Post-Crisis Macroeconomic Comparative Assessment of the Eurozone Member States with the Use of an Improved Misery Index

Paweł Błaszczyk
Doctor at the Poznan University of Economics
Faculty of Economics
Department of Economic and Local Government Policy
Aleja Niepodległości 10, 61-875 Poznań
Poland

Abstract

The aim of this study is a comparative assessment of the post-crisis Eurozone countries including the period 2008-2013. The study involved 17 countries, members of the Eurozone as of the end of 2013. The essential part of the survey estimates were made previously proposed, multifactorial, complex macroeconomic condition index (MCI) in three variants. The basis for the construction of the instrument is misery index. In this case, it has been expanded and qualitatively adjusted so that it is more appropriate in relation to the contemporary global economic conditions. The negative effects of the crisis were experienced by all Eurozone member states, yet each to a different degree. The crisis brought about a disturbance in the process of nominal and real convergence, which is so crucial for the stability of the European Economic and Monetary Union.

Keywords: Eurozone, Macroeconomic assessment, Misery index, Crises

Introduction

The Eurozone countries have been running in the post-crisis conditions for a few years now. The worldwide financial and economic crisis caused and continuous to cause serious social and economic repercussions, not only in the short, but also in the long-run. Some countries have been more successful in dealing with the post-crisis economic conditions, whereas some have struggled, achieving mixed macroeconomic results in terms of the GDP, unemployment, general price level and budget deficit. Regional post-crisis differences in the Eurozone present a challenge for the community cohesion polity, which is the essence of fiscal policy conducted at the supranational level and within the European Union budget. A crisis causes negative consequences with respect to both nominal and real convergence in Europe, which in turn is a treat also to the candidate countries as well as the Eurozone countries. Furthermore, it inhibits conducting uniform monetary policy by the European Central Bank (RODRIGEZ-FUENTES & DOW 2010).

The aim of this is to conduct a post-crisis comparative assessment of the Eurozone countries, taking into consideration also the years 2008-2013. The first 2-3 years of the period under analysis may be assumed to be the peak of the crisis, whereas the following years are regarded as a post-crisis period. The study includes 17 countries – members of the Eurozone, and their economic condition at the end of 2013. The initial part of the empirical, fragmentary research includes fundamental macroeconomic measures referring to the real dynamics of the GDP, unemployment rate, and dynamics of the general price level and the relation of budget deficit to the GDP. The main part of the study presents the estimates of an earlier suggested, multi factorial, complex macroeconomic condition index (MCI). The basis for the construction of this measure is the misery index, which has been broadened in this case and adjusted in terms of its quality. Furthermore, additional variables referring to the GDP dynamics and budget deficit have been included in the analysis and compared with the optimal values. As a result, three variants of the MCI have been proposed. Thus, the obtained measure is more adequate to the assessment of the situation with reference to contemporary global economic conditions.

Such an outlined analysis indicates the layout of this work, which consists of two primary parts: theoretical (points 1 and 2) and empirical (poin 3). Part one presents a proposal of a multi factorial, complex macroeconomic condition index, in the background of considerations concerning the misery index.

Part two present a complex comparative assessment based on the earlier suggested measure. The above-mentioned studies have made it possible to formulate conclusions concerning a relative condition of the Eurozone member states a few years after the global financial and economic crisis.

1. Misery index in the face of contemporary economic conditions

For hundreds of years, both the theory and practice of economic policy have indicated a need for continuous assessment of the economy. It is particularly important not only for decision-makers but also for private sector entities. For the former group, it is useful in terms of determining the goals and instruments of economic policy, yet many a time sophisticated econometric instruments are used for that purpose. The private sector entities in the form of entrepreneurs, households, consumers, investors, electors and others need coherent and clear measures to assess the economy. They are, for example, the basis for assessing risk while making investment or consumer decisions, but they can also serve as a factor while making political choices. In fact, making *ex-post* assessment in connection with a given term of office of the government may depict in an objective and legible way the achievements of particular political groups. However, it seems necessary to create an adequate procedure of assessing the economy (WELSH 2007, WISEMAN 1992, SETTERFIELD 2009).

Such assessment may vary in its character. First of all, it may be partial and may concern particular economic values individually, or it may be multi factorial and encompass large number of them altogether. Secondly, it may be strictly economic or it may include social issues as well. Thirdly, such assessment may be quantitative and/or qualitative in its character. Furthermore, it may refer to a short and/or medium and/or long time horizon. Finally, it may have a macro- and/or mezzo- and/or microeconomic character (WISEMAN 1992, SETTERFIELD 2009).

Fundamental macroeconomic values are frequently used in order to conduct such (partial) assessment, including above all different measures of the national income (mainly GDP). Besides, such aspects as unemployment, inflation, budget deficit, public debt and others may be indicated here. However, considering these measures separately does not give a coherent and clear picture of the condition of the economy.

In practice, the above-mentioned variables are considered to be stimulants or destimulants. For instance, as far as the GDP is concerned, a growth in its dynamics is perceived as positive (a stimulant), whereas when it comes to the unemployment rate, inflation or budget deficit, it is their decrease (destimulants) that is perceived as positive. Such an approach may be justified by the fact that most contemporary economies function under the conditions of excessively low and/or weak dynamics of the GDP, especially in the face of the convergence of emerging and developing economies, high unemployment, chronic budget deficits and growing public debts. An exception to this rule may be the price dynamics, with reference to which many countries currently experience low or zero inflation, or even deflation. The dynamics of the general price level, also in the practical approach, shall be regarded under contemporary conditions as a nominant variable.

On the other hand, theory frequently assumes other values as nominant variables. Their optimal and desired values are indicated. Thus, for example, the following may be indicated: the potential GDP, natural unemployment rate, optimal inflation rate (KHAN & SENHADIJ 2000, BARANOWSKI 2008) or target value of budget deficit (often related to the GDP – under 3%). It is assumed that the economy functions best under such conditions. Such a view is substantiated among all in the economic consensus which states that the economy reaches balance (in the long-run) determined by potential production and its equivalent natural unemployment rate. In the context of the Phillips curve, it is indicated that it is negatively bent in the short-run, and becomes a vertical line, crossing the axis of abscissas at the point of the natural unemployment rate in the long-run (SNOWDON & VANE 2003).

The misery index fits the conception of the Phillips curve as a simplified method of assessing the economy, which this work refers to (COHEN, FERRETTI & MCINTOSH 2014). It seems worth reminding that the misery index is a sum of the inflation and unemployment rates, and refers to delineating the goals of economic policy with a method of a changing value and fixed marginal rate of substitution. In other words, the higher the index value, the worse the economic condition. Thus, the index serves as a destimulant (DI TELLA, MACCULLOCH & OSWALD 2001, LOVELL & TIEN 2000).

A positive feature of this measure is its simplicity and clarity of estimates, which makes it being in use for tens of years by various entities and for different purposes of economic assessment (compares the above remarks). However, it also has some drawbacks in this context. First of all, it takes into account too few macroeconomic factors. Secondly, its components are inadvertently regarded as destimulants.

As has been said above, it is particularly unjustified with respect to price dynamics – taking into consideration contemporary global conditions, especially those concerning deflation in the face of a financial and economic crisis. In such a situation, the estimates of this measure would indicate that deflation causes improvement in the economic condition, reflected by a decrease in the value of the misery index. Furthermore, scientific research shows that the Phillips curve has a specific shape under low inflation or deflation conditions. In the short-run it is more flat, and in the long-run it is not vertical. Such conclusions undermine the validity of using the misery index in its original form (WYPLOSZ 2000, WOJTYNA 2001).

In the face of the above arguments, it may be suggested that the index should be corrected and used in the subsequent, empirical part of this study, to conduct post-crisis assessment of the Eurozone countries. In this context, the index shall be broadened to encompass the GDP dynamics and budget balance (surplus or – more often – deficit). In fact, they are the basic indicators of the contemporary economic policy, referring to both monetary and fiscal policy. These measures are frequently included at the level of economic policy goals/tasks. Besides, the measure will encompass a two-way possibility of changing the general price level dynamics.

It shall be noticed that this measure does not include other macroeconomic values, such as the exchange rate, balance of payments or public debt. When it comes to the exchange rate, under the conditions of a floating rate system, which is used in many countries around the world, it is rather a result value of the functioning of the economy, and especially the private sector, and not a target value, on the basis of which decisions concerning the use of economic policy instruments are taken. A similar remark may be formulated with respect to the balance of payments, including the trade balance, which depends to a large degree on exchange rates. As regards the public debt, although it is an important value in conducting fiscal policy, it may be assumed that it is a derivative of budget deficits (or surpluses) from previous years. The budget deficit seems to be a better determinant of current economic policy, especially when it is considered in the short-run (most frequently within the span of one year).

It shall be further noticed that the macroeconomic values selected for the study complement one another and may constitute a coherent picture of the condition of the economy. The economic expansion will – as a rule – cause positive effects in two areas – a drop in the unemployment rate and a growth in the GDP dynamics, and negative effects in two other areas – an increase in budget deficit and inflation. On the other hand, economic restriction will cause opposite effects. The original version of the misery index features similar characteristics (LECHMAN E. 2009).

2. The methodology of comparative assessment

Prior to a detailed presentation of the methodology of the suggested measure, including its different variants, a few fundamental assumptions made at the stage of its creation shall be referred to. First of all, the measure shall be used to assess the country's economic condition, and it does not encompass social aspects. Secondly, it refers to the macroeconomic sphere and includes the main macroeconomic values. Thirdly, the measure is quantitative in its character and does not account for the qualitative aspects. Furthermore, it shall be used to assess the economy in the short-run. The data included in the study represent a period of twelve months. Finally, the measure is multifactorial, i.e. it comprises four values which have been measured in a certain way and subjected to proper modifications in order to obtain a uniform measure. The study also includes: the real GDP dynamics, unemployment rate, rate of change in the general price level and surplus/deficit in the sector of public finance in relation to the GDP.

A few approaches may be taken while creating the MCI. First of all, two main potential directions of the measure shall be indicated. In the first direction, variables serve as destimulants (these are: inflation, unemployment, deficit) and stimulants (GDP dynamics). The last variable in the measure is accounted for as negative. Consequently, the entire measure, alike the misery index, serves as a destimulant. It shall be noticed that the measure serves practical purposes above all. It is also possible to include different weights in the measure or assume, similarly to the original version of the misery index, that its particular components have equal weights. Formula 1 depicts such a measure.

$$\mathbf{MCI_{t1} = (w_1 \Pi_t + w_2 DEF_t + w_3 U_t - w_4 RDGDP_t)/4} \qquad \mathbf{(1)}$$

Where:

t – Index referring to the number of the period (t = 1, 2, 3,),
MCI_1 – measure of economic assessment in variant 1,
RDPKB – real dynamics of GDP,

Π – inflation rate,
DEF – deficit in relation to GDP,
U – unemployment rate,
w_1, w_2, w_3, w_4, – weights.

The second direction includes nominant variables. Neither upward nor downward deviations from the nominal values (optimal) are desired here. Thus, the measure serves as a nominant. Its optimal value equals zero, with its increase indicating worsening of the economic conditions. Such a measure has mainly a theoretical character and it may be defined as economic stability. It measures the stability of particular measures in relation to their optimal values. The index may take the form of arithmetic or weighted mean. The measue is presented in formula 2 below.

$$\mathbf{MCI_{t2} = (w_1 \left| \Pi_t - \Pi^* \right| + w_2 \left| DEF_t - DEF^* \right| + w_3 \left| U_t - U^* \right| + w_4 \left| RDGDP_t - RDGDP^* \right|)/4} \qquad \mathbf{(2)}$$

where:

designations as above,
The asterisk depicts nomial values of particular variables.

In this variant of the MCI, it seems questionable to establish the nominal values. They should be adjusted to the conditions of a given country under analysis, including among all the degree of its economic development (e.g. difference between well-developed and developing countries). As has been pointed above, the optimal values may be assumed as:

- potential GDP – a potential value of the real dynamics of the GDP has been used in this work, determined as an average for the entire study period,
- natural unemployment rate – determined in this work as an average for the entire study period,
- value of the inflation target – determined in this work as a point value of 2% (referring to the ECB definition of price stability),
- target value of budget deficit in relation to the GDP, amounting to 3% (referring to one of the criteria for membership in the Eurozone).

It is also possible to determine the indirect variants of the MCI, e.g. assuming that only selected variables may serve as nominants. Taking into consideration the fact that – in the economic practice – it is usually the dynamics of the general price level that serves as a nominant, the estimates may include the deviation of the actual inflation for inflation purposes, leaving the other variables in the form of destimulants, just like in the MCI_1 variant. The measure in its third variant takes the form depicted in formula 3 below.

$$\mathbf{MCI_{t3} = (\left| \Pi_t - \Pi^* \right| + DEF_t + U_t - RDGDP_t)/4} \qquad \mathbf{(3)}$$

It is also possible to make other modifications of the measure, which was the subject of other works by different authors. The empirical part of this work offers an assessment of the tree MCI variants presented above, assuming equal weights.

3. Comparative assessment of the macroeconomic condition of the economy in the Eurozone countries

In the background of the above partial analyses of the macroeconomic measures, the second, empirical part of this work presents a complex and multi factorial, comparative assessment of the Eurozone countries in the years 2008-2013, taking into particular consideration the post-crisis conditions. The three variants of MCI presented in point 2 have been used while conducting the assessment. The results of the estimates are presented in figures 1-3. The figures have been prepared in the following way: the countries placed above the Eurozone in the legend had a relatively better economic condition in the period under analysis, including the average for a given MCI. The countries which did not reach the average for the Eurozone are located below in the legend.

It shall be noted that the obtained estimates for variants 1 and 3 are similar and can be interpreted together. In such an approach, the majority of countries improved their condition in the post-crisis period, especially compared to the year 2009. Some stability may even be observed here.

Such a case is also indicated by the data for the Eurozone average, although there is a visible breakdown in this case, which occurred in 2012. Greece, Spain, Cyprus and Slovenia, where the economic situation has worsened in recent years, may be shown as exceptions. Relatively the best situation in recent years has been observed in: Luxembourg, Germany, Malta and Austria.

As far as the measure of economic stability is concerned (MCI_2), it may be concluded that the weakest countries tend to reappear. Greece has also been assessed as the worst in this respect. On the other hand, among the best countries in the post-crisis period there are: Malta – once again, as well as Belgium, Austria and Finland. In general, the data concerning the average in the Eurozone indicate that there was a period of stability since 2010, with the best conditions in 2011.

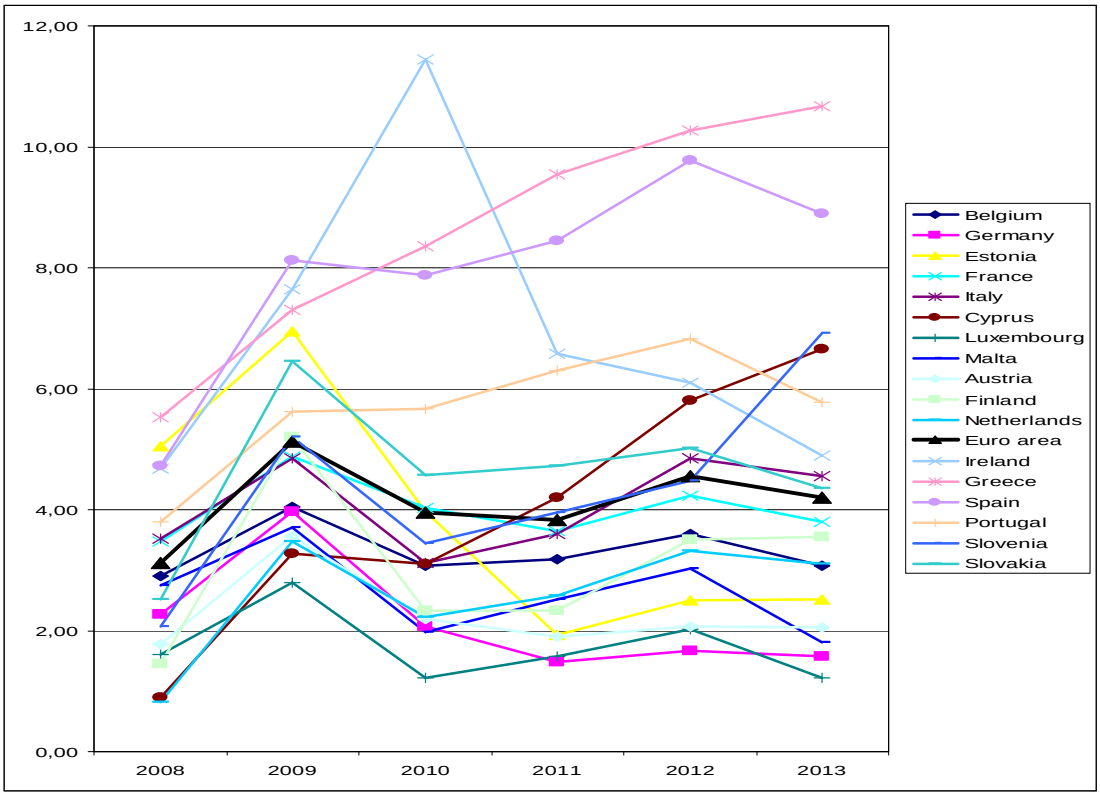

Figure 1: The MCI_1 estimates for the Eurozone countries in the years 2008-2013

Source: the authors' self-analysis based on the Eurostat data.

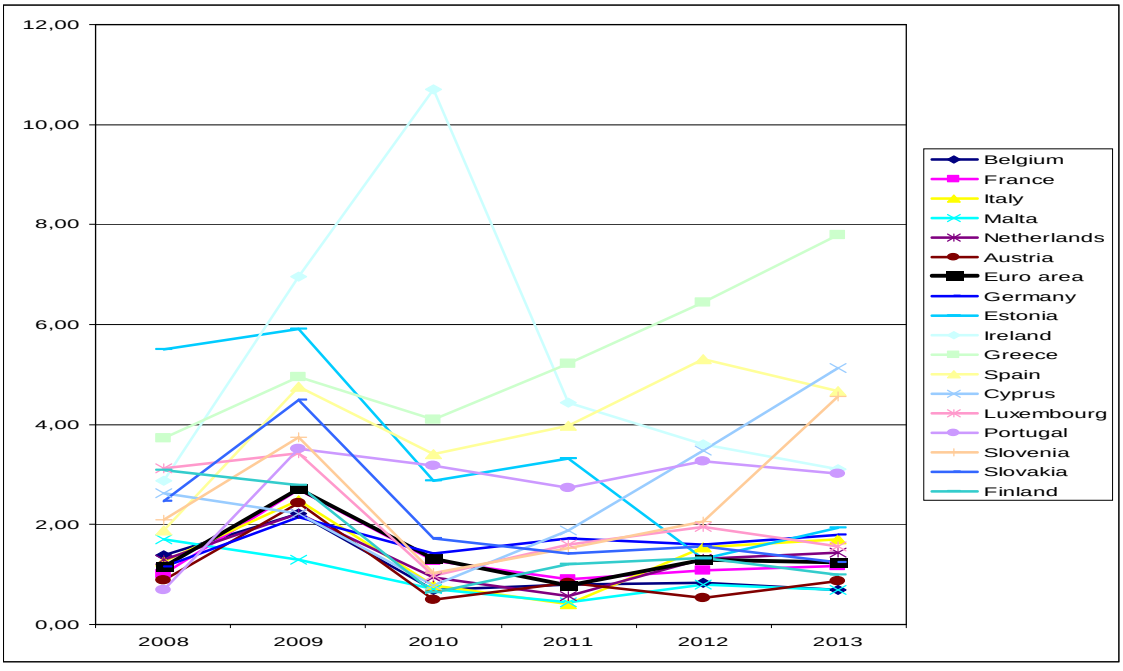

Figure 2: The MCI_2 estimates for the Eurozone countries in the years 2008-2013

Source: the authors' self-analysis based on the Eurostat data.

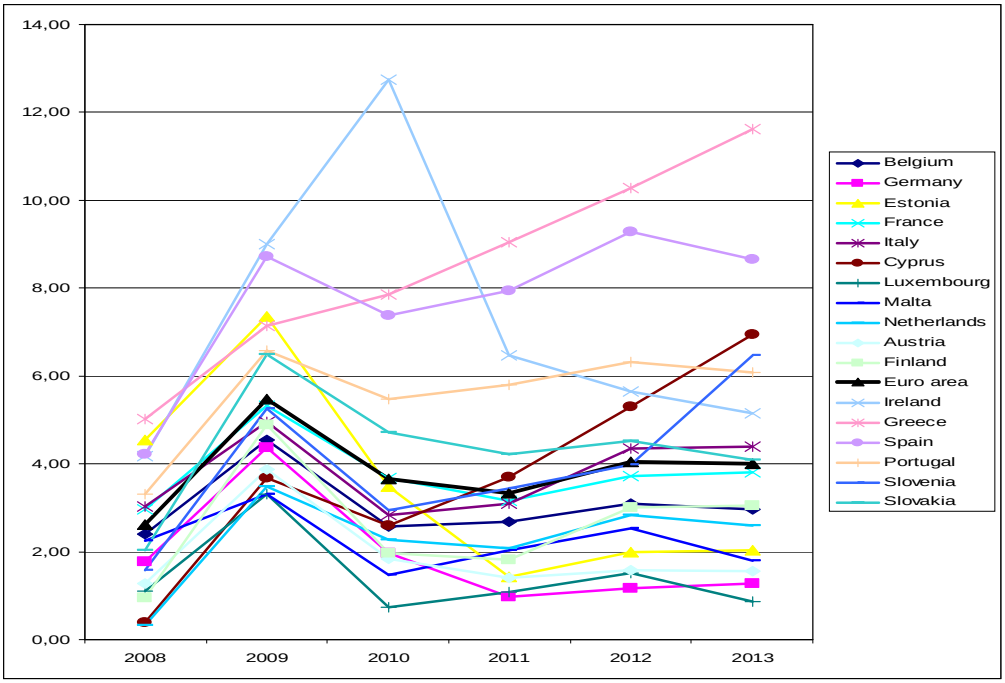

Figure 3: The MCI_3 estimates for the Eurozone countries in the years 2008-2013

Source: the authors' self-analysis based on the Eurostat data.

As a summary of the whole of empirical studies, a ranking of the Eurozone countries has been made with reference to the average MCI values for the entire research period (table 5). Gray entries show the instances of a given MCI variant falling below the average for the Eurozone countries. As is seen at the bottom of the table, a group of countries may be indicated for which all variants of the measure show relatively weak economic conditions. This group includes: Slovenia, Slovakia, Portugal, Ireland, Spain, and Greece.

The MCI_1 and MCI_3 variants present the best results of the economic assessment for Luxembourg. However, taking into account the economic stability in this country, defined in a specific way and with the use of MCI_2, the assessment does not seem so favourable. Looking at the whole of the post-crisis assessment, it seems worth highlighting such countries as: Germany, Austria, the Netherlands and Malta. Estonia, which proved to be the best among the developing countries – mainly with reference to MCI_1 and MCI_3, also deserves to be highlighted.

Table 5: Ranking of Eurozone countries according to the MCI estimates

country	MCI_1	MCI_2	MCI_3
Luxembourg	1	9	1
Germany	2	7	3
Austria	3	2	2
Netherlands	4	4	5
Malta	5	1	4
Finland	6	8	6
Belgium	7	3	7
Estonia	8	14	8
Cyprus	9	12	9
France	10	5	10
Italy	11	6	11
Slovenia	12	10	12
Slovakia	13	11	13
Portugal	14	13	14
Ireland	15	16	15
Spain	16	15	16
Greece	17	17	17

Source: the authors' self-analysis.

The data presented in the table corroborate earlier analyses concerning weak economic conditions in Greece, which ranks worst among the Eurozone countries in every comparison.

Thus, it may be concluded that this country is still struggling with a crisis situation, which makes it difficult to talk about post-crisis assessment in this case. None of the MCI variants shows traces of improvement or even stability of the Greek economy in recent years. Other countries among those with the lowest ranks differ in this respect – they experience both decreases and increases in the measure within the period in question. In sum, it may be concluded that less developed countries suffer more severe repercussions of the global financial and economic crisis from the perspective of assessment of contemporary macroeconomic conditions.

Conclusion

The effectiveness and efficiency of the ECB's uniform monetary policy in terms of the instruments, goals and strategies is conditioned on the convergence of economies of the participant countries. It is this convergence that determines to a large degree the balance of profits and losses of being a member of the Eurozone. Due to this fact, the realisation of this process, both within monetary and fiscal policies, should take place in a planned manner and should take into consideration the long-term effects. The people responsible for this process should be aware of the fact that it does not consist only in fulfilling (in the short-term) the criteria of the nominal convergence defined in the Treaty of Maastricht, but rather in such influencing the economy (in the nominal and real spheres), both in the pre- and post-accession period, so as to make it compatible with the community, uniform monetary policy conducted in the Eurozone (FENDEL & FRENKEL 2011).

The global financial and economic crisis struck European countries to a large degree, especially the countries of the Eurozone. It caused serious social and economic consequences, which could be noticed on the basis of various macroeconomic measures. The negative effects of the crisis were experienced by all Eurozone member states, yet each to a different degree. The crisis brought about a disturbance in the process of nominal and real convergence, which is so crucial for the stability of the European Economic and Monetary Union. Economic decision-makers, at both the supranational and national levels, have faced a challenge of making the process of convergence in Europe more dynamic, which will require much effort in the long-term. It, however, may become the basis for the stability of the Eurozone in the future.

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Tables

Table 1: Change rates of the real GDP (in %) in the EMU member states in the years 2008-2013

	2008	2009	2010	2011	2012	2013
Austria	1,4	-3,8	1,8	2,8	0,9	0,3
Belgium	1,0	-2,8	2,3	1,8	-0,1	0,2
Cyprus	3,6	-1,9	1,3	0,4	-2,4	-5,4
Estonia				9,6	3,9	0,8
Finland	0,3	-8,5	3,4	2,8	-1,0	-1,4
France	-0,1	-3,1	1,7	2,0	0,0	0,2
Germany	1,1	-5,1	4,0	3,3	0,7	0,4
Greece	-0,2	-3,1	-4,9	-7,1	-7,0	-3,9
Ireland	-2,2	-6,4	-1,1	2,2	0,2	-0,3
Italy	-1,2	-5,5	1,7	0,4	-2,4	-1,9
Luksembourg	-0,7	-5,6	3,1	1,9	-0,2	2,1
Malta	3,9	-2,8	4,2	1,5	0,8	2,6
Netherlands	1,8	-3,7	1,5	0,9	-1,2	-0,8
Portugal	0,0	-2,9	1,9	-1,3	-3,2	-1,4
Slovakia		-7,9	1,3	0,7	-2,5	-1,1
Slovenia	3,4	-4,9	4,4	3,0	1,8	0,9
Spain	0,9	-3,8	-0,2	0,1	-1,6	-1,2

Source: Eurostat data.

Table 2: Unemployment rate (in %) in the EMU member states in the years 2008-2013

	2008	2009	2010	2011	2012	2013
Austria	3,8	4,8	4,4	4,2	4,3	4,9
Belgium	7,0	7,9	8,3	7,2	7,6	8,4
Cyprus	3,7	5,4	6,3	7,9	11,9	15,9
Estonia				12,3	10,0	8,6
Finland	6,4	8,2	8,4	7,8	7,7	8,2
France	7,4	9,1	9,3	9,2	9,8	10,3
Germany	7,5	7,8	7,1	5,9	5,5	5,3
Greece	7,8	9,6	12,7	17,9	24,5	27,5
Ireland	6,4	12,0	13,9	14,7	14,7	13,1
Italy	6,7	7,8	8,4	8,4	10,7	12,2
Luksembourg	4,9	5,1	4,6	4,8	5,1	5,9
Malta	6,0	6,9	6,9	6,4	6,3	6,4
Netherlands	3,1	3,7	4,5	4,4	5,3	6,7
Portugal	8,5	10,6	12,0	12,9	15,8	16,4
Slovakia		12,1	14,5	13,7	14,0	14,2
Slovenia	4,4	5,9	7,3	8,2	8,9	10,1
Spain	11,3	17,9	19,9	21,4	24,8	26,1

Source: Eurostat data

Table 3: Public finance sector balance (in % GDP) in the EMU countries in the years 2008-2013

	2008	2009	2010	2011	2012	2013
Austria	-0,9	-4,1	-4,5	-2,5	-2,6	-1,5
Belgium	-1,0	-5,6	-3,8	-3,8	-4,1	-2,6
Cyprus	0,9	-6,1	-5,3	-6,3	-6,4	-5,4
Estonia				1,1	-0,2	-0,2
Finland	4,4	-2,5	-2,5	-0,7	-1,8	-2,1
France	-3,3	-7,5	-7,0	-5,2	-4,9	-4,3
Germany	-0,1	-3,1	-4,2	-0,8	0,1	0,0
Greece	-9,8	-15,7	-10,9	-9,6	-8,9	-12,7
Ireland	-7,4	-13,7	-30,6	-13,1	-8,2	-7,2
Italy	-2,7	-5,5	-4,5	-3,7	-3,0	-3,0
Luksembourg	3,2	-0,7	-0,8	0,2	0,0	0,1
Malta	-4,6	-3,7	-3,5	-2,7	-3,3	-2,8
Netherlands	0,5	-5,6	-5,1	-4,3	-4,1	-2,5
Portugal	-3,6	-10,2	-9,8	-4,3	-6,4	-4,9
Slovakia		-8,0	-7,5	-4,8	-4,5	-2,8
Slovenia	-1,9	-6,3	-5,9	-6,4	-4,0	-14,7
Spain	-4,5	-11,1	-9,6	-9,6	-10,6	-7,1

Source: Eurostat data.

Table 4: General Price level dynamics (in %) in the EMU countries in the years 2008-2013

	2008	2009	2010	2011	2012	2013
Austria	3,2	0,4	1,7	3,6	2,6	2,1
Belgia	4,5	0,0	2,3	3,4	2,6	1,2
Cypr	4,4	0,2	2,6	3,5	3,1	0,4
Estonia				5,1	4,2	3,2
Finlandia	3,9	1,6	1,7	3,3	3,2	2,2
Francja	3,2	0,1	1,7	2,3	2,2	1,0
Grecja	4,2	1,3	4,7	3,1	1,0	-0,9
Hiszpania	4,1	-0,2	2,0	3,1	2,4	1,5
Holandia	2,2	1,0	0,9	2,5	2,8	2,6
Irlandia	3,1	-1,7	-1,6	1,2	1,9	0,5
Luksemburg	4,1	0,0	2,8	3,7	2,9	1,7
Malta	4,7	1,8	2,0	2,5	3,2	1,0
Niemcy	2,8	0,2	1,2	2,5	2,1	1,6
Portugalia	2,7	-0,9	1,4	3,6	2,8	0,4
Słowacja		0,9	0,7	4,1	3,7	1,5
Słowenia	5,5	0,9	2,1	2,1	2,8	1,9
Włochy	3,5	0,8	1,6	2,9	3,3	1,3

Source: Eurostat data.