct negative dynamics of all the indicators examined. These include Greece, Portugal, Spain, Ireland, and Italy (the PIIGS countries). However, these countries had relatively higher positive indicators in the first period (just before the replacement of national currencies with the euro).

Thirdly, there is a group of Eurozone members which are characterized by relative stability in comparison with the PIIGS countries. This are Germany, France, Austria and to some extent the Netherlands.

Fourth, the two countries of the European Union which are not in the Eurozone show a relative stability of indicators that characterize the economic conditions which, as a

consequence, justify the statement that they did not lose their competitiveness and were not affected by the debt crisis because of running a euro currency. In the latter period, these two states have better rates than other groups of the Eurozone countries.

Fifth, in majority of the reviewed European countries, the dynamics of all three indicators observed is characterized by a certain degree of stability in the second and third periods. A slight improvement in the situation is demonstrated in a certain decrease in the values of the debt burden indicators for the budgets of individual Eurozone countries. However, such an important indicator as GDP tends to decrease in these two periods.

To summarize the results of the data analysis, some preliminary outcomes could be noted. To be precise, the introduction of the euro into circulation and the replacement of national currencies in the Eurozone were accompanied by a noticeable deterioration in the conditions and development dynamics of the states of Southern Europe and Ireland (the PIIGS countries).

The slowdown in economic development is also typical for other Eurozone countries. A lesser amount of this deterioration affected the industrialized countries as Germany, France, and Austria. Negative trends in the economies of the EU countries which are not part of the Eurozone took place but manifested itself in a relatively minor degree (Great Britain and Sweden).

Considering the dynamics of the indicators according to the chosen periodization based on the processes in the Eurozone economies, it can be noted that the most favorable state of the economies was in the first period, which is before the single currency was introduced into circulation (multicurrency monetary systems operated). Even in the first two periods after the introduction of the single currency, when there was a restructuring of the economies, there was some deterioration in the performance of most Eurozone countries. Currently, negative trends that develop throughout the period of observation demonstrated itself in an obvious form.

The results of comparing statistical data according to three indicators characterizing the economies of countries show the advantages of states that are not members of the euro area. Their economic indicators look more favorable than those of the euro area countries.

In addition, within the Eurozone there are relatively more successful countries (Germany, France, Netherlands, and Austria) and significantly less prosperous (PIIGS).

These are outsiders characterized by a gradual deterioration in the economies conditions and a prolonged recession after joining the monetary union.

Therefore, after the introduction of the euro, the asymmetry of economic development in the Eurozone between the countries of the center (Germany, France, Netherlands, and Austria) and periphery (Greece, Portugal, Spain, Italy, Ireland) intensified. The situation broke out when due to the higher competitiveness of the countries of the euro area center, the income gap between them and the periphery countries was constantly increasing.

The growth of the debt burden on the periphery members of the Eurozone, reinforced by raising of the private loans during the global economic crisis, and increased number of non – performing loans contributed to a decrease in investor confidence. This pushed the south countries to lose their trade competitiveness compared to the center. As a preliminary result of the data analysis, it could be stated that such an increased internal and external credit expansion has affected the overall state of the countries' economies, exacerbating the imbalance which is presented by the negative GDP dynamic, increased unemployment, and the current account deficit after the transition to the single currency.

2.5 The causes of the situation: initial inconsistency with Optimum Currency Theory and R. Mundell's criterions

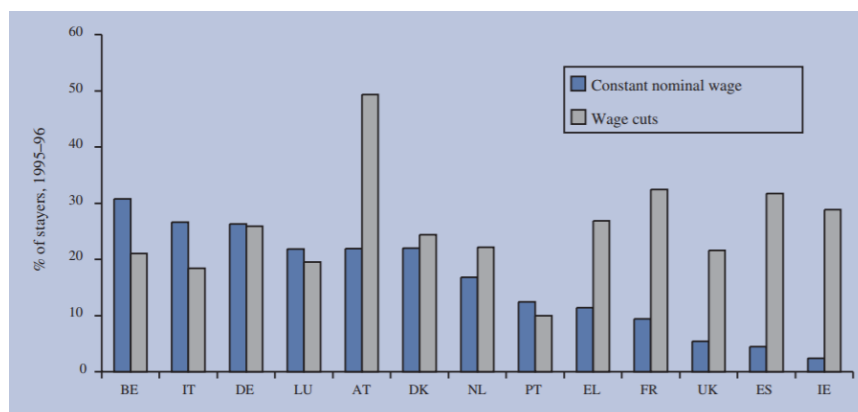
It is necessary to understand the causes of the differences between the two groups of countries in the Eurozone. Assuming that the conditions in the Eurozone are formally the same, then the causes should be search for in the historical features of the countries' economic development.

Essentially, the introduction of a single currency for a number of European states presumed the necessary degree of similarity in economies and social conditions. Only this provision could ensure sufficient equality in the circulation of a single currency both between the countries and within each of them. However, as it is known, the countries of the Eurozone have already been highly heterogeneous from the very beginning (since the introduction of the euro and in the history as well). So that, the states (originally included in the Eurozone) were inconsistent with the criteria of the optimal currency zone firstly proposed by R. Mundell.

According to the theory, one of the criterion is ensuring of the flexibility levels of inflation and wages. The flexibility of inflation level prices can be interpreted as their variability under the influence of the changing levels of demand and supply on the market. It is quite interesting that for the period from 1961 to 1996 (before the euro adoption), between 11 European countries, price convergence increased. Moreover, by 1999 year, inflation in the Eurozone (11 countries composition) had reached a minimum value for 30 years (OECD, 1999, p. 10). The increase in the inflexibility of nominal prices was observed as countries move towards a currency union. This may be due to the strengthening of trade ties within the association and the exclusion of the influence of exchange rates on the economic relations of the countries (Burda, 1999).

Flexibility of wages is understood as the degree of its elasticity according to the supply and demand in the labor market, and also to the level of unemployment and prices. In the second half of the 1990s, the control over the wage growth through three-party agreements became one of the features of some European countries policies struggling with wage inflation. This led to a decrease in the level of earnings (in Germany and France about 15-25%) and labor mobility (since differences in earnings between sectors of economy and regions have been smoothed out). The competitiveness of firms was under the threat because of the slow adaptation of salaries to the conditions of the labor market. The rigidity of nominal wages is presented by the fact that the share of workers with a constant level of nominal wages was greater in those countries where the share of those who experienced the wage cut was smaller (See Chart 2). (The EU economy: 2003 review by European Commission, 2004, p. 227)

Chart 2: Share of employees not affected by nominal wage rigidities in some EU countries, 1995-1996 years



Source: (The EU economy: 2003 review by European Commission, 2004, p. 227)

In general, it cannot be said that by the time the euro was introduced into non-cash payment, the countries of Europe were absolutely in line with the first criterion of R. Mundell.

The second criterion was the mobility of production factors. The introduced before the Werner's Plan modestly assessed the mobility of production factors within the association. So that, to ensure the free movement of labor and capital, a competent regional and structural policy of the EEC, the coordination of employment policies, and the integration of financial markets were required (European Commission, 1970). A Single European Act (signed in 1986) concluded the goal of building a market without internal barriers (including production factors). The obligation to lift restrictions on capital flows between member countries and with respect to third countries was enshrined in the Maastricht Treaty, which entered into force in 1993. By 1996, business representatives assessed the freedom of capital movement in the EU by 8.5 out of 10 points (EU Commission - Working Document, 1997). Up to 1999, the mobility of labor was also low, the proportion of Europeans who had become residents of another member state did not exceed 1.5% of the population (OECD, 1999). The reasons were hidden in the difficulty of preserving the right to social protection and pension insurance when changing jobs. Also, unsatisfactory mutual recognition of professional qualifications of employees and excessive payment for obtaining the status of a resident were contributed to the low labor mobility.

The third condition for the Optimum Currency Area proposed by Mundell was the synchronization of economic cycles. This condition has become an important criterion, since the participants of the area transfer the ability to influence the monetary policy to the supranational body. It is not easy to solve the diverse economic problems of a group of countries using a single instrument because the manipulation of the interest and exchange rates within the framework of the single monetary policy is effective only in the case of a symmetric shock.

Strengthening of the states' macroeconomic policies coordination which was necessary in order to equalize the development of various regions, has resulted in the formation of an integrated system of supervision aimed to ensure the price stability, sustainable public budgets and balance of payments. The formalization of the economic convergence process has become the well-known Maastricht criteria, compliance with which

has become an indispensable condition for the entry into the European Monetary Union. In particular, these criteria were as follows:⁶

- The government budget deficit of the applicant country should not exceed 3% of the GDP of the corresponding country;
- The size of the government debt of the applicant country should not exceed 60% of the GDP;
- The rate of inflation within one calendar year before the application for EU membership does not exceed more than 1.5% in relation to the average inflation rate among the three countries with the lowest inflation rate;
- Long-term interest rate has to be no more than 2 p.p. above the rate of the three best performing Member States in terms of price stability;
- Exchange rate stability deviation from a central rate should be for at least 2 years without severe tensions.

Up to 1999 year, 14 countries met these criteria (See Appendix 1). However, Denmark, Sweden and the United Kingdom refused to join the monetary union (Convergence report 1998). A little later Greece entered the Eurozone, and euro was introduced already in the territory of 12 countries into a cash circulation. Currently, it is certainly known that the Greek government falsified statistics (at that time Greece still did not meet the Maastricht criteria). This added complications to the current crisis phenomena and imbalances in the euro area.

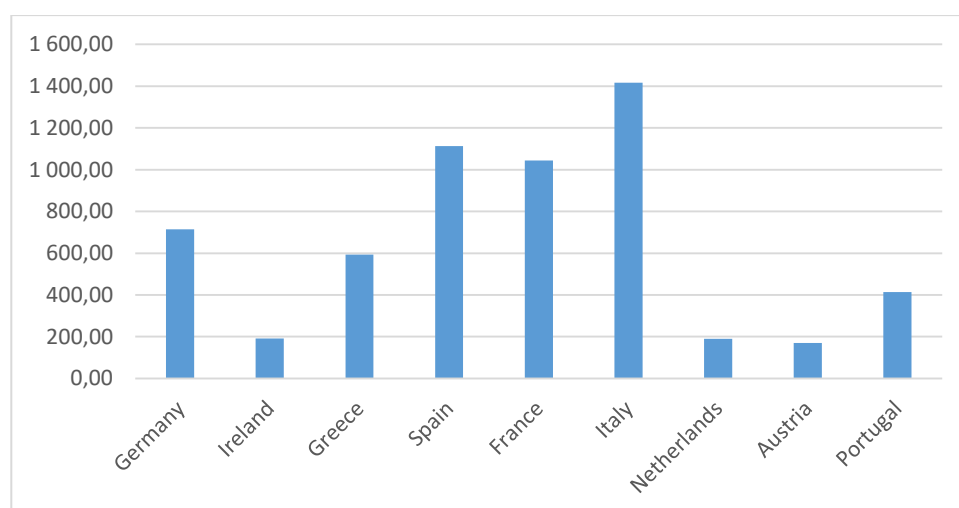
It is interesting to mention the criticism of this criterion. Particularly memorable arguments were announced by Paul Krugman in 1991. The scientist argued that in practice, the desired freedom of trade in the scale of unification inevitably leads to concentration of production in some more favorable regions, which only exacerbates the asymmetry of economic shocks. This means that the necessary degree of economic synchronization in the foreign exchange union can become unattainable. However, as an argument in defense of the original thesis, the scientific community uses the claim that such more favorable regions can include the territory of several countries. (De Grauwe, 2014)

⁶ European Commission. Convergence criteria for joining. Web. ec.europa.eu

Another important factor which is worth to briefly mention and which is also caused such a competitive indifferences between the countries of the Eurozone is their sectorial composition or indifference. Particularly, could be mentioned the share of agriculture sector of the south member states compared to the central ones, as it is known that such economic activities do not acquire large amounts of investments and capital and, therefore, produces such imbalances in the current account.

On the following Chart 3, the total labor in agricultural sector statistics are presented among the countries under consideration in 1999 year just before the single currency acceptance. It is clearly seen that the largest share of labor engaged in agriculture is concentrated in such countries as Italy (1416), France (1043.5), Spain (1112.74) and Greece (593.50) compared to the other countries. The smallest amount accounts for such countries as Netherlands (190.10), Austria (169.31).

Chart 3: Agricultural total labor input in 1000 annual work units, 1999



Source: based on Eurostat data

2.5.1 Distribution of the money supply by regions

These differences are one of the factors responsible for the relative uneven distribution of the money supply across economic territories between countries and within the Eurozone countries.

According to the macroeconomic theory, indicators which measuring the volume of money supply in the country are used to be money aggregates. To determine the direction of improving the Eurozone economy conditions, it seems the most convenient to use the M2

(money aggregate) that measures the amount of money supply. According to the ECB⁷, M2 is the sum of M1 (currency in circulation and overnight deposits), deposits with an agreed maturity of up to two years and deposits redeemable at notice of up to three months. Particularly, the banking credits that are involved in M2 are the main component of the following discussion.

Indicators of money aggregates are used to measure the money supply of such territories as individual countries. However, the important assumption of the further discussion is that measuring the volume of the money supply is possible and necessary not only for the country as a whole but also for any territories within the country. It is also important to note the volume of money supply for regions including several countries. Moreover, it is possible and necessary to measure the volume of money supply for regions that include territories in which different currencies are in circulation. This implies the possibility of quantitative comparison of different currency units, which can be done by allocating a common equivalent to which the each currency unit is compared (such an equivalent could be a unit of some generally recognized currency). (Abel, 2011)

Hence, the economic territory is a set of socio-economic structures represented by such resources as labor, capital, and natural resources which tied to a specific geographical area. These resources participate in a single internal production chain which is expressing its closed nature.

One of the main features of money is the ability to move quickly or the high degree of liquidity. Money can move between the entities operating in different countries (groups of countries). Moreover, the information technology progress greatly increases the degree of its liquidity. New banking technology systems significantly expand the ability to move money between territories. Providing operations with almost immediate transfer of large sums of money over distances of thousands of kilometers are the most important components of economic globalization. The emergence of such technologies is becoming one of the main factors of the growing instability in the global financial system.

The money flows between the territories and the distribution of money within the territories are unified. Equally obvious is the fact that as a result of cash flows movement between the territories, the money supply within the territories could be uneven.

⁷ Money Aggregates. ECB. Web: ecb.europa.eu

So what are the causes of such money movement leading to their redistribution across the territories? Local cash flows between the territories are made up of movements of certain monetary amounts carried out by individual economic entities. These flows cause an increase in the money supply in some territories and a reduction in others (on a local level).

For example, commodity exchange between territories can cause uneven distribution of money supply across territories in case of imbalances in trade flows (positive or negative trade balance of a certain territory). Unlike cash flows serving the movement of goods, there is another situation with investment cash flows. Economic entities direct their funds from one territory to another seeking to acquire income. According to the interests of individual entities, the redistribution of cash flows is done from those companies (or industries) and territories where the income from the investment is lower to those in which the investment of money yields high returns.

Cash flows are the basis of a certain form of the money supply distribution. So that territories with industries that yield high returns attract cash flows from other territories. This movement of money leads to the fact that the distribution of the money supply across different economic territories is uneven. This reveals the fact that the economic resources capacity and the distribution of the money supply in these same territories are not the same. Consequently, the unit of the same economic resources accounts for the unequal volume of the money supply in different territories.

Therefore, uneven distribution of the money supply is the result of the direction and intensity of cash flows. The reason for the money movement is the economic interests of the subjects. The result of uneven distribution of the money supply between economic territories is the varying degree of the ability of money to carry out its functions in these territories.

So, it is important to understand what volume of money supply is sufficient for a specific economic territory. The required volume should allow the territory to fully realize the functions of money in conditions of the general price level stability and as follows positively affect the GDP and unemployment of the territory. The lack of currency volumes in a certain territory, in particular within national borders, causes the so-called money and credit shortage. This leads to a reduction in production, stagnation and recession. This situation caused by the fact that manufacturers cannot sell products because potential buyers do not have enough funds required to make transactions to purchase the goods they need and also do not have funding to investments increasing production capacity.

The opposite situation supposes an excess of money in the territory. This leads to inflation, price instability, credit bubbles and later to a decrease in investment. As a result the production volumes decrease. In the period preceding the introduction of the single currency, each country independently regulated the volume of the money supply on its territory based on the needs for the implementation of the functions of money (primarily, the function of the means of payment).

After the national currencies have stopped servicing the domestic commodity turnover in the Eurozone countries, the euro became the same single currency for internal and external turnover. In a natural way, governments and central banks of the Eurozone countries have lost a significant part of the authority to regulate the liquidity of the currency as these powers were transferred to a higher level of the money supply influence in the Eurozone (the European Central Bank).

Therefore, it is very important to state one of the most controversial problems solved by economic theory which is consist in choosing between direct management and self-regulation of the market economy. In other words, it necessary in principle to manage the volume of money supply in various areas of the euro area or it should be expected that the market self-regulation processes will ensure the optimal distribution of the money supply between territories and countries.

The economic differences of the Southern Europe countries, Ireland, and the PIIGS countries vary from the economies of other members of the Eurozone as it was analyzed before. Moreover, in these countries, the share of services provided by small and medium-sized businesses is relatively higher.

The important fact follows from that features, specifically that the degree of closure of production chains in these territories is relatively greater than in other Eurozone countries. That is, there is a high level of closed economy or a low degree of its openness. This influence the share of exports in the economies of these countries as was already demonstrated. A high degree of production chains closure means an equally high degree of the cash flows closure in the territory.

2.5.2 Optimum currency area: expectations vs. reality

The basis for a single currency formation was the recognition of the foreign economic relations importance for countries that then entered the Eurozone. It was assumed that a single currency would simplify, facilitate, and reduce the cost of movement of goods and

services across the borders of the states participating in this monetary union. As it was seen initially, all participants will gain certain benefits both on the external and internal markets of these countries. For some of the states, these benefits will be rather larger (for countries with a significant share of exports to GDP), others will get smaller advantages but all states win in general.

It was given less importance to the internal turnover than to the external one. Because there was a certainty that internal or domestic economy could not suffer in any way. However, the practice showed that not everything went as planned and exactly the domestic turnover of goods and services suffered from the monetary union system.

One of the reasons for the deterioration of commodity turnover within the Eurozone states is the loss of their competitiveness and as a consequence the decrease of the money concentration. The result is the uneven distribution of the money supply across the territories within the Eurozone. Such uneven distribution across countries and within individual countries takes the form of a money shortage crisis for servicing commodity turnover within PIIGS countries.

In the reality it turned out that the domestic market or internal commodity turnover is extremely important. Insufficient amount of money in individual countries and regions leads to a reduction in the internal goods turnover. It should be accepted that in modern conditions, the domestic commodity turnover often has relatively more significance than external commodity and money turnover. Since it ensures the production chains of the most important components of socio-economic structures of any territory, including the country.

Due to the goods and services turnover inside the country (region or small economic territories) the so-called human capital of the population is formed which is the main component of the social and economic structures of the given territory. Through this turnover, a significant proportion of the requirements for nutrients, household services, education, and health services are met.

Most of the services provided to the population are products whose movement is closed within very small areas. This movement is mediated by a money circulation closed within the same small territories. To serve these closed production processes on the territory, it is necessary to provide economic entities with a sufficient amount of money or the volume of the money supply. As for the territory of a particular country, in relatively small economic territories that have closed product flows, there may be cases of lack of money in circulation necessary to service commodity flows. In this case, the available resources of this

territory are not used effectively and efficiently. In particular, this situation leads to an increase in unemployment for quite long periods. This situation is used to be in several countries of the Eurozone (Greece, Spain, etc.). The lack of money in the territory results in the development of deflation processes.

The opposite situation develops when there is a relative over supply of money within a certain territory. In this case, one should expect an increase in prices for goods circulating within such a territory. In accordance with the quantitative theory of money in domestic market processes, the demand inflation, current account deficit and the foreign debt burden should take place in that case.

Even within a relatively small economic area, the presence and composition of the resources in a certain territory (including the size of population) are objectively stable over relatively long run periods. It allows to assume that the nature of the basic needs for e.g. food and housing is also fairly stable. Due to these circumstances, it could be concluded that the amount of money needed to service the internal goods and services turnover of a given territory (under conditions of price stability) changes insignificantly. Therefore, the closed money turnover based on the made assumptions should remain equally stable.

It should be noted that the external or foreign commodity turnover of the territory is less stable than the domestic one. It cannot be characterized by the same level of stability and, therefore, it is a subject to fluctuations. This dynamic could be explained by a relatively greater variability of the needs that are satisfied by imported and exported goods. It is quite natural that relatively large mobility of the external commodity turnover of the economic territory also determines the volume of the external cash flows of any territory.

Providing with the necessary volume of the money supply different territories of the Eurozone is possible in two ways: through the centralized management or through the market self-regulation. The main functions of providing the Eurozone liquidity are generally conducted by the European Central Bank (ECB). It should be admitted that the ECB is not able to regulate the amount of money directly in particular countries of the Eurozone as it was done before by their national central banks in the conditions of national currencies. Methods of regulation of the money supply volume in individual Eurozone countries which had central banks and governments of these countries were lost after the introduction of the single currency.

On the contrary, if it is not possible to firmly regulate the money supply in the Eurozone, then it is only possible to rely on market self-regulation mediated by cash flows

between the countries. For this reason, it is necessary to define (at least in the general form) the directions of money flows between the Eurozone countries and individual territories within these countries.

2.5.3 The money flows

Following the most general ideas about the direction of money flows between the territories within the Eurozone, as already noted, money are directed to those economic entities that offer more profitable ways of investing within acceptable risks conditions.

It could be stated (not taking into account the investments in government securities) that significant amounts of money are absorbed by the financial sector. The most economically developed countries of the Eurozone as Germany, France, Austria, and the Netherlands also have the largest and most effective financial institutions where the large companies are concentrated. These companies are representing modern and technology-based industries, attracting significant amounts of money as investments. In these countries, the largest state budgets are formed.

It should be taken into account that money flows out of companies and industries in those regions where there is a low return on investment which is worsened by increased risks. Such types of economic activities as agricultural enterprises, small and medium-sized businesses, service companies and companies working with tourists are not so attractive to investors. Banks are not favorably willing to lend money to such companies, industries and sectors of the economy. For this reason, the countries and territories in which, the mentioned above, activities predominate do not attract sufficient investments and, as a consequence, are not able to attract significant cash flows. Moreover, the money available in these territories goes to large industrial and financial centers. But at the same time, these territories can have considerable resources as physical capital, sufficiently developed infrastructure, and natural environment resources. The countries of Southern Europe could be attributed to the economic territories, which to a certain extent are characterized precisely by such features (presence of agricultural industries, small businesses and service companies).

Therefore, if the unfavorable conditions of the economies of the Southern Europe countries is the result of losing competition and so insufficiency of the money supply in these territories, then the logical conclusion is that market self-regulation mechanisms do not provide an optimal distribution of money supply in the euro area countries.

A consequence of this cash flow directions is a reduction and a lack of money supply in some territories, regions, countries and the formation of a relative money surplus in others. The money supply shortage in the territories under consideration (which is a problem of crisis and post-crisis period) which resulted in debt crisis in these countries, does not allow to completely use available resources. This leads to an increase in unemployment, and consequently, to a significant loss of the production output volumes. This may explain the decline in GDP in the countries of Southern Europe which are examined in accordance with the statistical data.

A slowdown in economic growth or a decline in total output in some countries of the Eurozone influence a decline in economic growth in other countries that are not affected by the money shortage in domestic commodity turnover.

However, it is logical to assume that if there is a shortage of money supply in some territories then its relative surplus is formed in others. Indeed, the other side of this cash flow direction is the formation of a money surplus in the relatively prosperous regions and Eurozone countries. However, this excess leads to a decrease in the effectiveness of the funds usage. This happens because there is a lack of acceptable resources for the effective use of money.

2.5.4 Deflation as a consequence of the money shortage

A straight consequence of the money supply insufficiency is a reduction in the population, firms and budgets incomes in the respective territories. The incomes of the population are interrelated with the successful functioning of firms producing products for the domestic market, and also the budgets filling. The reduction of incomes inevitably leads to a fall in aggregate demand or the total expenditures of the population. The fall in aggregate demand naturally leads to a lowering of the price level in the countries with lack of the money supply. Since, under the conditions of the single currency functioning, prices tend to equalize in different territories, regions and countries, the occurrence of deflation also extends to relatively prosperous countries.

Additionally, low inflation and deflation have traditionally been linked by economists with economic crises and recessions. Increase in the inflation rate is indorsed by attempts to increase the volume of money supply in the Eurozone as a whole.

In cases where the traditional methods of increasing the money supply volume are not sufficiently effective, monetary regulators appeal to quantitative easing (QE). However,

the increase in the money supply throughout the Eurozone does not mean an identical spreading of additional money for all countries and territories. This money is attracted by large industrial and financial centers, concentrated in the state budgets of the most developed countries. Such an infusion of additional amounts of money into the Eurozone as a whole can cause even greater unequal distribution of the money supply in such economically different territories, worsening the problems of the Eurozone (including deflation). (Gilbert, 2015)

The general trend of the recent decades is a significant increase in the role and importance of the financial sphere in the economies of the most developed countries and regions. It seems that this feature of economic development is fully demonstrated in the European Union and in the Eurozone in particular.

To certain extent, the financial sphere is separated from the production area and have its' own autonomous nature. Money which are closely circulating in the financial sphere can bring incomes not even directly connected with the market production and consumption processes. The increase in such income is facilitated by the growth of the money supply provided by the measures of the European Central Bank aimed at stimulating economic growth.

The application of quantitative easing measures (QE) remains the subject of debate among economists. The extra money added into the economy largely does not reach the producers for whom it seemingly is intended, but remain in the financial sphere which is creating a threat of inflation. It seems obvious that in those territories where there is a shortage of money, there are signs of low inflation or deflation⁸.

2.5.5 Filling budgets issues and bank loans

Budgets which are filling mainly by taxes suffer from a lack of funds. This is caused by lower incomes of producers and the population which leads to an increase in budget deficit. To cover deficit, governments are appealing to the debt market. The defined limit of the budget deficit in the Eurozone at the level of 3% of GDP⁹ is not met by many governments.

Practice shows that attempts to reduce budget deficits inevitably lead to the reduction of social expenditures. The largest expense item is usually expenditure heading for fulfilling

⁸ Eurostat Statistics Explained. Inflation in the euro area. Last update: 18-04-2018

⁹ According to the Maastricht Treaty, the national debt should not exceed 60.0 percent of GDP and the deficit should not exceed 3.0 percent of GDP.

social obligations. Obviously, cut out the spending on health and education is the worst form of saving. It undermines any hope for economic growth in the future even in the best times of economic development.

It has already been noted that the inflow of investments into territories dominated by agriculture, services and small companies is not highly expected. Another source of cash flows that can be sent to such territories is apparently bank loans.

However, it is predictable that agricultural enterprises, small and medium-sized businesses, and the services sector, as well as the population with small incomes, are not attractive borrowers for large banks.

Generally speaking, Basel standards¹⁰ focus on increasing own capital by banks and own consolidation. It is believed that these banks are quite stable and reliable in the conditions of increasingly free movement of currencies across national borders. These leave little area for small and medium-sized banks, whose traditional niche remains lending to small businesses, agricultural producers, and the public. This source of cash flows which could be directed to problem areas is becoming less effective.

The difficulties faced by small companies and enterprises, especially agricultural ones, are well known when trying to obtain a loan from a bank. They are often willing to pay high interest, but even in this case getting a loan for them is a very difficult task.

2.5.6 Government bonds

As a rule, the issuing of government (sovereign) bonds allows to reduce the cost of borrowing. It would seem that government borrowings on international debt markets provide money flows to public budgets, and thus to the economies of countries experiencing difficulties related to a shortage of money. From the budgets, money goes to the internal turnover of the state. However, this circumstance cannot change the general tendency of the cash flow direction to the territory with more favorable conditions for their application. Even having made several turns inside the country which attracts borrowing, the money is returned to the countries from which they came. It should be noted that borrowing services are required and interest payments are made, which further worsens the situation of the borrowing country.

¹⁰ Global, voluntary regulatory framework on bank capital adequacy, stress testing, and market liquidity risk

Another result of government borrowing in the debt market is that the major buyers of government bonds are large banks. Contrary to the well-established notion that government bonds are the most reliable type of debt securities, the securities of some Eurozone countries carry significant risks. This is due to the high level of debt burden on the budgets of these states. As already noted, the debt burden on the Greek budget in last period reached 172% of GDP and still tend to continue growth up to now. In these conditions, an increase of banking risks encourages greater caution in lending to already risky spheres of activity (agriculture, small business).

The reason for the lack of money supply in the country is also a balance of payments deficit. In case of the national currency usage, this problem is corrected by a lowering of its domestic rate. In the Eurozone, this possibility is given up for each individual country.

Thus, the state external borrowings do not only solve the problem of filling the country's economy with money but also intensify it, contributing to the outflow of money from the country in the medium and long-term periods.

Trying to identify the cause of the Eurozone crisis in the most general form, it should be stated that this is actually the applying of the single currency. Therefore, resolution of the Eurozone problems is not limited to financial and budgetary reforms but requires deep institutional changes.

3. THE SOLUTION TO THE PROBLEM

3.1 Limitations of fiscal stimulus

Before considering options of solving the current situation, it is worth mentioning that in order to improve the economies of countries suffering from the debt crisis, the European Commission has made attempts to support states by fiscal stimulus.

On November 26 of 2008, the European Commission presented a plan to stimulate the EU economy, under which a financial injection of 200 billion euros has to be made. The essence of the plan was to offer countries a set of tools to overcome the crisis. At the same time, in order to narrow the gap between the countries of central Europe and the periphery states, it was assumed that EU members do not have to act on the same pattern. However,

each country will choose the measures that it needs.¹¹ On December of 2008, the Commission approved the European Economic Recovery Plan, aimed at creating conditions for reviving the economy, implementation of the necessary structural reforms and preparation for development. According to the plan, it was said that the current situation is a real test for EU governments and institutions and the participating States must jointly resist the recession. At the same time, actions in the plan were recorded both at the EU level and with reference to each country. The document describes the need in stimulation of consumer confidence and expanded demand. (A European Economic Recovery Plan, 2008)

In addition to strengthen the competitive position of the EU in the present and especially in the future, a special investment strategy was developed to increase energy efficiency and energy supply, clean technologies, and improve the research infrastructure for R&D development. Since the plan provided measures to preserve jobs and promote employment of those who are being dismissed, solidarity and social responsibility became the basic principles of the approved plan (A European Economic Recovery Plan, 2008).

In total, since the crisis began, more than 400 billion euros have been allocated to support the population. The expenses of the national authorities were more than the share of the European Union as a whole. A series of anti-crisis measures included tax cuts and an increase in state investments in education and business support.

Nevertheless, there are a number of reasons why this fiscal stimulation is not effective enough. Indeed, according to economic theory, in conditions where production resources are not used completely, fiscal stimulation aimed at increasing demand can solve the problem. Nevertheless, this will be effective under conditions of temporary deviation. However, as analysis of the difference in unemployment indicators in the countries of the Eurozone shows that this is a constant problem connected with continuously reducing GDP. Therefore, such fiscal support is able to provide some short term help to these countries but it is barely to resolve such permanent structural problems in states economies. (Bonatti, 2017)

There are a number of other issues that hamper the long-term growth of economies in peripheral countries. This is, as noted above, the structural differences of countries affecting its GDP and growth. Namely, the predominant fraction of the agro industry and the

¹¹ European Commission. Press releases database. The Commission launches a major Recovery Plan for growth and jobs, to boost demand and restore confidence in the European economy. Brussels, 26 November 2008. Web.

problem of competitiveness in the service sector, also the strong dependence of countries on imports, and the absence of firms engaged in research and development.

For example, Greece and Italy, “both areas have been granted access to external funds in recent decades: Greece mainly by borrowing from abroad and as net recipient of European funds, the Italian “Mezzogiorno” as part of a transfer union within Italy, so that it received substantial fiscal transfers (close on average to 20% of its GDP) from the rest of the country” (Bonatti, 2017, p. 16). However, provided financial resources did not help the countries to increase their competitiveness and make them less dependent on imports.

Thus, it could be concluded that the funds aimed at social restructuring of lagging countries, as investments in education, training of new workers, will potentially have an impact in the long term, but at the moment this stimulation has no proper effect on countries in a deep recession and is of little effect for solving such deep problems.

In order to resolve the situation, it is necessary to eliminate the initial causes that led to the crisis in the Eurozone.

Previously, it was stated that one of the main reasons for the current unfortunate situation is the uneven distribution of the money supply in various territories and countries of the Eurozone. This could be due to the high level of the single currency liquidity between the regions. (Giannone D., 2012)

In order to find the ways to provide countries and territories with the required and stable volume of money supply, it is necessary to somehow reduce the liquidity of that part of the money supply that provides closed production chains, commodity and cash flows within the territories under consideration.

A one simple solution to the problem could be to increase the degree of money liquidity between the territories or in other words liquidity means getting money whenever it is needed. This can be achieved by returning to the old system of national currencies. However, in this case, many of the advantages gained through the operation of the single currency will be lost. These advantages consist in simplification and acceleration of external goods turnover, and movement of resources and capitals between the countries and territories. However, the combination of the single currency advantages and the need for national currencies can be achieved by recognizing of the simultaneous or parallel using of both options. (Von dem Berge, 2014)

There is reason to believe that a way out of the current situation lies in the division of domestic and external commodity turnover for some economic territory.

It should be assumed that a rational solution to the problem would be to service these two types of commodity turnover with currencies having varying degrees of the liquidity between the territories.

The situation that took place in the European economy before the introduction of the single currency could be an example of such a system. During this period, the domestic commodity turnover of European countries was serviced by national currencies while external turnover by the ECU and Eurodollars. Thus, the internal and external turnover was served by currencies that had varying degrees of the territorial liquidity. National currencies had a limited ability to cross the state borders. Thus, the territorial liquidity of such currencies at the level of trade flows between countries is absent or very limited.

3.2 Parallel using of the Euro and national currencies

The most easily and simplest implemented solution for a certain country is the reestablishment of the national currency without the exception of this country from the Eurozone (Von dem Berge, 2014). Due to this, the national currency is able to serve domestic commodity turnover which is closed within the country. The difference of this possibility from the previous situation (before the introduction of a euro) is that both, the national currency and the euro have the same opportunities for circulation within the country. This measure is able to provide many regions with the necessary amount of money. The lack of money slows the economy (Cabannes, Living with five or six currencies in our wallet, 2011). Thus, the crisis of money shortage is overcome and the problem of deflation is being solved.

According to the proposed issue resolution, the euro circulation within the country is not a subject to any restrictions. The choice of which currency to use remains for economic subjects. Also, a natural condition is the free exchange of one currency for another within the country (floating rate).

Additionally, double price tags and accounting in two different currencies is a subject to some technical difficulties but it is not difficult to resolve under conditions of applying modern cash and computer technology.

In this situation, it can be assumed that sufficiently large companies and residents of large cities will prefer to use the euro, and residents of e.g. agricultural areas will be largely satisfied with the use of the national currency.

The regulating authorities of the country (government, national central bank, ministry of finance) will acquire the ability to manage the volume of the money supply, influence its distribution across the territories, maintain the price level, regulate the exchange rates of the national currency, etc. within the country. However, the volume of the money supply represented by the euro will be influenced by the European Central Bank (ECB).

In addition to solving employment and economic growth issues, filling the budgets with two currencies allows to acquire additional funds in euros for external liabilities payment, since the national currency will partially replace a certain amount of money supply in euros from the domestic turnover. Currently, this is particularly important for a country like Greece. This possibility is beneficial to the country which will be able to fulfill its obligations to external creditors, and the creditors themselves. Such a measure, most likely, will help Greece to avoid default situation.

3.2.1 Possible problems with the parallel circulation of domestic currencies with the euro

However, there are enough reasons against the parallel usage of currencies. One of them is the fact that in the domestic turnover of sufficiently large countries, national currencies carry the same shortcomings as the single European currency (Bootle, 2012). The disadvantage, for example, is presented by the high territorial liquidity of the national currency within national borders, which causes the uneven distribution of the money supply throughout the country.

The question is how to make it possible to provide a necessary volume of the money supply with a closed goods turnover in different territories within the same country. In other words, it is required to ensure the optimal amount of money in circulation and credit within a certain territory. For this, it is necessary to identify which subject and what methods will regulate the amount of money in circulation within the established boundaries. As mentioned before, market self-regulation does not ensure the availability of the optimal amount of money needed to service production processes within a certain economic territory within a single country.

In this case the introduction of the regional currencies in addition to national and local is seen as an acceptable measure. Local or regional currency can be created for the particular territory of the country, which is to a certain extent subject to crisis phenomena (due to the insufficiency of the money supply in the national currency in such a region).

Following this method adopted for national currencies, it is required to limit the extraterritorial liquidity of those local money that will circulate within particular boundaries. However, this also will be driven by the agents in these other regions that will not be prepared to hold these local currencies. In addition, it requires a banking authority to regulate the amount of money supply of such a local currency in the selected territory.

The question of who can have the right to issue such local currencies and regulate their circulation should be addressed. The issuer can be a subdivision of the country's central bank. It may be an authorized bank chosen by local authorities and controlled by the central bank and regional or local authorities. Naturally, local and regional banks should be integrated into a system similar to the European central banks system (Liebscher, 1998).

It is necessary to ensure at least internal convertibility of local currencies with the national currency. Currency exchange rates of local currencies could be established through the foreign exchange market trades, which inevitably occurs under the floating exchange rate regime. However, the value of these local currencies against euro must be depreciated to restore the competitiveness. At the same time, the processes of emissions, circulation and conversion are subject to regulation by the central bank of the country, the government of the country, regional and local authorities. Countries such as Germany in which local currencies currently operate do not experience difficulties in the formation of such economic mechanisms.

3.3 Multiple regional currencies inside the one country

It is possible that there are several territories which are subject to crisis phenomena within the country. Due to this, it is quite possible to issue several regional currencies within one country. These domestic currencies can also be traded simultaneously or in parallel with the national currency and the common euro currency.

It is quite naturally that these currencies can compete with each other and with the euro at the country level. Such competition takes place in those cases when the different currencies are traded together or in parallel. In these conditions, it is required to ensure measures to limit extraterritorial liquidity of local currencies. Such measures include the following. First, the compulsory acceptance of the local currency only within the boundaries of the territory for which this currency was issued. It can be presumed that in other localities the acceptance of such currency is not prohibited, but not mandatory. Secondly, it can be

ensured that the payment of taxes and duties to different levels of budgets by local currency is possible only within the territory for which the currency was issued. However, for sure, other measures can be established to limit the extraterritorial liquidity of local currencies.

Since any of the local currencies in the case of mutual agreement of the parties can be accepted as a means of exchange or a means of payment outside the territory for which it was issued, it is necessary to provide technical conditions for recording various local currencies throughout the country. This implies a system of accounting in organizations, designed to perform transactions in several currencies. It is also required to have price tags for goods in different currencies. It is quite natural to see the existence of an exchange market inside the country, which determines the mutual exchange rates of local currencies and the euro.

So that each of these currencies being tied to their territory will have limited extraterritorial liquidity. Due to this, the local currency has the ability to fill the money supply with a certain locality inside the country. Local or regional monetary authorities can manage the volume of money supply expressed in the local currency.

3.3.1 Hierarchy of the territorial market structures

It should be taken into account the fact that the territorial structure of markets and production processes in the Eurozone is extremely complex. This structure can be represented in the form of hierarchy.

For example, if we choose some territory as the base which is the smallest in the specified hierarchy, it is necessary to divide the commodity and money flows into internal (closed in its borders) and open (closing beyond its borders).

Closed commodity and cash flows create a closed economy within a certain locality. The commodity flow is called closed when the seller and buyer of some goods are inside the territory under consideration. In this case, the movement of the goods from the seller to the buyer takes place within its limits. The simple flow of goods is the case when a separate commodity passes from the hands of the seller to the buyer's hands. Similarly, the cash flow is called closed when the payer and the recipient of money are within the boundaries of the selected territory. In this situation, money moves from the payer to the recipient without leaving a specified locality. The other way is that commodity and cash flows are open to the territory, so they cross its borders. The seller and buyer of the goods, the payer and the recipient of money are divided by the established boundaries (Adolfson, 2005).

Production chains for a given territory are closed in the case when a certain product is produced, distributed, exchanged and consumed within the boundaries of the same territory. If the product is produced within the same area, but consumed in another, then this production process is open. It is also open when the product is produced in another territory, but consumed in a given territory.

In addition to some of the smallest territories within a single country, it is possible to define larger ones that unite such smallest territories. The latter can also be combined into even a larger ones, etc. As a result, a territorial hierarchy is constructed.

The smallest of such areas have their own currencies. In order to exchange goods between them, specially created currencies can also be used. So that, the hierarchy of local, regional and international currencies corresponds to the specified territorial hierarchy.

Nowadays, systematized hierarchies of the real currencies in the world economy are proposed. The main principle on the basis of which some currency is positioned on a specific place in this hierarchy is the degree of ability to service transactions between a large or a smaller number of countries. At the top of this hierarchy is the US dollar (De Conti, 2014).

3.3.2 Influencing of the money supply in different territories

Based on the statistical data provided above, it was stated that the ECB and banking sector in the euro area is not capable to fill all the territories with adequate amount of money. Therefore, it is required to form other control centers capable of ensuring the optimal filling of the monetary mass in various territories within the countries of the Eurozone. Moreover, it is necessary to build a hierarchy of such centers.

However, the problem is to correctly determine the size of economic territories, in which the management of the money supply can ensure the optimal functioning of production processes. Such management of the money supply can be provided by issuing local and regional currencies. It is necessary to indicate the number of management levels in this hierarchy and the emission centers on each of the levels. It could be central bank subdivisions or commercial banks authorized by the authorities of the Eurozone. These centers should be interconnected and form a common system for managing the money supply which is composed of different currencies of the Eurozone.

To create such a multi-level hierarchical system for managing the money supply of the euro area, it is required to specify the territories within which each of the managing centers performs its functions. Firstly, the smallest of such territories should be defined on

lower level of management. Their size should not be too large for the management system being able to provide the optimal amount of money in different parts of this territory.

The boundaries dividing such smallest areas are determined on the basis of the degree of closeness or openness of the production processes which take place in them. In case there is a region that needs to be divided into a number of territories, then the boundaries between these territories should be drawn in such a way that the sum of commodity (money) flows closing within these territories (with other things being equal) would be maximal. Obviously, the amount of open commodity (money) flows between territories in this case is minimized.

The second level of money management unites several territories connected by extraterritorial commodity (money) flows. These extraterritorial commodity flows are served by a currency that is able to cross the boundaries of the smallest territories. However, extraterritorial liquidity of the second-level currency should be insufficient to overcome the boundaries of these territories. It could be assumed that there can be several such territories. Their size is determined on the basis of the same methodological provisions as the size of the first-level territories.

Regarding the territories and currencies of the third level, it is quite obvious that there are economic ties between the second level territories, which are presented by the availability of commodity flows between them. These commodity flows, as well as in the previous case, should be mediated or accompanied by counter cash flows. In general, it should be recognized that there are some production processes that unite social and economic structures in the territories of the second and first levels. Such integrated production structures form the third-level economic territories. Their dimensions are determined by the same factors as before.

Similarly, this currency should have limited liquidity, that is, the limited ability to flow from one region of the third level to another, as well as to the territories of higher levels. The number of such currencies is equal to the number of third-level territories.

In the same way, it could be shifted to the higher levels of the territorial production hierarchy with the corresponding currencies. Which serve the commodity flows at the appropriate levels. Correspondingly, it is possible to identify the economic territories of higher levels. The last level in this hierarchy is the territory that unites all the processes of social and economic production on a global scale. Such productive processes are subject to servicing by the common world currency. While the possibility of introducing such a supranational world currency is only hypothetically discussed.

Euro which is being a regional currency, can serve production processes only on a part of the European territory. This circumstance limits the number of the territorial hierarchy levels in the euro area.

The issue is to determine the size of the smallest economic territory. To solve this problem, it is necessary to take into account two main factors. The first is the ability of the controlling center to ensure the required distribution of the money supply in different parts of each of the allocated territories. The second is the ability of market mechanisms through the processes of self-regulation to provide the necessary amount of money supply in various parts of the territories under consideration.

Methods for managing the distribution of money supply by the centers are constantly being improved. In sequence, the ability of self-regulation in the distribution of the money supply between the territories is based on a number of factors. First, the homogeneity of economic entities is necessary within the territory in which the money supply is distributed. Secondly, banks should be able to direct cash flows in the form of available credits for entities in regions with low rates of return. Which is due to the presence of a sufficient number of small banks.

These two circumstances, which provide an opportunity for a relatively equal distribution of the money supply, are not sufficiently implemented in the Eurozone. The countries that entered the Eurozone (which had national currencies in circulation) differed significantly in size, population, availability of resources, and level of economic development. Among them were very small countries, such as Slovakia, Luxembourg, Latvia, and as large as Germany and France.

3.4 The importance of the local banks in the economy

The equalization of the money supply distribution for different economic territories to a certain extent can be ensured by the availability of credits for such economic entities as small companies and the population. This is ensured by the presence of banks that are focusing on local and small clients like saving banks. Thus, the ability of the market self-regulation in terms of filling the region with money increases when there are a sufficient number of such banks. The fact is that such local banks are focused on working with small companies in areas of activity with low profitability and bearing relatively high risks. This

is the sphere of services, agriculture, venture companies, etc. Such banks provide loans available to small companies and groups of people with relatively low incomes.

Local banks serve as a natural channels filling particular areas with the money supply. Usually these areas have a significant portion of low-income, but important from the production chain point of view companies. Otherwise, in the case of lack of local banks, these regions are subject to the risks of a money shortage crisis. As already mentioned, high levels of unemployment and deflation are signs of this kind of crisis phenomena.

The development of the global financial crisis of 2007 and the subsequent sovereign debt crisis pointed to the apparent institutional weaknesses in the construction of the Economic and Monetary Union in Europe. At the same time, it led to such problems in the banking sector as a reduction of interbank lending and lending to non-financial institutions by banks, an increase in interest rates on loans and in undermining confidence in the banking sector by clients.

To understand the scale of the banking crisis in Europe, several examples of the financial difficulties of the large European banks can be considered. On July 30 of 2007, the German bank Industriekreditbank (IKB) announced the emergence of financial difficulties related to unsatisfied demands in the mortgage lending market (Sinn, 2014, p. 44). IKB is specialized in servicing and crediting medium-sized businesses, and such a turn of events had serious consequences for the real sector¹² of the economy. This was followed by a statement of the largest French bank PNB Paribas that the hedge funds of the bank were experiencing difficulties due to their involvement in the US subprime lending market (Sinn, 2014, p. 44). This was a serious blow to the banking system of the euro area, as PNB Paribas is among the twenty largest European banks (fourth) by market capitalization, which amounted to 69.5 billion euros in 2015¹³ and is the second largest market capitalization among the banks of the Eurozone¹⁴. This caused a real shock in the financial markets and led to the development of the interbank crisis in August 2007 (when banks reduced interbank lending to a minimum) (Sinn, 2014, p. 44).

The situation deteriorated further when the financial troubles of the British bank Northern Rock and the collapse of the US investment bank Lehman Brothers followed in 2008. However, this does not end the list of banks that were in difficulty. Landesbank

¹² The real sector of the economy is the aggregate of all branches of material and non-material production, with the exception of those who provide financial services.

¹³ Paribas Market Capitalization. Web: statista.com

¹⁴ Banks' lending market capitalization. Web: statista.com

Sachsen had problems. Further: the large Spanish banking conglomerate Bankia had to apply for state aid, and it was decided to nationalize the Bankia. Furthermore, financial burden for the state was much higher than originally expected, and this measure had a negative impact on the country's credit rating (Jones, 2015).

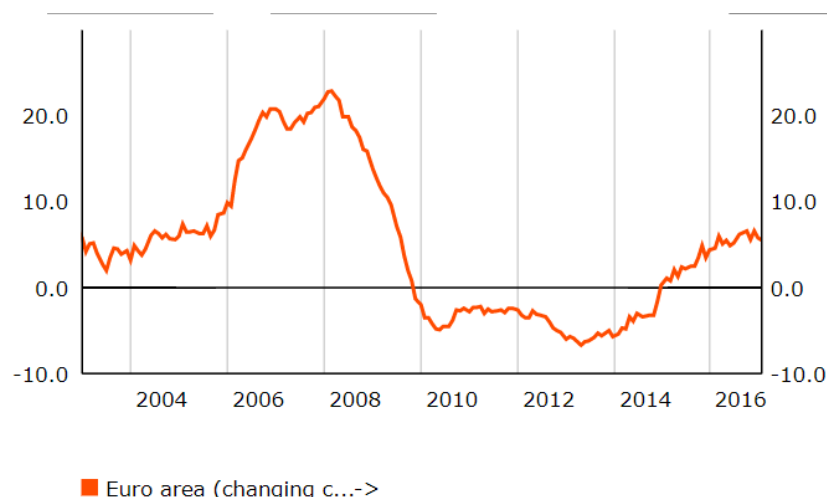
The consequences of the global financial crisis forced the European Central Bank (ECB) and national governments to use unconventional monetary policy. The anti-crisis policy of the ECB has largely pursued the goal of providing liquidity to the banks, as well as reducing interest rates on loans.

3.4.1 Dynamics of changes in lending volumes to the Eurozone non-financial sector

One of the problems for the euro area countries was the reduction of loans to the non-financial sector. Due to the lack of liquidity and rise of credit risk pushed by the crisis and process of reducing high debts through unleveraging, banks have greatly reduced the volume of lending to cooperatives. For national economies of the euro area this had serious consequences as firms in the euro area rely more on bank loans.

Now, it is necessary to consider the data of ECB on credit volumes for the countries of the euro area. Chart 4 shows the dynamic of lending index to the Eurozone non-financial corporations sector by banks for the period of 2004-2016.

Chart 4: Dynamic of banks' loans to Non – financial sector over 1 and up to 5 years maturity, index of notional stocks, Eurozone, 2004-2016



Source: European Central Bank

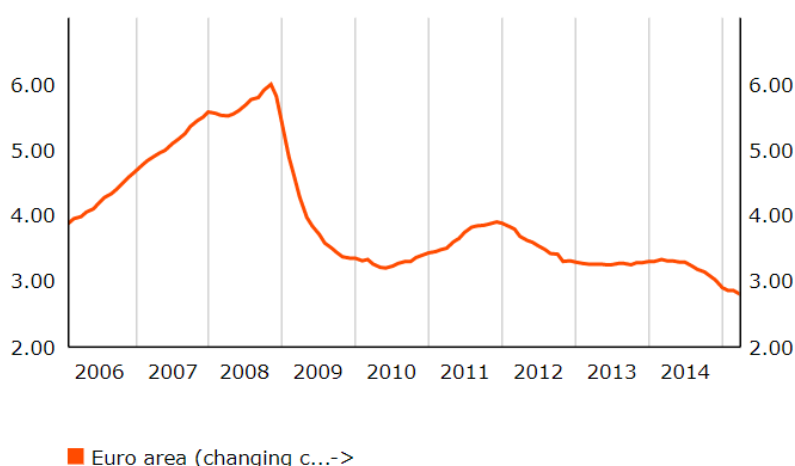
In general, we can say that after the onset of the global crisis, the fall in lending volumes became noticeable. Even though, after 2012 the level of lending has stabilized, one cannot yet speak of a full return to the pre-crisis levels.

3.4.2 The dynamics of interest rates on loans to the non-financial sector

In 2006, the refinancing interest rate in the euro area ranged from 2.25% (December 6, 2005) to 3.5% (December 13, 2006). After this, the ECB slowly raised the rate to 4.25% (July 9, 2008). Further, the ECB decided to gradually reduce the interest rate. On March 11, 2009, the rate was reduced to 1.5%. After further declines this indicator reached 0.05%, since September 10, 2014. Which is the historical minimum of the ECB's interest rate.¹⁵

These actions of the ECB were aimed at providing the banking sector with liquidity and reducing the price of the loan, including for the real sector of the economy. The real development of effective interest rates for non-financial corporations presented on the following Chart 5. The dynamics of changes in effective interest rates is taken for loans over 1 and up to 5 years maturity. At the same time, only new loans settled in euros and issued by credit institutions are considered. Data is shown for the period from 2006 to 2014.

Chart 5: Dynamic of banks' effective interest rates to Non – financial sector on loans over 1 and up to 5 years maturity, Eurozone, 2006-2014



Source: European Central Bank

From the graph above (see Chart 4), it can be seen that the effective interest rate on loans to the non-financial sector has been reduced in the euro area. If in October 2006 this figure was 5.17% per annum, then under the influence of the global financial crisis and the interbank crisis, the indicator rose to 6.35% in October of 2008. Against the backdrop of the

¹⁵ ECB Key Interest Rates. Web: ecb.europa.eu

ECB's anti-crisis measures, the effective interest rate gradually decreased to 2.87% in October 2015, which is even lower than the pre-crisis level. Therefore, to summarize, the anti-crisis policy in the euro area contributed to a tangible reduction in the effective interest rate on loans to the non-financial sector which slightly helped to avoid the default by banks through the increasing level of credits.

3.4.3 The dynamics of changes in the volume of household deposits in the euro area

The crisis did not limit its influence to the bank and real sectors. The British regional mortgage bank Northern Rock, which was heavily dependent on the interbank loan market, had to seek financial assistance from the Bank of England. The consequence of this was a massive withdrawal of deposits by the bank's worried customers. Such a withdrawal of deposits in the UK was the biggest since the financial crisis of 1866. (Jones, 2015) The events of the financial crisis of 2007-2009 and the crisis of sovereign debts drew attention to the problem of losing the clients loyalty. Such a phenomenon can lead to bankruptcy of the bank or the need for third-party assistance (often in the form of state guarantees of deposits or direct financial assistance).

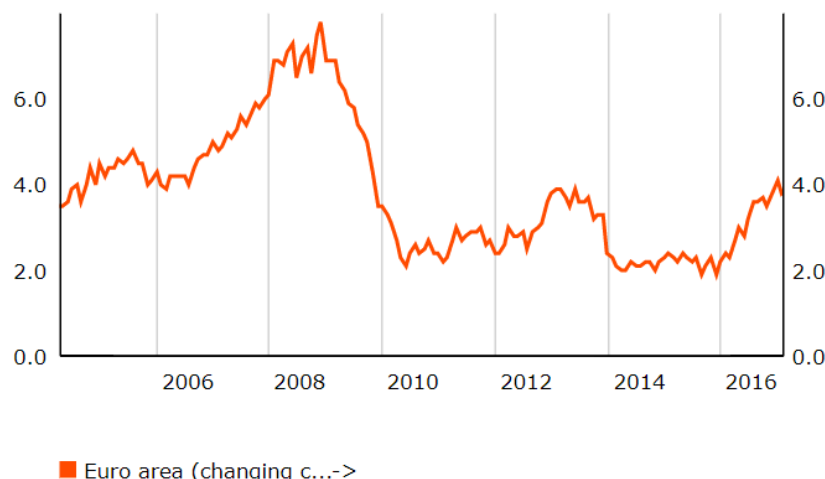
Nevertheless, even after passing through the critical phase of the financial crisis, it's too early to talk about ending of the public confusion about the banking system. This is evidenced by the events in Greece. Against the backdrop of unrest about the possible withdrawal of Greece from the euro area and a possible default of the country, Greek bank depositors withdrew their savings in large quantities. Only in June, 2015, depositors withdrew more than 800 million euros from Greek banks, and during the period from October 2014 to April 2015, a total of 30 billion euros were withdrawn from Greek banks (Behrakis, 2015).

It could be considered how many banks in the whole euro area could restore the previous trust of households and rise to the pre-crisis level of the volume of deposits. To do this, the data on the dynamic of deposits from 2006 to October 2016 were analyzed. Chart 6 presents data on deposits placed in euro for a total maturity. All contributions accepted by banks and other credit institutions from households and non-profit organizations serving households are considered.

Data on deposits for all maturity shows a sharp decline with the onset of the crisis. The percentage change in relation to the previous 2008 year in October 2009 amounted to

almost 59% (by the end of 2008 this indicator was characterized by stable growth). Additionally, there is a further decrease in the volume of deposits.

Chart 6: Dynamic of deposits by Household sector, index of notional stocks, Eurozone, 2006-2016



Source: European Central Bank

Thus, data on the volume of deposits in the euro area do not indicate a full return to the pre-crisis level. Also, the massive withdrawal of funds from Greek deposits does not allow to come to the conclusion that the anti-crisis measures undertaken in the euro area could completely solve existing problems with deposits and restore full trust.

3.4.4 The decreasing MFSs in Eurozone and private sector lending

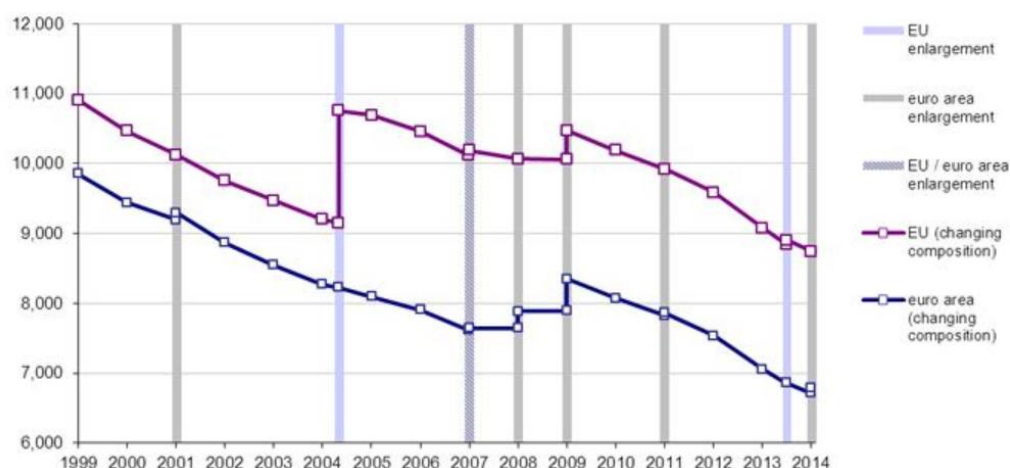
Overall, regarding the volume of the bank lending to the private sector¹⁶ by particular countries, the total volume decreased from 2008 to 2014 by approximately 29% in Spain, in Ireland by almost 50%. In a smaller scale, but steadily declining lending also observed in Greece. The volume of lending in Italy is declining after 2011. (Dr. Edward Yardeni, 2018)

Attention should be paid to the fact that the greatest reduction in the number of banks and private sector lending is observed in troubled Eurozone countries with a relatively high share of services and agriculture in GDP. For example, for 2013 the number of banks (MFIs) in the Eurozone decreased by 269 units (3.8%) by early 2014, the number of banks in the euro area was 6,790 (see the chart 2). For individual countries, the relative decline in the number of banks was uneven. The greatest decrease took place in Cyprus (-26%), in Greece (-17%), Spain (-9%), in France (-7%). The decrease in the number of banks in the euro area

¹⁶ Private Sector includes Households, Non-Profit Institutions Serving Households (NPISHs), and Non-financial Corporations

from 01-01-1999 to 01-01-2014 amounted to 3,066, or 31% (despite the accession to the currency union in this period of seven countries).¹⁷ (See Appendix 2)

Chart 7: The number of MFSs in the EU and the euro area, 1999 – 2014



Source: European Central Bank statistics

Thus, after the global financial crisis, the Eurozone's banking sector faced problems such as lack of liquidity and a reduction in interbank lending. This, in turn, led to a reduction in lending to the non-financial sector and an increase in interest rates on these loans. Further in Europe, a crisis of confidence developed, which, among other things, was reflected in the reduction of the volume of household deposits. The banking institutions started to close.

Based on the results of the analysis of the global pre-crisis and post-crisis levels of the problematic indicators of the banking sector in the euro area, the following conclusions can be drawn. First, the indicators of the banks loans to non-financial corporations indicate certain improvements. However, despite the decrease in interest rates on loans, the volume of lending to the non-financial sector has not yet reached its pre-crisis level. This can also be explained by the fact that with increasing risks, banking standards for customers have also grown. Concerning the effective interest rate on loans to NFCs, it can be said that it managed to achieve its significant reduction and it became even lower than the pre-crisis level, which helped to stop the process of closing down the banks. On the contrary, the issue of household contributions could not be fully resolved in the euro area. According to the data

¹⁷ PRESS RELEASE. Decline in the number of monetary financial institutions continued in 2013. 21 January 2014. Web: ecb.europa.eu

on the volume of deposits, the value of this indicator did not even approach the pre-crisis level.

The measures currently being taken in the euro area to fill unfavorable territories with a sufficient amount of money supply do not lead to the desired results. Due to this circumstance, it is required to determine other ways of achieving this goal and solving the current problems of the Eurozone.

Nevertheless, to solve the problems of filling the troubled areas of the euro area with a sufficient amount of money supply is possible. It is necessary to choose the right balance of the system and methods of managing the money supply and to ensure the processes of self-regulation of the money supply in different territories.

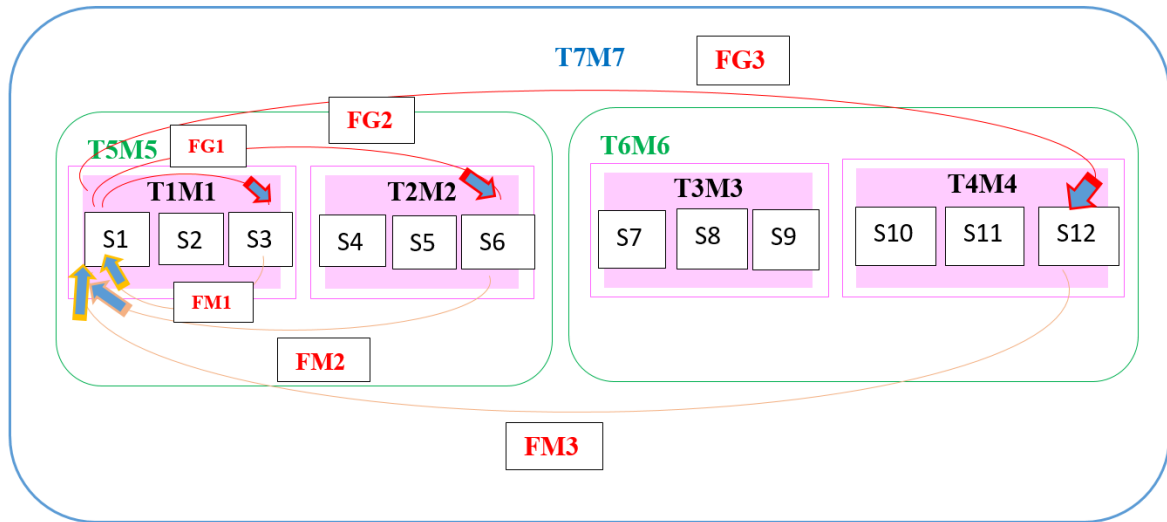
As the reasons for the current not quite prosperous state of the economies of the euro area countries were defined and analyzed. In view of this, it seems appropriate to refer to some generalized qualitative characteristic of the model for the functioning of a multicurrency system of monetary circulation. It gives the impression that such a model is capable of providing optimal conditions for production chains in the euro area.

3.5 Model of the multicurrency system

If the regulation of money supply in different countries of the Eurozone (which is provided by one center - the European Central Bank (ECB)) does not ensure the optimal distribution, taking into account the processes of market self-regulation, then it must be accepted that this requires the establishment of a hierarchy of government bodies.

As the basis for the functioning of a multilevel system of money supply regulation, a model of the flows of production chain in different territories (e.g. within the Eurozone) can serve. This model is built on the assumption that production chains in any territory can be divided into two parts. First includes the production chain inside the given territory, together with commodity and money flows. Second consists of open territories. In case of hierarchical division of territories lying in the basis of a money management system, it is necessary to indicate at what level of this hierarchy the production chains that go beyond the primary territory and the corresponding commodity and money flows are closed.

Picture 1: **Hierarchical multi-currency three level system**



Source: Own construction

S1-S12: Economic subjects

T1-T4: Territories of the first level

M1-M4: Currencies of the first level territories

T5-T6: Territories of the second level

M5-M6: Currencies of the second level territories

T7: Territory of the third level

M7: Currency of the third level territory

FG: Flow of goods

MF: Flow of money

Consider that there is a certain set of subjects in the economy which can be divided under the territorial basis. In this case, the important assumption is that the three levels of territorial division of a certain region can be singled out. Let us assume that one economic subject (entity) produces its products and sells in various territories of the first level.

The first part of the sales - flow of goods (FG1) of the selected subject (S1) is sent to buyers who are located within its own location - the first level territory (T1) (Picture 1). This flow of goods is mediated by the counter-flow of money (FM1) which is functioning in the territory T1. The currency in the given territory is represented by M1.

The second part of the sales - flow of goods (FG2) of the subject (S1) is outside the territory of its location. The buyer is the subject (S6) which is located in another territory of the first level (T2). In the territory (T2), another local currency (M2) is offered. Since the

local first-level currencies cannot leave their territories, this flow of goods is mediated by the counter-flow (FM2) and currency (M5). This currency is drawn at the second level and shown in the Picture 1 within the territory (T5).

The third part of the sales - flow of goods (FG3) is going from the subject (S1) to the subject (S12). This flow goes beyond the territory (T1). For this reason, the transaction payments for goods cannot be made in local currencies of first level (M1, M12), as well as in second level currencies (M5, M6), because these currencies due to their deliberately limited extraterritorial liquidity cannot go beyond their territories too. Therefore, such transaction payments is carried out by the currency (M7) through the cash flow (FM3) under the given territory (T7).

An important feature of this multicurrency system is that currencies of higher levels can handle in parallel with currencies of low lying levels. High level currencies can serve transactions within the territories that make up their largest own territory. For example, the flow of goods (FG1) can be serviced not only by the currency (M1) but also by the currencies (M5) and (M7). Participants of the transaction themselves choose the currency in which they want to pay.

It should be noted that the reasoning about the multi-level scheme of money supply management in the multi-currency system is not a hypothetical construction, far from reality. Historically, multicurrency systems preceded the introduction of unified national currencies. In fact, many societies used two-currency and multi-currency systems [15]. The multi-level system actually took place before the introduction of the cash euro.

Comparing to the reality, as the first level can be considered national currencies that circulated within the territories of Eurozone countries (during the non-cash ECU which was used to service transactions between the countries that originally formed the euro area). In addition, there was a brief transition period, when countries that were part of the euro area were simultaneously using national currencies, as well as cash and non-cash euros. This circumstance allows us to consider the ECU and the EUR as the second level currencies on the territory of the original members of the Eurozone. Finally, the US dollar which performed (and now fulfills) the functions of the world currency, belongs to the third level in the territory of countries that participated in international trade (Cabannes, 2012). It should be noted that the US dollar was used in trade between the countries originally included in the euro area (in parallel with the non-cash ECU and euro).

4. CONCLUSION

Based on the foregoing discussion, it seems possible and justified at least in the most general form, to indicate those measures that could lead to the correction of negative trends. Such measures will overcome the current debt and the Eurozone's economic crisis for many countries.

The main of such measures is the return of the Eurozone to the multicurrency system. However, this does not mean an automatic return to national currencies. It is necessary to conduct studies on the distribution of the money supply and monitor the cash flows in the euro area as a whole, as well as in individual countries. Based on such studies, it may be proposed to allocate territories at different levels of the territorial hierarchy within which currencies with limited extraterritorial liquidity are able to function. In accordance with the adopted multicurrency system, it is required to form the control bodies for the distribution of the money supply in the adopted territorial divisions. To increase the size of economic territories of different levels, it is necessary to increase the number of local banks in the euro area to provide the supply of credit on a regional level which would be high enough to cover a demand for credit on that level.

More specific solutions for individual countries of the euro area should be based on the individual characteristics of each country. Currently, Greece is in the most difficult position. In fact, proposals to remedy the situation which were considered earlier, are valid for other countries in the euro area in the medium and long term. However, the current situation in Greece requires the application of immediate measures that can have an effect in the very near future in the short term.

Now Greece is solving two problems. First, there is a need to find the means to service a sovereign debt in order to avoid default. Secondly, the country should maintain its participation in the euro area.

Greek Prime Minister Alexis Tsipras has repeatedly stated that Greece has no money to pay debts to creditors. To make such payments, new borrowing is required. However, it is possible to find funds for servicing and repaying Greece's debts without borrowing as the last resort.

The return of Greece to the former national currency (drachma) is an undesirable option. Currently, this step is viewed as a way out of the Eurozone, which is considered

unfavorable. However, the issuance of the local or regional currencies is not intended to be as a return to the national currency.

The handling of a wide variety of local currencies takes place in many countries, including the euro area. Of the euro area countries, the largest number of local currencies operates in Germany, where there are 16 regions where local (regional) currencies currently act as substitutes for the euro (Lietaer, 2012). In addition to Germany, several examples of the functioning of local money are presented in a number of Eurozone countries. These are such highly developed countries as France, Belgium, Denmark, Italy, and the Netherlands. There are examples of the use of local currencies in some regions of Greece itself.

In view of this, it seems that the introduction of local currencies is not seen as something unacceptable or opposed to the circulation of the single European currency. The reasons for a return to local currencies are approximately the same in all cases. That is support for the regional economy, solving social problems, environmental problems, etc. The regional currency allows to increase the demand for local products, thereby contributing to the strengthening of the regional economy (Lietaer, 2012). Probably, this option will not meet serious doubts, if it is used in Greece.

The use of local and regional currencies will free up large volumes of euro from domestic circulation. This will help to correct an absurd situation similar to the one that exists in Greece or France, when the money borrowed from Germany is used inside the country to serve the domestic exchange (Cabannes, 2011). These released euros from the internal turnover can be used for servicing and payment of external debts.

The introduction of a local currencies system can help solve many of the economic problems in Greece. However, in this case, it does not mean private or spontaneously arising examples of the use of local or regional currencies, but the construction of a hierarchical multicurrency system. That is, official recognition of local and regional currencies. This implies regulation of the issuance and circulation of such currencies by state, regional and local authorities. This circumstance results in the use of local and regional currencies in the budget process. Which means the possibility of paying taxes and paying off budgetary obligations, mainly social obligations, with local currencies on an equal basis and in parallel with the use of the euro. With certain adjustments, it is proposed to build a hierarchical system of local and regional currencies presented above.

Admission of the multi-currency system does not mean the use of local currencies throughout the whole country. This may be required only in regions experiencing the greatest

difficulties caused by the insufficiency of the money supply. For large cities and successful regions, regional currencies are most likely not required.

Greece is currently in the most difficult position and may be the first country to adopt new approaches to the formation of a multi-currency system. The transition to such a system is seen as a perfectly acceptable measure, which can largely resolve the accumulated contradictions in the euro area.

It seems that there are only few other acceptable options. However, regular tranches of financial assistance do not solve the problems of Greece, but only delay the threat of withdrawal from the Eurozone. It must be remembered that other PIIGS countries (Portugal, Italy, Ireland, Greece and Spain) are in a slightly better position. An example of Greece may prompt Eurozone countries to move in the same direction.

5. REFERENCES

- Abel, A. B. (2011). *Macroeconomics* (6th Canadian edition ed.). Toronto: Pearson.
- Adolfson, M. L. (2005, September). Empirical Properties of Closed and Open Economy DSGE. Stockholm, Sweden: Sveriges Riksbank and Stockholm University. Retrieved from https://www.newyorkfed.org/medialibrary/media/research/conference/2005/quantitative/empirical_properties.pdf
- Behrakis, Y. (2015, June). *Depositors withdraw €820mn in single day ahead of Eurogroup 'crunch' talks - media*. Retrieved from RT Business news: <https://on.rt.com/bquht8>
- Bonatti, L. F. (2017, November 6). Addressing the Core-Periphery Imbalances in Europe: Resource Misallocation and Expansionary Fiscal Policies. *EconPol WORKING PAPER*.
- Bootle, R. (2012, June 4). Leaving the euro: A practical guide. Retrieved from <https://www.capitaleconomics.com/wp-content/uploads/2016/11/wolfson-prize-submission.pdf>
- Burda, M. C. (1999). European labor markets and the Euro: How much flexibility do we really need? Berlin. Retrieved from <http://nbn-resolving.de/urn:nbn:de:kobv:11-10046280>
- Cabannes, A. (2011, October). Living with five or six currencies in our wallet. California, USA. Retrieved from https://www.lapasserelle.com/billets/multiple_currency_monetary_systems.html
- Cabannes, A. (2012). The European monetary crisis explained. Retrieved from https://www.lapasserelle.com/billets/greek_crisis.html
- Commission European. (2008). A European Economic Recovery Plan. Brussels. Retrieved from http://ec.europa.eu/economy_finance/publications/pages/publication13504_en.pdf
- Council of the European communities. (1992). Treaty on European Union. Luxembourg, Brussels. Retrieved from https://europa.eu/european-union/sites/europaeu/files/docs/body/treaty_on_european_union_en.pdf
- De Conti, B. M. (2014). The International Monetary System hierarchy: Determinants and current configuration. *Research Network Macroeconomics and Macroeconomic Policies (FMM), 18th Conference, Inequality and the Future of Capitalism*, (p. 31). Berlin. Retrieved from <http://www.internationaloffice.unicamp.br/english/wp-content/uploads/2015/02/De-Conti-Paper1.pdf>
- De Grauwe, P. (2014). *Economics of Monetary Union*. Oxford University Press.
- Dr. Edward Yardeni, D. J. (2018, May 5). Money & Credit: Private Sector Lending by Eurozone MFIs. Retrieved from <https://www.yardeni.com/pub/europrivlend.pdf>
- EU Commission - Working Document. (1997). The Single Market Review. SUBSERIES III: DISMANTLING OF BARRIERS Volume 5: Capital market liberalization. .
- European Commission. (1970, October 8). Werner Report. Luxembourg. Retrieved from http://aei.pitt.edu/1002/1/monetary_werner_final.pdf
- European Commission. (1998). Convergence report 1998. Belgium. Retrieved from http://ec.europa.eu/economy_finance/publications/pages/publication8013_en.pdf

- European Commission. (2004). The EU economy: 2003 review by European Commission. Belgium. Retrieved from http://ec.europa.eu/economy_finance/publications/pages/publication7694_en.pdf
- European Commission. (n.d.). *The history of the Euro*. Retrieved from ec.europa.eu: https://ec.europa.eu/info/about-european-commission/euro/history-euro/history-euro_en
- Feenstra, R. C. (2014). *International Macroeconomics*. New York: Worth.
- Frankel, J. A. (1997). The Endogeneity of the Optimum Currency Area Criteria. *The Economic Journal*. doi:10.1111/1468-0297.00327
- Gilbert, M. (2015, october 29). *The Quantitative Easing Experiment Is Failing*. Retrieved from Bloomberg.com: <https://www.bloomberg.com/view/articles/2015-10-29/ecb-nears-zero-bound-on-effectiveness-of-quantitative-easing>
- In depth: US interest rates. (n.d.). Financial Times. Retrieved from <https://ig.ft.com/sites/when-rates-rise/>
- Jones, E. (2015). *The Forgotten Financial Union: How You Can Have a Euro Crisis Without a Euro. The Future of the Euro*. . New York: Oxford University Press.
- Kawai, M. (1991). Optimum Currency Areas. In M. Kawai, *The World of Economics*. (pp. 526-533). London: Palgrave Macmillan. Retrieved from https://link.springer.com/chapter/10.1007%2F978-1-349-21315-3_70
- Kenen, P. (1969). The Theory of Optimum Currency Areas. *University of Chicago Press*, 41-60.
- Lacina, L. R. (2012). Eurozone and Its Neighbors: The Third Year of Crisis. *CATALOGUING-IN-PUBLICATION – NATIONAL LIBRARY*. Retrieved from http://www.striz.cz/pdf/The_Third_Year_of_Crisis_2012.pdf
- Liebscher, K. (1998). The role of a national central bank within the ESCB as illustrated by the OeNB. *the 26th Economics Conference of the Oesterreichische Nationalbank on the topic "Economic Policy 2000"*, (p. 13). Vienna. Retrieved from <https://www.bis.org/review/r980522a.pdf>
- Lietar, B. A. (2012). *Money and Sustainability : The Missing Link - Report from the Club of Rome*. Triarchy Press.
- McKinnon, R. (1963). Optimum Currency Areas. *American Economic Review*, Vol. 53, No. 4, 717-725.
- Mundell, R. A. (1961, September). A Theory of Optimum Currency Areas. *The American Economic Review*, 657-665. Retrieved from <http://links.jstor.org/sici?sici=0002-8282%28196109%2951%3A4%3C657%3AATOOCA%3E2.0.CO%3B2-V>
- Mundell, R. A. (1969, December 10-12). A Plan for a European Currency. New York: Paper Prepared for Discussion at the American Management Association. doi:939/II/70-E
- OECD. (1999). *EMU, Facts Challenges and Policies*. Paris: OECD Publications Service. Retrieved from <https://www.oecd-ilibrary.org/docserver/9789264172609-en.pdf?expires=1526752623&id=id&accname=guest&checksum=0300E8544CB01DFE02A48BB5C27DE6DB>
- Peirce, H. M. (2015). Small Banks by the Numbers, 2000–2014. Retrieved from <https://www.mercatus.org/publication/small-banks-numbers-2000-2014>

- Pollard, P. S. (2003). A Look Inside Two Central Banks: The European Central Bank and the FED. Retrieved from <https://files.stlouisfed.org/files/htdocs/publications/review/03/01/Pollard.pdf>
- S. Storm., C. N. (2015, April 11). Myths, Mix-ups and Mishandlings: What Caused the Eurozone Crisis? PARIS. Retrieved from <https://www.ineteconomics.org/uploads/papers/The-Eurozone-Crisis.pdf>
- Scott, D. L. (2003). *Wall Street Words (3rd ed)*.
- Sinn, H. W. (2014). *The Euro Trap: On Bursting Bubbles, Budgets, and Beliefs* . Oxford: Oxford University Press.
- Tracy, R. (2013). Tally of U.S. Banks Sinks to Record Low. *The Wall Street Journal*. Retrieved from <https://www.wsj.com/articles/tally-of-us-banks-sinks-to-record-low-1386030979>
- UNESCO. (2015). Rethinking Education, towards a Global Commons Good? Paris. Retrieved from <http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/Cairo/images/RethinkingEducation.pdf>
- Von dem Berge, L. (2014). Parallel currencies in historical perspective. Para"CAWM Discussion Papers 75.

6. APPENDIX

6.1 Appendix 1: Performance of the member states in relation to convergence, 1995-1998

	Inflation		Government budgetary position					Exchange rates	Long-term interest rates
	HICP ⁽¹⁾	Existence of an excessive deficit ⁽²⁾	Deficit (% of GDP) ⁽³⁾	Debt (% of GDP)			ERM participation		
	January 1998			1997	1997	Change from previous year			
									1997
Reference value	2.7 ⁽⁴⁾		3	60					7.8 ⁽⁵⁾
B	1.4	yes ⁽⁷⁾	2.1	122.2	- 4.7	- 4.3	- 2.2	yes	5.7
DK	1.9	no	- 0.7	65.1	- 5.5	- 2.7	- 4.9	yes	6.2
D	1.4	yes ⁽⁷⁾	2.7	61.3	0.8	2.4	7.8	yes	5.6
EL	5.2	yes	4.0	108.7	- 2.9	1.5	0.7	yes ⁽⁸⁾	9.8 ⁽⁹⁾
E	1.8	yes ⁽⁷⁾	2.6	68.8	- 1.3	4.6	2.9	yes	6.3
F	1.2	yes ⁽⁷⁾	3.0	58.0	2.4	2.9	4.2	yes	5.5
IRL	1.2	no	- 0.9	66.3	- 6.4	- 9.6	- 6.8	yes	6.2
I	1.8	yes ⁽⁷⁾	2.7	121.6	- 2.4	- 0.2	- 0.7	yes ⁽¹⁰⁾	6.7
L	1.4	no	- 1.7	6.7	0.1	0.7	0.2	yes	5.6
NL	1.8	no	1.4	72.1	- 5.0	- 1.9	1.2	yes	5.5
A	1.1	yes ⁽⁷⁾	2.5	66.1	- 3.4	0.3	3.8	yes	5.6
P	1.8	yes ⁽⁷⁾	2.5	62.0	- 3.0	- 0.9	2.1	yes	6.2
FIN	1.3	no	0.9	55.8	- 1.8	- 0.4	- 1.5	yes ⁽¹¹⁾	5.9
S	1.9	yes ⁽⁷⁾	0.8	76.6	- 0.1	- 0.9	- 1.4	no	6.5
UK	1.8	yes ⁽⁷⁾	1.9	53.4	- 1.3	0.8	3.5	no	7.0
EU	1.6		2.4	72.1	- 0.9	2.0	3.0		6.1

⁽¹⁾ Percentage change in arithmetic average of the latest 12 monthly harmonised indices of consumer prices (HICP) relative to the arithmetic average of the 12 HICP of the previous period.

⁽²⁾ Council decisions of 26.9.1994, 10.7.1995, 27.6.1996 and 30.6.1997.

⁽³⁾ A negative sign for the government deficit indicates a surplus.

⁽⁴⁾ Average maturity 10 years; average of the last 12 months.

⁽⁵⁾ Definition adopted in this report: simple arithmetic average of the inflation rates of the three best-performing Member States in terms of price stability plus 1.5 percentage points.

⁽⁶⁾ Definition adopted in this report: simple arithmetic average of the 12-month average of interest rates of the three best-performing Member States in terms of price stability plus 2 percentage points.

⁽⁷⁾ The Commission is recommending abrogation.

⁽⁸⁾ Since March 1998.

⁽⁹⁾ Average of available data during the past 12 months.

⁽¹⁰⁾ Since November 1996.

⁽¹¹⁾ Since October 1996.

Source: European Commission Convergence report of 1998

6.2 Appendix 2: Number of MFIs per country and percentage changes in recent periods

Country	Number of MFIs						Percentage changes		
	I Jan.	I Jan.	I May	I Jan.	I Jul.	I Jan.	I Jan. 1999	I May 2004	I Jan 2013
	1999	2001	2004	2013	2013	2014	to	to	to
							I Jan. 2014	I Jan. 2014	I Jan. 2014
ECB	1	1	1	1	1	1	-	-	-
EIB*	-	-	-	1	1	1	-	-	-
BE	153	142	126	117	114	116	-24.2	-7.9	-0.9
DE	3280	2782	2268	1,916	1,916	1,885	-42.5	-16.9	-1.6
EE	-	-	25	35	34	35	-	40.0	0.0
GR	102	105	100	75	71	62	-39.2	-38.0	-17.3
IE	96	211	294	573	567	554	477.1	88.4	-3.3
ES	608	571	512	381	360	345	-43.3	-32.6	-9.4
FR	1,938	1,764	1,577	1,042	988	966	-50.2	-38.7	-7.3
IT	944	884	854	730	715	714	-24.4	-16.4	-2.2
CY	-	-	409	139	135	103	-	-74.8	-25.9
LU	676	662	586	430	357	360	-46.7	-38.6	-16.3
LV	-	-	52	72	73	73	-	40.4	1.4
MT	-	-	17	34	33	31	-	82.4	-8.8
NL	668	620	484	276	271	264	-60.5	-45.5	-4.3
AT	910	866	827	761	755	741	-18.6	-10.4	-2.6
PT	228	223	205	160	159	162	-28.9	-21.0	1.3
SI	-	-	27	28	28	29	-	7.4	3.6
SK	-	-	28	31	31	30	-	7.1	-3.2
FI	354	362	396	329	326	318	-10.2	-19.7	-3.3
Euro area**	9,856	9,193	8,230	7,059	6,935	6,790	-31.1	-17.5	-3.8
BG	-	-	-	37	36	37	-	-	0.0
CZ	-	-	79	61	62	59	-	-25.3	-3.3
DK	216	213	206	164	164	164	-24.1	-20.4	0.0
LT	-	-	74	96	91	92	-	24.3	-4.2
HR	-	-	-	-	57	56	-	-	-
HU	-	-	238	251	251	250	-	-	-0.4
PL	-	-	659	696	693	692	-	5.0	-0.6
RO	-	-	-	53	54	42	-	-	-20.8
SE	179	177	255	182	173	174	-2.8	-31.8	-4.4
UK	556	541	457	405	389	390	-29.9	-14.7	-3.7
EU**	10,909	10,124	10,756	9,076	8,905	8,746	-19.8	-18.7	-3.6

* For the ECB's monetary and other euro area statistics, the EIB continues to be treated as an institution that is resident outside the euro area.

** Changing composition.

Source: European Central Bank statistics