

# ANALYSIS OF ECONOMIC SHOCKS AFFECTING EURO AREA

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## Abstract

*The objective of this study is to explain the causes of economic shocks that are manifested in the euro area countries and to examine the possibilities of their adjustment in the context of a common monetary policy. The member countries of the European Monetary Union can not use its own exchange rate or monetary policy to neutralize the economic shocks. Therefore, they must find new ways to adjust the shocks such increase labor market flexibility and promoting reforms in the areas with significant structural rigidities. Common monetary policy also generates asymmetric shocks, as long as Member States are in different phases of the business cycle. In this study I have demonstrated that the ECB's monetary policy has favored Germany and has disadvantaged the countries confronted in present with problems of debt financing.*

**Keywords:** asymmetric shocks; euro area; monetary policy; economic flexibility; optimum currency area.

## Introduction

Within this study I have analyzed the stance of economic shocks which affect the member countries of the euro area, as well as opportunities to neutralize them. This analysis offers a different perspective on the costs of adopting a common currency, avoiding technical analysis of its. For economies that form a monetary Union, the most important cost is giving up monetary policy and exchange rate for its own internal objectives. This cost can be illustrated from the situation of a country that is affected by a restrictive economic shock (for example, increasing internal production costs). If he had not adopted a common currency, the economy would be able to depreciate the currency in order to enhance competitiveness, and neutralization of shock would be achieved more quickly. Therefore, the economy will be affected by economic shocks which it will neutralize more difficult and the cost of adopting a single currency will be higher.

The study is structured in three parts in which I will provide answers to three specific to the topic addressed. The first one concerns the nature of economic shocks in a monetary Union. In light of this, I have identified the optimum solution to their neutralization. Thus, structural shocks (eg. the increases of food prices) can not be solved by policies to increase aggregate demand, but by policies to boost potential GDP and by structural reforms. The second question concerns the rather asymmetric economic shocks affecting the countries of a monetary union. Because these economies have divergent economic, financial and commercial structures, then even shocks symmetrical generates rather asymmetric effects. In this part I have adjusted the analysis of Robert Mundell (1961) to highlight solutions to neutralize the asymmetric shocks in a monetary union. In the economic literature it is considered that labor market flexibility is the most effective mechanism to neutralize the asymmetric shocks. For economies with rigid labor markets, the shocks will be persistent, while flexible economies will offset shocks faster. Therefore, differences regarding the flexibility of labor markets will deepen the asymmetric stance of economic shocks.

A third question concerns the effectiveness of the common monetary policy to counteract the economic shocks in the euro area. The monetary policy of the European Central Bank leads to an increase rather than a neutralization of the asymmetric shocks in the euro area. For example, if the ECB decides to decrease the interest rate in order to stimulate the economic activity in the euro area

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and the country A is in recession, while the country B is in economic expansion, then the common monetary policy will have divergent effects in countries A and B.

In conclusion, this study will explain why the asymmetry is the rule in the case of a monetary Union, while the symmetry of the shock is just random. This statement is consistent with research conducted by two of the economists who have received the Nobel Prize for Economics in recent years – Robert Mundell (1999) and Paul Krugman (2008). The starting point for the analyses pointing to the micro- and macroeconomic costs induced by the abandonment of the national currency is constituted by Mundell's work *A Theory of Optimum Currency Areas* (1961), the one who laid the basis of the theory defining the criteria which are specific to an optimum currency area. Mundell proposed a few factors which allow the adjustment of a few asymmetric shocks if there is no proper monetary policy, such as labour mobility and wage flexibility. Among Paul Krugman's works, I have studied those related to the issues of economic and monetary integration, namely *International Economics. Theory and Policy* (2005), *Integration, Specialization, and Adjustment* and *Lessons of Massachusetts for EMU* (1993). According to the author, the more the commercial and financial relationships between the economic agents which belong to two economies are stronger, the more their impulse to adopt a mutual currency is higher. Moreover, the existence of the same currency will still intensify the degree of economic integration between those economies. However, Krugman endorsed that the increase of the commercial relationships between two economies did not also generate symmetric shocks between them, as each economy will specialize in producing the goods which it can make more efficiently. This correlation is named *the specializing hypothesis* within the theory of the optimum currency area.

#### What is the nature of shocks in a monetary Union?

The most well-known shocks are those who exercise influence on the demand and aggregate supply. According to economic theory, there are some temporary demand shocks, because they influence only the inflation on the long-run. The supply shocks are permanent because influence both the inflation rate and the production the long-run, due to the potential impact on GDP. Demand and aggregate supply shocks may be the result of both internal policies promoted (for example, increasing or reducing the VAT rate) and of exogenous factors, such as external shocks, those caused by natural factors, etc. Briefly, economic shocks can be classified into four categories:

- a) supply and demand shocks;
- b) symmetric and asymmetric shocks;
- c) *temporary and permanent* shocks;
- d) *exogenous and policy-induced* shocks.

**Aggregate demand shock** causes a change in output and inflation in the same direction, which implies a compromise in the adoption of macroeconomic policies. The European Central Bank's mission is to ensure both price stability and to avoid the volatility of real variables. **Aggregate supply shocks** lead to conflicts between the policies pursued, especially when the ECB and national fiscal authorities have conflicting objectives. Poor flexibility in the adjustment of the European economy induces the persistence of these shocks, which extends the period of macroeconomic recession.

Using a common currency implies a higher difficulty to adjust the **asymmetric shocks**, rather than the **symmetrical shocks**, because the adjustment is more costly in terms of wage and costs. The asymmetric shocks cause different effects between countries or between sectors of activity. A *symmetric shock* can be defined as an economic disturbance that affects all member countries of monetary union simultaneously. An *asymmetric shock* consequently is defined as an economic disturbance that affects the member countries of monetary union to a different extent, e.g. only one country of a monetary union (country-specific shock), only one region of a country (regional shock) or only one industry within a union or country.

The distinction between **temporary and permanent shocks** refers to intensity of an economic shock. A *temporary shock* is an economic disturbance which will be reversed within a relatively short time. A *permanent shock*, by contrast, is a lasting disturbance. Thus, some shocks have only transitory effect - for example an unanticipated fall in aggregate demand - and other shocks which entail a permanent decline of competitiveness. Shocks of the first kind can be corrected by expansive fiscal and/or monetary policy. Shocks of the second kind can be corrected by major long-term restructuring of exporting sectors. The distinction is important because confusion between them can lead to action which aggravates rather than neutralizes the economic shocks. Treating shocks with a permanent effect as if they were temporary may only serve to entrench the underlying loss of competitiveness and make necessary reform more difficult.

The shocks which are caused by outside events over which the authorities in a member state of monetary union have no direct control are *exogenous*, and other shocks arising from *internal policies*. The exogenous shocks can be more difficult offset by macroeconomic policies in a monetary union. For example, the global food price increase will generate an increase in domestic inflation and the national authorities can not short term to alleviate the pressure of rising prices.

#### **Why become asymmetric economic shocks?**

Even if macroeconomic policies of countries participating in a monetary union coincides and shocks are exclusively symmetric, problems of asymmetry may arise as a result of country-specific differences in terms of economic, commercial, financial structures. This means that some country specific adjustment is needed on top of the common policy response. For instance, a rise in short-term interest rates may, for example, have differing effects in different areas because they are at different stages in an economic cycle. But they may also be due to long-term differences in financial structure: the relative importance of banking finance and the differences in monetary transmission mechanisms.

The main causes of asymmetric shocks transmission refers to:

- *the heterogeneousness of the national structures and financial systems* – the financial system interferes within the mechanism of spreading the monetary policy over the global demand (the channel of the interest rate, of the credit, of the financial assets);
- *the heterogeneousness of the prices and salaries' reactions to an exogenous shock, which affects the national economy's competitiveness, if there is a centralization of the decisions regarding the salary negotiation;*
- *the evolution of the Euro/Dollar parity*, because the foreign trade of the European economies is not the same in the relationship with the Dollar area.

*The asymmetry* of the national economic variables within the Euro area, which can be explained, at the same time, by:

- ✓ the action of the national asymmetrical shocks;
- ✓ the national asymmetrical spreading of the symmetrical shocks;
- ✓ the symmetrical spreading of the monetary policy impulses within the Euro area (the asymmetrical shock).

In these circumstances, the euro area must create the mechanisms to effectively neutralize the consequences of asymmetric shocks. Many asymmetries can be suppressed if the EMU promote coordination of economic activities (by aligning the legislation). An example of shocks asymmetry manifestation offers Mundell (1961). In this study, I have adapted this example to situation in which Romania and the euro area forming a monetary union. I have assumed that an asymmetric shock lowers aggregate demand in Romania and increase aggregate demand in the euro area. A demand shift caused by a change in preferences from the goods produced by Romania to the goods produced by Euro area, will lower demand in Romania, raising unemployment and causing a trade imbalance; while inflation will increase in Euro area (see Figure 1).

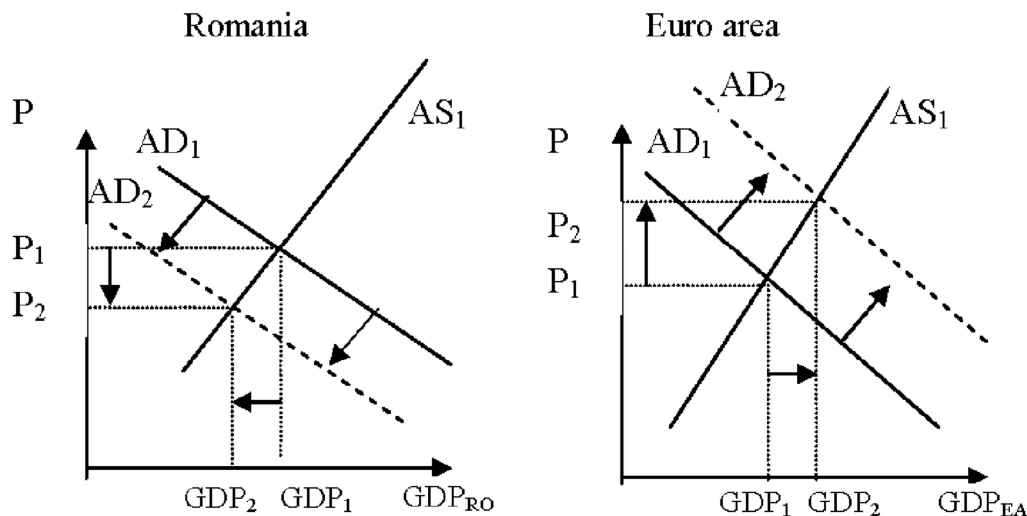


Figure 1. The asymmetric shocks in Romania and euro area

In such a situation, a common monetary policy cannot solve the problems of both economies at the same time. A restrictive common monetary policy might reduce inflation in Euro area, but worsen the unemployment problem in Romania. An expansionary common monetary policy would reduce unemployment in Romania, but worsen inflation in Euro area, because it was already in an inflationary gap. The disequilibrium caused by an asymmetric shock will therefore require a change in relative prices to restore the previous equilibrium. If the two regions have separate currencies, this can be achieved by altering the exchange rates: i.e. by a devaluation of currency in Romania vis à vis euro currency. Romania would then recover its competitive position through lower real wages and prices (though nominal wages and prices would remain constant). Aggregate demand would rise and unemployment fall in Romania.

If, however, the two economies have a common currency, production and employment in Romania must be restored through other means:

- a fall in *nominal* wages and prices;
- an upward shift in the aggregate supply curve of the home-produced good through, for example, labour migration out of the country.
- an expansionary fiscal policy.

Mundell's analysis therefore suggested that:

- if the impact of shocks on the two countries was symmetric, fixed exchange rates, or a monetary union, was appropriate;
- if the impact of shocks was asymmetric, however, *high labour mobility* and/or *wage flexibility* (more particularly in a downward direction) were the main prerequisites.

#### Why common monetary policy has an asymmetric impact?

The main cost associated with the decision to join the euro area was a limited potential to neutralize the temporary shocks of the aggregate demand. The supply side shocks become permanent ones, requiring a higher flexibility of the economy for their neutralization. Applying policies to stimulate aggregate demand as cyclical policies may have perverse effects in a monetary union, leading to increased inflation. This causes an increase in relative prices, which leads to loss of

external competitiveness, the final impact on real output being a lower intensity. Thus, the manifestation of a positive demand shock may involve promoting a restrictive monetary policy to counteract inflationary pressures caused by increasing aggregate demand.

In order to outline the consequences of the symmetrical/asymmetrical shocks upon the ECB's monetary policy behavior, a simplified model will be used – aggregate demand and aggregate offer for  $n$  member countries of the monetary union. It is known that the inflation within the Euro area is controlled by ECB, and the offer shocks affect the national Phillips curves.

The equation of the Phillips curve is the following:

$$U_i = U_i^* - a_i \cdot (\Pi_i - \Pi_i^e) + \varepsilon_i + u_i \quad (1)$$

$\varepsilon_i$  – symmetrical shock;  $u_i$  – asymmetrical shock

$U_i$  represents the rate of unemployment in the country  $i$

$U_i^*$  represents the natural rate of unemployment in the country  $i$

$\Pi_i$  represents the effective inflation rate in the country  $i$

$\Pi_i^e$  represents the expected inflation rate in the country  $i$

The model's hypotheses refer to:

-  $\Pi_i = \Pi$  (the unique inflation rate within the Euro area); actually, there is an inflation heterogeneousness within the Euro area

-  $\varepsilon_i = \varepsilon$  (the symmetrical shock has the same impact in all the countries member to the Euro area)

-  $u_i \neq u_j$  if  $i \neq j$  (the shock is specific to each country). The shocks  $u_i$  are purely asymmetrical if their related impact is null. They are asymmetrical if their impact differs from one country to another.

-  $a_i$  is the impact coefficient of the inflation upon the rate of unemployment. This coefficient shows, in the case of this model, the spreading of the monetary policy over the real economy.

-  $a_i = a$  (there is no asymmetry in the spreading of the monetary policy)

The impact upon the related variables of the Euro area (E) is:

$$U_E = \sum_{i=1}^n \mu_i \cdot U_i; U_E^* = \sum_{i=1}^n \mu_i \cdot U_i^*; \Pi_E = \sum_{i=1}^n \mu_i \cdot \Pi_i = \Pi \quad (2)$$

$\mu_i$  represents the share of the  $i$  country's GDP in the Euro area's GDP.

The linearity supposed by the Phillips curve allows the outlining of an aggregate relationship in the Euro area, which has the following form:

$$U_E = U_E^* - a \cdot (\Pi - \Pi^e) + \varepsilon + \sum_{i=1}^n \mu_i \cdot u_i \quad (3)$$

The conclusions of the previously presented model are as it follows:

- the impact of the symmetrical shocks is outlined at the level of the aggregate relationships within the Euro area;
- the impact of the purely asymmetrical shocks is not caught;
- the bigger the asymmetrical (specific) shocks, the stronger their impact, if that economy's share in the Euro area is high (the case of Germany);
- Euro area's monetary policy does not react upon the purely asymmetrical shocks, but only upon the symmetrical shocks.

*The structural harmonization policies, as well as the convergence determined by the introduction of the Euro, should result in lowering the heterogeneousness within the Euro area.*

This analysis allows the offering of a possible solution concerning the development of a common monetary policy under the terms of the asymmetrical evolutions for the Euro area economies:

- if ECB is only concerned for the related macro-economic variables within the whole Euro area, then there should not be reactions depending on the disparities between the member countries, these disparities generating asymmetrical shocks;
- if the impact of the promoted monetary policy varies from one country to another and if ECB is concerned for the inflation rate in a certain country, then there must be reactions to the economic evolutions in the country where the monetary policy has the greatest impact;
- for ECB there is a dilemma between taking into account the particularities of each economy within the Euro area and the macro-economic efficiency of the monetary policy within the entire area;
- the dilemma can be solved if dealing with shocks' asymmetry will be in the charge of budgetary policy;
- *the efficiency of the monetary policy in this field* will be the more reduced so as the spreading of the monetary policy interferes with the asymmetrical shocks; the solution consists in integrating the asymmetry of spreading the monetary policy in its development;
- within the Euro area, there must be created the mechanisms which allow the efficient management of some asymmetrical shocks' consequences; several asymmetries can be eliminated if, at the EMU's level, there will be promoted a coordination of the economic activities (by adapting the laws).

At present, the problem of asymmetry does not seem to be directly approached within the decisional process of the European monetary policy, the ECB representatives mentioning that *the monetary policy is conducted by taking into account the situation within the whole Euro area*. Under these terms, it is necessary to promote some budgetary policies which could provide the neutralization of the asymmetrical shocks. Until 2005, The Stability and Growth Pact (SGP) has characterized by rigidity, because the situation of the public finances was not interpreted according to the macro-economic evolution on its whole. Thus, certain negative shocks on the side of the aggregate demand could not have been lowered through an expansionary budgetary policy because it could have generated the exceeding of the 3% target for the budget deficit (according to SGP).

To highlight the asymmetric impact of monetary policy promoted by the European Central Bank, I have analyzed the existing macroeconomic divergences within the monetary union. As these are more significant, the common monetary policy asymmetry is more pronounced. I have measured the asymmetry of macroeconomic variables with dispersion weighted by contribution of each country to obtain the euro area GDP.

$$\sigma_x = \sqrt{\sum_{i=1}^n (X_i - X_m)^2 \cdot GDP_i} \quad (4)$$

Where,

$X_i$  – value of the macroeconomic variable  $X$  for countries  $i$ , member of the euro area

$X_m$  – the average value of the variable  $X$ ;

$GDP_i$  – share of the country  $i$  in the euro area GDP.

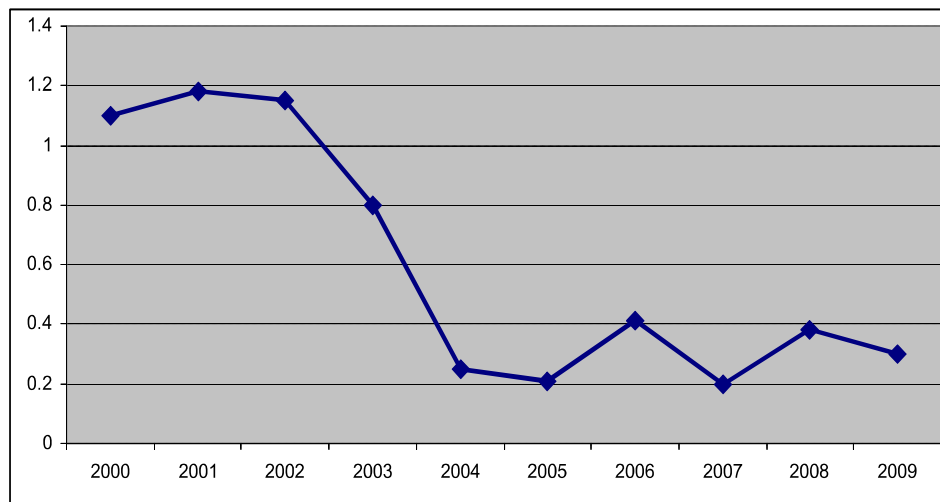
#### The dispersion of the inflation rates

The existence of the same currency will not cancel the differences between national inflation rates. Mainly, the evolution of the internal costs represents the most important factor of the differences in inflation in the euro area. Another important factor is the productivity differential between regions and sectors of a Monetary Union. One can distinguish two types of factors that may contribute to increased dispersion of inflation in the euro zone - factors related to convergence and European integration and the factors related to the implementation of fiscal policies, structural reforms and national wage. From the viewpoint of the first category of factors, implementing the single European market in the mid 90s and the introduction of the euro in 1999 have reduced the dispersion of price levels increased, especially for tradable goods.

Inflation differential was also generated by the convergence of price levels for tradable goods and services. This effect is often associated with recovery of growth differentials between tradable goods sector and the productivity of non-marketable goods or, more generally, with the convergence of living standards (GDP per capita) between economies. According to the Balassa-Samuelson effect, in countries with pronounced differences between sectors, wage growth and inflation would tend to further increase in tradable goods sector. In a monetary union, where the nominal exchange rate can not appreciate this kind of country would be characterized by a higher overall inflation in relative terms. However, empirical evidences of this effect are mixed.

At the same time, the inflation differential can be caused by differences of the economic structures at national level and by diversity of consumer preferences and exposure of the countries to the euro exchange rate fluctuations and commodity prices. In addition, fiscal policy may lead to inflation differential by inadequate using of the fiscal instruments. Structural policies and the earnings policies are applied at national and regional levels leading to an inflation factor asymmetrical, in the absence of implementation of the single market.

In the figure below I have presented the evolution of the dispersion of inflation rates in the euro area, expressed in percentage points. Between 2000 and 2009 years, the inflation rate has reduced in all euro area countries, except for Ireland and the Netherlands. Therefore, there as been a reduction in the inflation rates of the dispersion of 1.2 percentage points in 2001 0.2 in 2007. Therefore, there has been a reduction in the dispersion of inflation rates from 1.2 percentage points in 2001 to 0.2 percentage points in 2007.

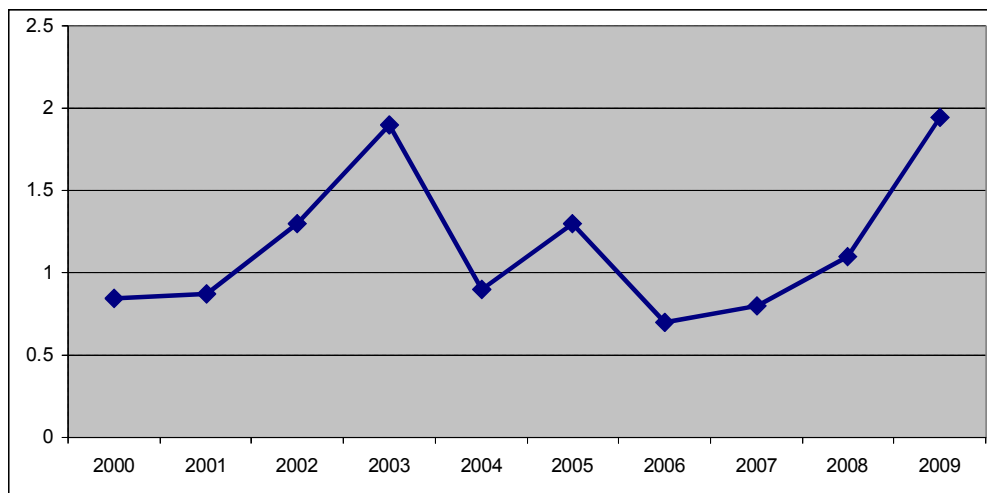


B Source: Eurostat 2010

Figure 2. Dispersion of inflation rate in the euro area

#### Dispersion of the economic growth rates

Since the business cycles of euro area countries are different, then there will be significant differences between growth rates and their dispersion will grow. The main causes of differing rates of growth are structural differences between the policies promoted in the euro area, the various stages of development in which they are and macroeconomic shocks that affect them. The dispersion of growth rates increased immediately after the adoption of the euro to around 2 percentage points, then fell to 0.8 percentage points in 2007 (figure 3). It appears that the common monetary policy has generated more asymmetric shocks once there has been an increase in economic growth dispersion.



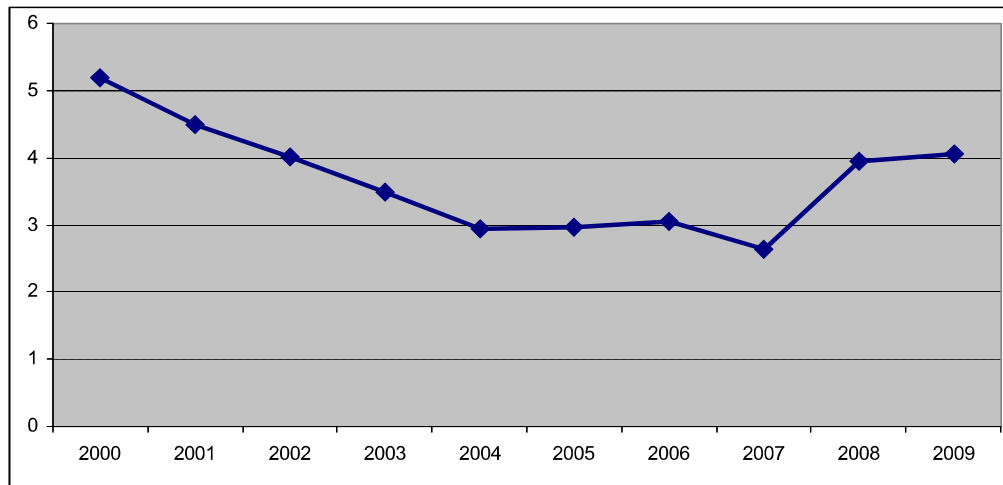
Source: Eurostat 2010

Figure 3. Dispersion of economic growth rate in the euro area

#### Dispersion of the unemployment rates

Unemployment rate constitutes one of the macroeconomic variables characterized by a high differential between member countries of the euro area. Unemployment rate dispersion decreased strongly, reaching over 5 percentage points in 2000, at least over 2.5 percentage points at the end of the year 2007 (Figure 4). Subsequently, in 2008 year, as a result of the global economic crisis occurred at the end of 2007, the unemployment rate dispersion has increased sharply, to about 4 percentage points. Differences in unemployment rates are caused by competitiveness gap between the developed countries of the euro area and the peripheral ones. For example, I have considered the case of two states in the euro area, which have been affected by the financial crisis – Germany and Spain. In 2009, Germany had a higher unemployment rate of 7.5% and a trade surplus of 175 billion dollar, while Spain had an unemployment rate of 18% and a trade deficit of 84 billion dollar. Spain could easily lower this deficit if would be able to depreciate national currency, which would have led to an increase in exports (Spanish products would be cheaper for foreign buyers). This increase in exports would bring more benefits to Spain, among which the most important were the decrease of unemployment. In the absence of own currency, member states of the euro area have not one of the most important tool of economic adjustment. Therefore the only possibility of Spain is to increase labour productivity through policies to boost supply aggregates. Because they generate effects in a longer period of time, then the adjustment of differences in competitiveness will be harder, and the dispersion of unemployment rates will increase.



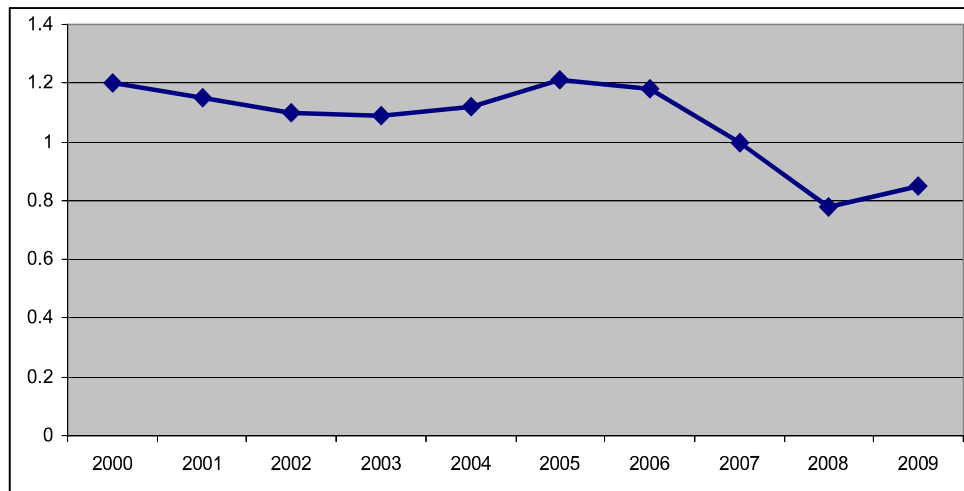


Source: Eurostat 2010

Figure 4. Dispersion of unemployment rate in the euro area

#### Dispersion of the busgetary deficits

The creation of Monetary Union has generated an ascendant trend of dispersion budget deficit from 1.2% of GDP to approximately 0.8% of GDP in 2009 (figure 5). The higher is dispersion of budgetary deficits, national fiscal policies pursued by the monetary union countries are more different and the common monetary policy will have an asymmetric impact. The main reasons for the differences between budget deficits refers to fiscal policies stance promoted in the framework of the Stability and Growth Pact and to the shares of the spending and of the budgetary revenue. Most euro area member states have promoted restrictive fiscal policies until 2005 year in terms of restrictive rules of the Stability and Growth Pact. Along with its relaxation, fiscal policies became more expansionary and budgetary consolidation efforts in the years of economic expansion were lower.



Source: Eurostat 2010

Figure 5. Dispersion of budgetary deficit in the euro area

## Conclusions

The economic shocks which affect the Euro area seem to be rather asymmetrical, because a certain structural divergence persists in the case of the member countries. It determines a lower synchronization of the business cycles, and this can negatively affect the shocks absorption through the ECB's monetary policy. Not even the fiscal policy has constituted an anti-cyclic policy, as a consequence of the strict rules required by the Stability and Growth Pact. Therefore, the macroeconomic policies that an economy uses to neutralize asymmetric shocks are no longer effective in a monetary union, so additional mechanisms must be found to adjust the shocks, like labor market flexibility. Without it, the costs of adopting the euro will increase and become asymmetric macroeconomic shocks and will acquire a permanent character. This conclusion can be developed in other research, whose objective is to determine the degree of labor market flexibility in the Romanian economy, based on indicators such as wage flexibility, the unit labor costs, changes in private investment and labour mobility.

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