European Monetary Union and Its Compliance with the Optimum Currency Area Criteria

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Abstract: **The aim of the paper is to analyse a level of compliance of the euro area with the OCA criteria. To reach the aim set, the authors have used methods of theoretical, statistical, mathematical and graphical analysis, comparison and induction methods, and the analysis of secondary data. As a result of the performed analysis, it has been concluded that the euro area is not optimal, and the stable functionality of the system under the existing risks and problems is not possible. Therefore, as additional criteria for the estimation of the currency area optimality it is possible to apply the efficiency and innovation rate in the EMU member states and the diversification indicators of export partners.**

Keywords **– European Monetary Union (EMU), euro area, optimum currency area (OCA) criteria, OCA theory.**

I. Introduction

EMU is a result of serious and long-term integration processes. European monetary integration has both positive and negative consequences, which are caused, on the one hand, by the member states' achievements and, on the other hand, by modern economic and financial problems. The aim of this paper is, based on the OCA theory guidelines, to provide a comprehensive analysis of the level of compliance of the euro area with the OCA criteria, which will help understand the basic problems of operation of the euro area.

The optimum currency area (OCA) is a group of countries or regions, where there are one or more currencies with a fixed exchange rate and single monetary policy. There is a free trade of goods and services in the OCA, as well as free movement of production factors. A currency area is considered to be optimal, if internal and external balance is supported in each national economy. The OCA consists of sovereign states, which take an independent decision whether to join the area. The most researchers of the OCA theory argue that the OCA establishment limits the instability, which can occur in the OCA states using floating exchange rates. It stimulates trade and investments among the OCA countries. It also makes possible to consider the region as a large single market.

II. Criteria of Optimum Currency Area Theory

The OCA theory explains how currencies should operate in a homogeneous area to ensure a stable currency. This issue has been considered by a number of scholars since the second half of the 20th century. The pioneers of the OCA theory are R. Mundell, R. McKinnon, and P. Kenen. The second wave of the research relates to J. Ingram, Y. Ishiyama, M. Friedman, M. Taylor, G. Tavlas, R. Baldwin, C. Wyplosz, etc. The main aim of these economists was to focus on the research of maximum benefits from joining EMU, rather than trying to find the same conditions and indicators that could help compare countries among themselves, which has been noticed at the first stage of the theory development.

Considering the issue of asymmetric shocks in economy, R. Mundell has proposed such a criterion as labour mobility. Costs, which are related to using the same currency, can be excluded if there is a mobile cross-border movement of workforce.

R. Mundell emphasizes the desire of workforce to move in response to shocks. R. Mundell bases his theory on the assumption that all current currency areas largely coincide with nation states. These areas are similar in sense of culture, language, legislation and opportunity to move easily around. Thus, a national currency is not just a symbol of statehood; it is usually supported by labour mobility. However, borders, legislation, language differences slow down migration, as well as institutional barriers delay labour mobility. Therefore, changes in legislation may make cross-border labour mobility easier and enlarge the size of OCA. [[4], 356]

Labour mobility is limited in short term. It is influenced by significant costs that are related to labour migration and its retraining. Movement of physical capital is the most time consuming activity, because in order to have productive workforce, it is necessary to have required equipment. Financial capital moves more quickly and freely, while physical capital is comparatively immobile. Mobility can be increased in the medium and long term, facilitating the adjustment to asymmetric shocks.

P. Kenen, in turn, indicates that "perfect interregional labour mobility requires perfect occupational mobility. And this can only come about when labour is homogenous." He notes that "labour force is not homogenous that it is possible to talk about perfect mobility or even hope to delineate a region, where there is perfect mobility, unless that region is a single-product region." [[19], 12] As a result, it is concluded that perfect mobility is not possible.

According to the authors' opinion, if asymmetric shocks occur in a country, migration stimulating policy is not possible to implement in short term. Human migration takes a long time. Moreover, not all people are also ready to change the residence because of their mentality, expectations of the future, age, knowledge, experience and language skills. Labour mobility is a significant factor in the analysis of the optimality of currency area; therefore, it can be further applied to the long- term planning of the OCA as an additional dimension.

The relevant question is whether the exchange rate is a useful tool to deal with an asymmetric shock. However, many standard goods are produced in different countries and are virtually identical. [[4], 358] The market itself balances prices in foreign and domestic markets, thus prices become independent of the exchange rate. The exchange rate changes do not influence competitiveness; prices are not fixed, so the exchange rate is not longer an adjustment tool. Therefore, when the economy is small and highly open to trade, it has little ability to change prices of products on the international market. In this case, abandoning of the exchange rate does not imply a lot of costs. Thus, R. McKinnon defines an economic openness as the ratio of tradable production of non-tradable goods. If the economy is more open, it will be more tended to the application of a fixed currency regime.

It can be concluded that it is beneficial for small countries to join large currency areas, especially if they are active international traders. The authors of the paper consider that diversification is a significant economic aspect for a small country. It is a big challenge, because mostly they have little influence on the overall financial and fiscal policy making and on the establishment of market prices. Therefore, greater degree of openness and diversification leads to smaller costs of countries in the prevention of asymmetric shocks.

Considering the issue of asymmetric shocks, it is important to be familiar with their causes and frequency. This problem has been analysed by P. Kennen. His developed criteria review the key reasons of the shocks. Changes in consumption (for example, taste, technology changes) can be considered the main reason of the asymmetric shocks. However, such shocks occur every day, and the major part of them takes place without affecting the production processes.

As a result, the second criterion, which was initially introduced by P. Kennen, can be formulated as follows: currency area member countries ought to be well diversified and producing similar goods. [[4], 357]

P. Kennen thinks that a well-diversified economy is less subjected to adverse changes in the world, which are related to changes in the demand of export products. Diversification of production reduces likelihood of asymmetric shocks and minimizes their negative effects.

The authors of the paper reckon that diversification is an important aspect of the economy of small countries, including Latvia. It helps quickly adapt to changes, and if there is a decline in demand for a certain product, this product can be replaced with another product; consequently, losses will not be so great.

M. Friedman has put forward such an OCA criterion as price and wage flexibility. When nominal prices and wages are flexible among and within countries contemplating a single currency, the transition towards adjustment following a shock is less likely to be associated with sustained unemployment in one country and/or inflation in another. This will, in turn, diminish the need for nominal exchange rate adjustments [[27], 2]. J. M. Fleming adds that price and wage adjustment to the excess supply and to the excess demand will lead to the automatic adjustment to asymmetric shocks. At the same time, the need for the rate adjustment will not be necessary.

J. Ingram considers that the most important criterion of the OCA theory is financial market integration. Financial integration can reduce the need for the exchange rate adjustment. A stable financial system in a country, which is a member of the currency area, reduces a negative impact of the asymmetric shocks. With a high degree of financial integration even modest changes in interest rates would elicit equilibrating capital movements across partner countries. This would reduce differences in long-term interest rates, easing the financing of external imbalances but also fostering the efficient allocation of resources. Financial integration is not a substitute for the permanent adjustment when necessary: in this case, it can only smooth this process. Temporary financial flows may induce the postponement of real adjustment and make it more difficult at a later stage. Some authors also warn that financial integration might lead to destabilising capital movements. [[27], 2]

An important criterion is the similarity of inflation rates or convergence of inflation. External imbalances may arise from the regular difference in inflation rate that occurs from differences in structural development of the labour market, economic and social policy priorities (such as dissatisfaction with inflation). J. M. Fleming notes that when inflation rates between countries are low and similar over time, then terms of trade will also remain fairly stable. This will foster more equilibrated current account transactions and trade, reducing the need for nominal exchange rate adjustments. [[27], 3]

The above-mentioned criteria depend on country's economic and financial policies. Therefore, there is such an important criterion as coordinated policy or political integration. This issue is examined by Y. Ishiyama. If common policies are more coordinated, then they can be easier implemented. G. Haberler, in turn, reckons that the similarity of member states in political issues creates a thriving currency area. N. N. Mintz adds that political integration is one of the most important conditions for member states during the implementation of the common currency, while E. Tower and T. D. Willett consider that for a successful OCA, policy-makers need to trade-off between objectives. [[27], 3]

R. Baldwin and C. Wyplosz have investigated such criteria as homogeneous preferences [[4], 359]. These criteria suppose that participants of the currency area are required to come up with a common solution on how to deal with the consequences of asymmetric shocks. There are some possible measures that can help overcome the shocks. But what kind of policy should be chosen by a country? For example, let us focus attention on either the problem of inflation or unemployment. There are several compromises to which member states are required to come. If the OCA member states cannot determine common advantages of the currency area and come to a common solution, then, in general, they will expect that the central bank implements favourable policies for each country that , in turn, can become a reason for the collapse of the currency area. If it happens, it will bring serious damage to some countries and, in the end, it will lead to the collapse of the OCA.

R. Baldwin and C. Wyplosz offer another criterion – solidarity vs. nationalism. Any shocks – asymmetrical or symmetrical – create political disputes among the OCA member states. When countries are planning to join the currency area, they have to understand that in the future there may occur disagreements in the implementation of policy, so that these disagreements can lead to national aspects – countries' inhabitants must be tolerant, and they have to accept the fact that they will live together and extend their sense of solidarity to the whole union. So when the common monetary policy gives rise to conflicts of national interests, the countries that form a currency area need to accept the costs in the name of a common destiny. [[4], 359]

In the authors' opinion, homogeneous preferences, common policy and solidarity are the most important criteria in the establishment of overall sentiment in the currency union. Fulfilment of these criteria provides fast and efficient decision-making process, which will increase the sustainability of the currency area.

Reality has shown that the OCA theory has a number of advantages and disadvantages. The economist P. Robson notes that several OCA features are difficult to measure univocally. M. Emerson adds that this theory cannot be applied to the measurement of pros and cons of establishment of the monetary area. The OCA theory offers a narrow and outdated analytical framework to define the optimal monetary area. [[27], 4]

In turn, G. Tavlas defined such a situation as the problem of inconclusiveness. He mentioned the following example. One country could have free trade within the currency area; however, at the same time, there might be low labour and production factor mobility in the same country in comparison with other OCA states. [[27], 4]

G. Tavlas also pointed out that due to the fact that all the main principles had been doubted by new theoretical and empirical achievements, the OCA theory was weakened. Also during the period from 1970s to1980s, economists and politicians could not find a clear response to the question whether Europe needs to continue monetary integration, and for which countries it would be beneficial to join the currency area.

It should be noted that the early OCA theory could not predict that in the future the service sector would have a significant share of economy in many countries. The service sector by nature is diversified, fragmented and it makes the European economies more similar than in terms of their production sector estimation.

III. European Monetary Union Compliance with the OCA Criteria

This section provides the analysis of European Monetary Union (EMU) compliance with the OCA criteria, based on publically available information of the European Commission, European Central Bank and Eurostat. The analysis makes it possible to determine strengths and weaknesses of the monetary union.

Labour Mobility

According to the OCA theory, labour mobility helps deal with asymmetric shocks. People always migrate; however, absolute mobility is not possible. Labour freedom index has been applied to the analysis of optimality criteria. The index is annually calculated by the Wall Street Journal and Heritage Foundation Research Institute using the World Bank data. [[20]] Calculation of the weighted average labour freedom index shows that the index has almost reached 60 point level in the EMU countries, and in the recent years it has been decreasing. This displays an increase of obstacles of free labour mobility. Uncertainty and barriers are growing in the labour market, and this is connected with the consequences of the crisis – each country is trying to protect its labour market. There are significant differences in the labour freedom index of the EMU countries in comparison with the index values of the USA, where the major one is that the USA labour force is more mobile and the euro area countries are noticeably behind.

Migration depends on a number of factors – difference in salary, moral costs, distances, age of employee, professional skills and experience, knowledge of languages, marital status, possibility to find a desired job or to find a job at all, lack of information, institutional obstacles.

Concerning migration on a large scale, foreign language skills play an important role. Statistics on language skills by age groups is not available. Therefore, for the purpose of examining this issue the data about pupils' foreign language skills has been applied. According to the Eurostat data [[10]], the highest number of foreign languages learned per pupil is in Luxembourg (2.5 languages), on Malta (2.2), which has recently improved its position, and in Finland. The lowest result is in Ireland – one foreign language per pupil. The authors of the paper suppose that the level of foreign language skills is not sufficient and it limits labour migration.

The existence of workplaces in a country can attract new labour force and, as a result, positively influence migration. Since 2009 Eurostat has started publishing data about the level of vacancies in the EMU countries each quarter [[29]]. The highest rates have been observed in Germany, the Netherlands, Austria, Finland and Belgium in recent years. The score of these countries is above 1.5% level. The fact that some countries have managed to create new workplaces can be estimated positively. However, this number of new workplaces is not enough. [[17]] Analysing this data in the context of unemployment statistics, it can be concluded that the lowest level of unemployment is in Austria and in Portugal. Finland has managed to reduce this index twice that indicates its well-developed and planned politics related to creation of new workplaces. As a result of implemented stimulating policy in Germany, during the crisis the unemployment level has decreased. In recent years, the highest unemployment level has been in Spain. In Greece the unemployment rate is still increasing because the government has approved the next savings plan, which implies a reduction in minimum salary and the termination of employment of public sector employees; moreover, the employers will have more freedom in redundancy issues.

On the one hand, growing unemployment can motivate people to go abroad looking for a job, and, as a result, this tendency will help to deal with asymmetric shocks. On the other hand, the number of countries, where the index of vacancies exceeds 1.5%, is relatively small. This means that the euro area countries are not able to create new workplaces, which indicates a low level of fulfilment of labour mobility criteria.

Due to a lack of corresponding data, the data on minimum wage level has been applied in order to perform the analysis of salary. According to the Eurostat data [[25]], the lowest minimum salary is in Slovenia and Estonia; however, in recent years Slovenia has exceeded Estonia's level. The average minimum salary level is in Greece, Spain, Slovenia, Malta and Portugal. The highest minimum salary level is in Luxembourg, Ireland, Belgium, France and the Netherlands. There is a significant difference in the salary level in the euro area countries, which indicates differences in living conditions – the Monetary Union is struggling against them. Although in France, Luxembourg, the Netherlands, Ireland and Belgium the minimum salary is higher than in other euro area countries, migration in these countries in on the average level. It can be concluded that there are other obstacles and barriers for labour mobility, or people are satisfied with current living conditions.

It should be noted that the social security system is of high importance. The more attractive the social system is, the more labour migration can be expected. According to the Eurostat data [[7]], an average level of social security expenditure is 27.5% of GDP in the euro area countries. Since 2009 this indicator has risen due to additional expenses on unemployment benefits occurred as a result of the financial and, later, debt crisis.

Having considered the issues related to labour mobility, the authors have come to a conclusion that the migration level is not high in the EMU countries. The main reasons are bad foreign language skills and a small number of vacancies. Furthermore, there has been noticed a human aging tendency in Europe; the older people get the less mobile they are. Also a lack of information about job opportunities significantly influences labour migration.

Diversification of Production and Consumption

The higher the diversification of national production and consumption is, the faster and with less damage a country will be able to avoid consequences of asymmetric shocks.

For the purpose of examining the diversification of production and consumption, statistical data on gross added value by industry has been applied [[28]]. In general, according to gross added value, business and financial services dominate in the euro area countries. Agricultural, fishing and hunting industries have the lowest share of GDP.

The highest share of agricultural, fishing and hunting industries was in Greece until 2006, but later in Slovakia and on Cyprus. The lowest share of agriculture in the economy is recorded in Luxembourg, which can be explained by the fact that Luxembourg is a comparatively small country with specific climate conditions.

Until 2003 the highest production share in the economy was in Ireland, later in Slovakia. However, in 2010 both countries had almost the same level. The lowest production share in the economy is in Luxembourg, where it decreases annually.

The highest construction share in the economy is recorded in Spain. Until 2006 there had been a construction boom in Spain and Ireland; however, later construction volume sharply decreased, which significantly affected the development of the crisis in these countries. The lowest construction share in the economy is on Malta, where this indicator is stable over time.

The highest share of trade, transport and communication services in the economy is in Greece, where until 2007 there was indicated a growing trend. The lowest share is in Ireland and Germany. Since 2004 on Malta there has been a rapid decrease in the share of these industries in the economy.

According to the year 2010 data, there is the highest share of financial and business activities in the economy in Luxembourg (50.7%). The second place was taken by France, the third – by Germany, and the last – by Austria. Since 2008 there has been a rapid growth in the share of this industry on Malta.

It is important to note that the structure of the economy defines abilities of countries to cope with consequences of the financial crisis. Of course, the government's ability to quickly adapt to changing conditions and to be able to use the existent structure of the economy in order to eliminate asymmetric shocks is of great importance. Therefore, it has been analysed that the structure of the economy has influenced the changes in GDP especially during the crisis. Fig. 1 displays the real changes in GDP in the euro area countries during the last five years. The most considerable decrease in GDP was in Estonia, Slovenia and Finland in 2009. The production share in these countries is comparatively high. Some economists consider that a higher share of basic industries in the economy makes it less open [[32]]. In spite of the fact that there is the highest share of the economy in financial services in Luxembourg, the decrease in GDP was not the largest among the euro area countries. Also, the improvement in some rates was noticed, except problematic countries – Greece, Spain, and Ireland.

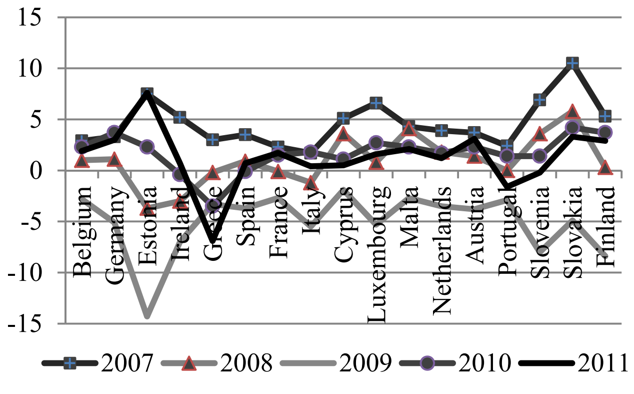

Fig. 1. The real GDP changes in the European Monetary Union countries, 2007–2011. (%) [[30]]

It can be concluded that the euro area is relatively well diversified. The highest share of the economy belongs to services, in particular, to the financial sector. The production share in the economy dominates in some countries. In general, based on the data of Fig. 1, it is possible to conclude that countries have managed to improve macroeconomic position with the existing structure of the economy, in particular, countries, where the financial sector is leading.

The Degree of Economic Openness

As stated above, a higher degree of economic openness helps avoid and overcome asymmetric shocks. To analyse the criteria, the authors have applied an average index of import and export quotas, calculations based on the Eurostat data on export, import and GDP. The results of calculations are displayed in Table 1.

TABLE I

THE DEGREE OF ECONOMIC OPENNESS IN THE EURO AREA COUNTRIES, 2006–2010 (%) (THE AUTHORS' CALCULATIONS) [[14]]

Year/Country	2006	2007	2008	2009	2010
Euro area	40.61	41.35	42.85	38.11	42.15
Belgium	85.55	88.11	94.02	80.98	88.38
Germany	43.92	44.67	46.67	42.10	46.41
Estonia	49.72	48.99	51.22	42.80	51.73
Ireland	89.59	89.40	96.04	99.70	102.43
Greece	24.26	26.79	28.11	23.05	23.81
Spain	26.63	27.15	27.09	23.35	26.16
France	30.54	30.39	31.60	27.94	30.21
Italy	28.69	29.15	29.13	24.94	28.83
Cyprus	44.28	45.16	45.03	39.20	40.32
Luxembourg	173.48	181.92	183.85	174.80	179.21
Malta	64.77	67.02	67.91	61.48	69.22
the Netherlands	73.53	74.01	77.70	72.97	81.12
Austria	56.62	59.86	61.49	53.94	57.40
Portugal	28.65	29.41	31.12	26.76	28.73
Slovenia	49.87	54.58	55.78	48.74	54.32
Slovakia	47.71	52.40	55.58	48.55	55.35
Finland	50.33	50.10	52.77	43.82	47.32

Calculations (see Table 1) show that the highest degree of economic openness was in Luxembourg during the period from 2006 to 2010 and it exceeded 100%. A significant degree of economic openness is also noticeable in Ireland, Belgium, the Netherlands and Malta. These are small countries and the trend proves the statement – the smaller a country is the more open its economy is. This also explains why the Benelux countries have always stimulated and have participated in the Monetary Union during the whole period of its establishment and development. This proves also that small countries are able to get adapted to changing conditions more quickly, and they are more creative. The lowest indexes are in Greece, France, Spain and Portugal.

The significant aspect is the diversification of trading partners. The greater the number of countries is to which the country exports its products and services, the more diversified the country's export market is. This, in turn, can help avoid and overcome asymmetric shocks on its territory. In addition, if one partner country faces problems then it will not significantly affect county's export volume and, as a result, its GDP.

According to the data collected from the Central Intelligence Agency [[8]], an average leading export partner of the euro area country accounts for about 19%, in turn, the second one makes 12.4% on the average. Such a considerable share of the leading partner, according to the authors' opinion, can significantly influence foreign trade of countries in case of asymmetric shocks. The most diversified number of partners in foreign trade is in Germany, Greece, Italy and Finland.

The important factor is a geographical location of an export partner. If mostly there are neighbour countries, then there is a risk that these countries can be affected by asymmetric shocks. Therefore, if there are countries among export partners, which are located far away from the country, this can be as an "airbag".

The authors' special attention has been attracted by the structure of Germany partners, where shares of partners are not high, and this proves the diversity of German export market.

Therefore, the authors propose applying the diversity of export partners as one additional criterion, which indentifies the optimality of the Monetary Union.

If the degree of economic openness of the EMU is compared with the U.S. degree's value than it is obvious that in the EMU this indicator exceeds twice the indicator of the U.S. According to the analysis conducted, it can be concluded that there is a high degree of economic openness in the EMU.

Integration of Financial Markets

According to J. Ingram, the integration of financial markets has been denominated as one of the major criteria of determination of the Monetary Union optimality. Financial integration can improve allocation of production resources, promote entrepreneurship, investment and can help hedge against macroeconomic fluctuations. At the same time, capital movement may lead to a wider gap between rich and poor countries, as well as result in the instability of the local financial system.

Limitations of capital movement, new financial innovations, new opportunities to diversify risks – these factors have encouraged better resource allocation in the euro area countries that, in turn, has stimulated greater integration.

Interest rate is considered to be one of the most important factors of financial integration. Until 2009 all countries of the EMU fulfilled convergence conditions for the long-term interest rate. Since 2009 an interest rate has significantly increased in Greece. This trend can be explained by an increase in the inflation rate. In 2010 Luxembourg and Portugal exceeded the limit. According to Fig. 2, it is seen that since 2008 interest rates have decreased almost in all countries. This can be explained by the fact that the European Central Bank (ECB) reduced the refinancing rate to ensure activity on the financial market.

The Eurostat data shows that the tightest inflation rate convergence among the EMU countries was in 2007. Later divergence of indexes was noticed. This was caused by reaction of governments on the financial crisis, and later on the debt crisis. Consequently, it proves that the euro area countries were not well prepared to extreme situations.

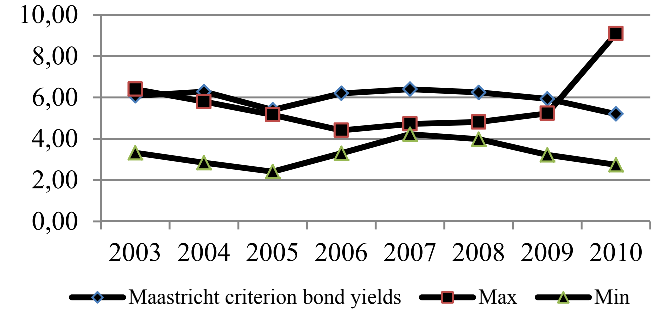

Fig. 2. Amplitudes of long-term interest rates and the Maastricht criterion bond yields, 2003–2010 [[6]], [[24]]

Capital market share of GDP, % [[5]] is used in the estimation of optimality of the financial system. Rate changes in the euro area countries, as well as in the U.S. are displayed in Table 2.

TABLE 2

CHANGES OF CAPITAL MARKET SHARE AS A PERCENTAGE OF GDP, 1995–2010 (%) (THE AUTHORS' CALCULATIONS) [[5]]

Year/Country	1995-1999	2000-2004	2005-2010
Euro area	-	28.91	17.70
Belgium	8.60	26.81	31.04
Germany	31.20	-1.96	4.55
Ireland	28.92	22.39	-3.95
Greece	25.29	53.58	68.70
Spain	30.55	19.14	-5.03
France	3.63	22.65	13.73
Italy	104.41	43.53	25.32
Luxembourg	-	215.69	163.83
the Netherlands	36.82	48.73	20.54
Austria	19.16	40.41	37.32
Portugal	58.58	38.27	19.15
Finland	-	45.92	21.25
United States	46.16	13.76	0.38

The ECB data supposes that in general the amount of capital in the euro area increases year over year. During the period from 2000 to 2004 in comparison with the corresponding previous five-year period the amount of capital increased by 28.91%, in turn, during the period from 2005 to 2010 an increase was 17.7%. The highest capital market increase has occurred in Luxembourg, Austria and Greece. In Luxembourg, as it has been stated above, business and financial services compose the highest share of GDP. During the period from 2005 to 2010 in comparison with the previous period there was a reduction in the capital share in Ireland and Spain by 3.95% and 5.03% correspondingly.

Increasing integration causes a reduction in restrictions on capital movement. Therefore, external asset growth can be considered one more factor that shows the level of financial integration in the euro area. The growth of external capital indicates the openness of the monetary union. Attracting of external capital enhances the mass of money in circulation without an increase in the inflation rate. According to the data of the Deutsche Bundesbank (see Fig. 3), until September 2008 there was an upward trend in changes of amount of external assets. This had a positive effect on the size of M3 component. From the late 2008 until the beginning of 2010 there was a significant decrease in external capital. Of course, the trend occurred due to the instable situation on financial markets, decrease in the ECB refinancing rate, as well as unstable political situation in some countries.

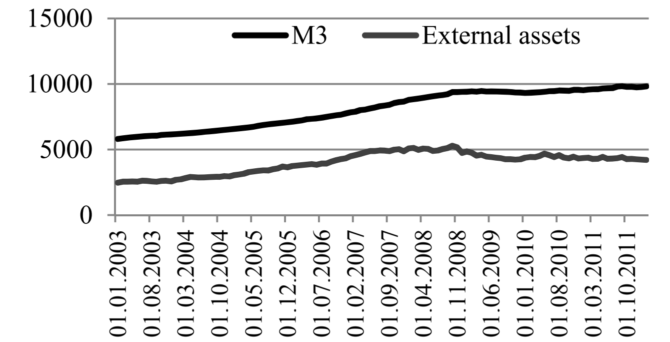

Fig. 3. Monthly amounts of M3 component and of external assets, 2003–February 2012 (billion) [[9]], [[26]]

Reduction in refinancing rate has partly caused a decrease in the external capital inflow; however, the ECB in this way has tried to boost an economic activity in the euro area. This, in turn, has affected a further increase in the amount of money. Fig. 3 displays that despite a significant decrease in the external capital, M3 component is continuing to grow (a slight decrease has been noticed at the beginning of 2010). This, of course, has caused an increase in the inflation rate.

As an additional factor that features the development of financial sector is the index of financial freedom, which is annually calculated by the Wall Street Journal and Heritage Foundation Research Institute [[20]] using the data of the World Bank. It shows an efficiency level of the banking system, a degree of independence from the government control, and its intervention in the financial sector. The ideal banking and financial system implies a minimal degree of government intervention, the independent supervision control of the Central Bank and the regulation of financial institutions only for the purpose of preventing the emergence of fraud mechanisms and ensuring the fulfilment of contractual obligations. According to the data regarding the index of financial freedom, the lowest index value in the euro area is 50 points in Slovenia, where the index has not been changing over time. The same index was in France, Germany, Greece and Portugal until 2006. It can be positively estimated that the situation in these countries has improved and the index has increased. The highest indices are indicated in Estonia, Finland, Luxembourg and Spain, where the index value is about 80 points – nominal level of government intervention. This means that the government owns a small share of the financial sector assets, and financial institutions almost do not have any limitation on the provision of services.

In recent years, the value of financial freedom index has decreased. This trend can be explained by the consequences of financial crisis – the government control over the financial sector has increased. If we compare the weighted average index of the euro area countries with the U.S. index, it is obvious that the euro area is behind the U.S. by 10 percentage points. However, it can be considered that the euro area has a high financial freedom degree.

Having considered the currency area, it can be concluded that the euro area, according to the development trends of financial indices, is well integrated, because capital is free moving, without significant obstacles and its amount is growing, indicating the attractiveness of financial instruments.

Convergence of Inflation Rate

Inflation convergence is a very important criterion. Steady increase and reduction in the inflation rate in the member states indicate the existence of stable economic and supervisory policies in a country. The authors suppose that this is one of the most important indicators, which demonstrates a degree of economic convergence of a country. Inflation rate shows the level of differences in the structure of economy, labour market, public policy, human expectations and mood.

According to the calculated weighted average inflation rates [[18]], it is obvious that until 2005 the inflation rate in many countries was more than 1.5%. In 2006 and 2007 there was a greater unity. 2008 was characterized by the highest inflation rates. In 2009 there was a decrease in demand, which affected production levels. In 2009 only Malta and Finland were unable to comply with the Maastricht criterion on inflation. The year 2010 showed that despite the negative expectations, the market began to reanimate. During the eight-year period Germany, the Netherlands and Austria were able to hold the inflation rate within the certain limits. France did not succeed it only in 2004; in other years it followed the rules related to the rate of inflation.

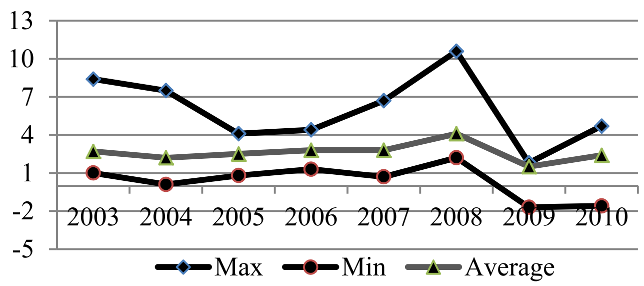

Fig.4. Amplitude of the inflation rates in the euro area countries 2003–2010 (%) [[**18**]], [[**24**]]

Fig. 4 displays the maximum, minimum and average inflation rates. It can be seen that the highest level of cohesion among the euro area countries was in 2005 and 2006. The maximum difference in the inflation rate was observed in 2008 – 8.4 percentage points, but the minimum – 3.1 percentage points – in 2006. It can be concluded that the optimality criterion is fulfilled at a medium level.

Price and Wage Flexibility

Price and wage flexibility is one of the government instruments in the fight against asymmetric shocks. If a wage rate is inelastic, then it may cause problems in business, because companies will not be able to pay salaries to their employees and, thus, a number of insolvency cases may increase. If, however, wage changes are flexible, it can help entrepreneurs to respond adequately to these changes in the economy. Thus, the currency area may exist if the changes in prices and wages are flexible.

To assess the price and wage flexibility rate in the euro area, weighted inflation rates [[18]] and minimum wage [[25]] changes have been applied. To evaluate the effect of price changes on the changes in minimum wage, the authors have analyzed the relationship between the current year rate of inflation and the next year level of salary. There are not many countries, where price changes have caused higher wage changes. These are Estonia (until 2009) and Slovakia, where the average wage change was 11.2%. By 2007 a relatively high level of wage flexibility was observed in Ireland, and in France – until 2006. In Belgium in 2010 the same change rate was for both inflation and salaries. In majority of the euro area countries price changes have caused small changes in minimum wages. The average price changes were 2.7%, while the average minimum wage changes – 4.8%. This leads to the conclusion that this criterion is fulfilled at a medium level.

Political Integration, Homogeneous Preferences, Solidarity vs. Nationalism:

Y. Ishiyama has put forward one of the most important criteria of optimality – a coherent policy. Experience shows that today this condition is not fulfilled. Also, the next criterion – homogeneous preferences –, which has been set by R. Baldwin and C. Wyplosz, is not fulfilled.

The unstable political situation has been observed in the euro area in recent years. The euro area member states have no consensus in the economic and financial policy planning and its implementation. National trends have strengthened in the euro area and countries are not ready to support others on their own account.

During the crisis a variety of different meetings took place; however, they did not bring any particular solution for a long period of time. As a result, it certainly slowed down possible time of the exit from the crisis. For example, in 2010, the meeting of G7 finance ministers and central bank governors took place, which actually did not bring any serious solution, but, further, increased frustration and uncertainty of the future. At that time, it was only possible to develop and to try to implement joint anti-crisis measures. Even then it was known about the problems of Greece, but the anti-crisis plan was not developed on time.

Irresponsible, ill-considered and unfair policy of Greek Government led the member states of the euro area to the thought to exclude it from the euro area and from the EU in general, which would further weaken the euro area. The euro area member states are not ready to respond to such extreme situations. The issue of exclusion of Greece from the euro area shows that it is easier to eliminate "a diseased part of the body" than to cure it. This situation indicates more negative sentiment in the monetary union. However, the decision to support Greece is an important step in the development of economic and monetary integration. It also shows the desire of EMU countries to continue the consolidation.

It is more likely to hear dissatisfaction of French people with the loss of national identity. German residents are also unhappy with the fact that they have to save other countries on their own "account". This undoubtedly makes worse the overall sentiment in the euro area. Thus, it can be concluded that the objective criterion of solidarity vs. nationalism, unfortunately is not fulfilled in the euro area.

Non-fulfilment of the Maastricht criterion is the further evidence that political integration of countries is at a low level. For example, Germany and France were the first countries that in 2003 violated the 3% level limit of deficit.

According to the Eurostat data [[11]], only a few countries could keep the budget deficit within the limits set by the Maastricht Treaty until the crisis. These were Estonia, Ireland, Spain, Cyprus, Luxembourg, Finland and the Netherlands. The increase in the budget deficit can be explained by the reduction in national income, which has been caused by the reduction in demand and increase in spending for economic recovery and stimulation of development.

The highest budget deficits were observed in Ireland, Greece and Spain. A positive trend of reduction in the rate during three years was noticed in Belgium, Estonia, Spain, France, Italy, Malta, the Netherlands, Slovenia, Slovakia, Finland and Greece. Only Estonia was able to create a budget surplus in 2010 and 2011.

Therefore, there a topical question has been raised, whether the state should set a balanced budget as one of the primary goals. The economist Alberto Alesina supposes that a budget surplus is not desirable in the OECD countries. For countries in booming periods of time it is necessary to reduce costs, but during the recession – to increase costs. This will help stabilize the economic situation. Studies also show that the most successful fiscal measures are those that reduce costs, not increasing taxes [[31]].

During the recession it is highly recommended to examine carefully the structure of public expenditure. There should be no spending cuts in sectors that stimulate the economy and provide long-term development. All the mechanical reductions in spending during the crisis deepen negative consequences in a country. Today we can see that countries have chosen different ways of dealing with the crisis, where some of them have been directly related to the spending cuts and increase in taxes. The increase in income tax raises a share of shadow economy, insecurity and poverty in countries. However, in the recent economic boom, most countries showed budget deficits and, later, during the crisis they did not have a "safety cushion", which could help quickly and effectively deal with economic shocks.

Other challenge for the euro area is a national debt that exceeds 60% limit. According to the Eurostat data [[12]], only a few countries are still able to fulfil this condition – Finland, Slovakia, Slovenia, Luxembourg, and Estonia. It is also important to note that Ireland, Spain, the Netherlands, Estonia, Slovenia, Slovakia and Finland fulfilled this condition before the financial crisis. Declining trend of the index can be noticed in such countries as Cyprus, Malta and Austria. The increase in debts is related to the financial sector and economic rescue activities. However, the existent government deficit has negatively influenced the situation; at the same time, the financial crisis has led to the debt crisis.

The largest budget deficit is recorded in Greece, Italy, and Belgium. A considerable growth has also been noticed in Germany, Ireland, France, and Portugal. As the practice shows, the priority aims of many countries in the nearest future will be connected directly with the reduction of debt.

Lack of efficiency in the southern states of the euro area is considered one of the reasons of the crisis. Therefore, as another indicator of the country's ability to operate successfully in the single currency area is a measure of efficiency and innovation. For example, according to the level of innovation development (Fig. 5) the euro area countries cannot compete with the U.S. Only in Finland the level of innovation exceeds the level of the U.S., but rates of other countries are considerably below the certain level. The figure below shows the level of international competition and the level of convergence of the euro area countries.

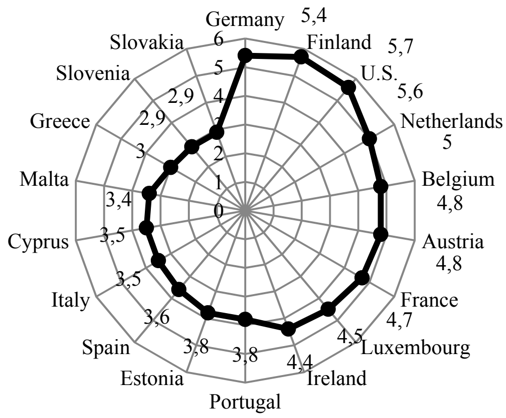

Fig. 5. Component of index of global competitiveness – innovation, 2011 (points) [[13]]

The comparison of technological levels [[13]] shows that the index of a half of euro area countries exceeds the index of U.S. However Estonia, Spain, Italy, Cyprus, Malta, Greece, Slovenia, and Slovakia run behind Finland, where the highest score has been reached. The following tendency proves that the euro area countries have a relatively good technological foundation to develop production and to increase its effectiveness.

Having analysed market efficiency indicators, [[13]] which reflect country's ability to produce competitive products and services for domestic and external demand, it has been noticed that the highest rates are recorded in Luxembourg, the Netherlands, Ireland, and Belgium, where the index value is more than 5 points. It can be observed that according to this indicator the U.S. takes only the eighth place. A high divergence of the indicator in the euro area countries up to 1.5 points indicates the national uniformity.

According to the characteristics of labour market efficiency, the euro area is placed considerably below the U.S. – by 0.7 points from the maximum rate and by 2 points from the lowest rate. This index shows how efficiently employees are used in the economy and are provided with incentives to take their work. Residents of the euro area are more passive and are less incentive to take over the work than the U.S. population. Mainly, this factor depends on the difference in mentalities. There is a perception in the U.S. that it is prestigious to be creative and active.

Based on the analysis of the labour and goods markets efficiency performance, it can be stated that peripheral countries of the euro area are significantly behind others, and it indicates the uniformity problem in the euro area, i.e., inefficiency of peripheral countries.

IV. Conclusion

Having performed the analysis of the OCA performance, the authors have come to a conclusion that the fulfilment degree of the optimality criteria of a single currency area is at a low or medium level (see Table 3). Consequently, the euro area cannot be considered optimal.

TABLE 3

Performance Degree of Optimality Criteria

Criteria	Degree
Degree of labour mobility	Low
Degree of diversification of production and consumption	Medium
Degree of diversification of export partners	Medium
Degree of economic openness	High
Degree of price and wage flexibility	Medium
Degree of integration of financial markets	High
Degree of inflation convergence	Medium
Degree of political integration	Low
Degree of homogeneous preferences	Low
Degree of solidarity vs. nationalism	Low

The authors consider that the political integration, homogeneous preferences, and solidarity vs. nationalism are the most important OCA criteria in mood creation in the monetary union. These criteria are the foundation for the currency area to move towards integration. They show the willingness of countries to integrate and to refuse their priorities for a common goal. Fulfilment of these criteria facilitates more rapid and effective decision-making process. The lack of political consistency is one of the reasons, which today slows down the exit of countries from the crisis, moreover, negatively affects people's mood and confidence.

Despite the non-compliance with the Maastricht criteria, Greece and Italy were admitted to the euro area. Furthermore, later an obvious disregard of the Maastricht criteria was noticed. This suggests that the EMU was more a political decision, not an economic one. Therefore, acceptance of countries to the euro area in the future requires the objective and realistic assessment of the economy in advance and careful fulfilment of all the necessary conditions within the functioning in the EMU.

The Maastricht criteria cannot be considered to be criteria, which fully reflect economic convergence and uniformity of the euro area member states. The fulfilment of these criteria is only the first step to the real monetary integration. The authors suppose that non–fulfilment of the Maastricht criteria is a large breach of the euro area rules, for which Europe pays today. The breach of the euro area conditions in France and Germany, which initially were the promoters of the integration process, has also inspired other countries to feel free regarding the implementation of monetary and fiscal policy of the union. One of the problems is a lack of the control and punishment mechanisms that has caused such irresponsibility. Therefore, it is required to develop effective control, monitoring and punishment mechanisms for countries, which do not fulfil certain conditions for a long period of time.

The authors propose supplementing the OCA theory with the following additional criteria:

- the efficiency and innovation rate in the EMU member states. It can be estimated as the effectiveness rate of production and labour and/or the level of innovation. However, the fulfilment of the following criterion can be applied and analyzed only after a certain time of country’s accession to the single currency area;
- in the analysis of optimality in the monetary union it is possible to use diversification indicators of export partners.

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Oksana Kiselova, Inna Dovladbekova. Eiropas Monetārā savienība un tās atbilstība optimālās valūtas zonas kritērijiem
Raksta mērķis ir, balstoties uz optimālās valūtas zonas teorijas pamatnostādnēm, izanalizēt Eiro zonas atbilstības līmeni optimālās valūtas zonas kritērijiem, kas palīdzēs izprast eiro zonas funkcionēšanas pamatproblēmas. Darbā tiek izmantotas teorētiskās literatūras analīze, salīdzināšanas, indukcijas metodes, sekundāro datu statistiskās analīzes metodes, matemātiskās un grafiskās analīzes metodes. Par pētījuma avotiem kalpo: zinātniskā literatūra optimālo valūtu zonu jomā, Eiropas monetārās integrācijas jomā; interneta resursi, publikācijas, zinātniskie un informācijas raksti, eiro zonas valstu statistiskie dati, ziņojumi, periodiskie izdevumi.
Pēc veiktas analīzes tiek secināts, ka eiro zona nav optimālā un pie tādiem pastāvošiem riskiem un problēmām stabila sistēmas funkcionēšana nav iespējama. Uzņemot valstis eiro zonā ir nepieciešams objektīvs un reāls ekonomikas izvērtējums un visu nepieciešamo nosacījumu izpilde arī funkcionējot Eiropas Monetārajā savienībā (EMS). Ir jāizstrādā efektīvie kontroles, uzraudzības un sodīšanas mehānismi, ja valsts ilgu laiku neizpilda noteiktus nosacījumus. Politiskās saskaņotības trūkums ir viens no iemesliem, kas šodien palēnina izeju no krīzes, kā arī negatīvi ietekmē iedzīvotāju noskaņojumu un uzticību. Kā papildus kritērijus valūtas zonas optimalitātes novērtēšanā ir iespējams izmantot efektivitātes un inovācijas rādītāju EMS dalībvalstīs un eksporta partneru diversifikācijas rādītāju.

Оксана Киселёва, Инна Довладбекова. Европейский монетарный союз и его соответствие критериям оптимальной валютной зоны
Цель статьи, основываясь на руководстве теории оптимальной валютной зоны, проанализировать уровень соответствия еврозоны критериям оптимальной валютной зоны, что поможет понять основные проблемы функционирования еврозоны. В работе использованы анализ теоретической литературы, методы сравнения, индукции, вторичный анализ данных, методы математического и графического анализа. Источниками исследования служит: научная литература в сфере оптимальных валютных зон, в сфере Европейской Монетарной интеграции; ресурсы интернета, публикации, научные и информационные статьи, статистические данные по странам евро зоны, доклады, периодические издания.
По результатам проведенного анализа следует, что еврозона не является оптимальной и при таких существующих рисках и проблемах стабильное функционирование системы невозможно. Принимая страны в еврозону, необходима объективная и реальная оценка экономики страны, а также необходимо исполнение всех условий, функционируя в Европейском монетарном союзе (ЕМС). Необходимо разработать эффективные механизмы контроля, управления и наказания, если страна – участница длительное время не выполняет определенные условия. Отсутствие политической согласованности является одной из причин, которая замедляет выход из кризиса, а также негативно влияет на настроение и доверие населения. В качестве дополнительных критериев оценки оптимальности валютной зоны можно использовать показатель эффективности и инноваций стран-участниц ЕМС и показатель диверсификации партнеров-экспортеров.