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Title of the Master`s Thesis:

Euro area countries and the efficiency of ECB monetary policy with regard to the principles of OCA

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Declaration of Authenticity and Acknowledgements

I hereby declare that the Master´s Thesis presented herein is my own work, or fully and specifically acknowledged wherever adapted from other sources.

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Prague, June 1, 2015 Bc. Martin Machala

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Abstract:

The main aim of the Thesis is to prove a hypothesis if monetary policy of the European Central Bank is suitable for all members of the Euro zone. The theoretical part of this thesis is devoted to the position, goals, and tools used by the European Central Bank, which are bound to the development of monetary policy. The main tool of the analysis is the optimum currency area theory. The theory compares the inflation of the Member countries, with the monetary policy of the European Central Bank. In the long term, the inflation of the Euro zone countries, which currently are in major economic problems, differed from the average inflation of the Euro zone. From the results of the analysis, it is recognizable that there is very slow rate of the convergence in inflation. The convergence in inflation is an important condition of creating an optimal currency area. As a result, countries, which are in main economic problems, need to adjust other channels as exchange rate is fixed. For that reason, a common monetary policy of the European Central Bank for all countries of the Euro zone is not always optimal.

Key words: European Central Bank, Optimum Currency Area Theory, Monetary policy, Eurozone

Contents

LIST OF ACRONYMS

ECB – The European Central Bank

ESBC – The European System of Central Banks

EMI – The European Monetary Institute

MP – Monetary Policy

CB – Central Bank

EU – The European Union

NCB – The National Central Bank

EMU – The Economic Monetary Union

HICP – The Harmonized Index of Consumer Prices

CPI – The Consumer Price Index

EP – Economic Policy

GDP – Gross Domestic Product

ECU –European Currency Unit

ERM – The European Exchange Rate Mechanism

OCA – Optimum Currency Area

NULC – Nominal Unit Labour Cost

Introduction

The monetary policy together with fiscal and international policy create a macro-economic framework of economic policy, which ensures basic economic aims of society. The main function of the central bank is to execute the monetary policy in a market economy. In Euro zone (i.e. Group of states using the same currency – euro), the monetary policy is executed by the European Central Bank, which uses its tools to reach the primary goal – the price stability.

The Optimal currency area theory follows up problems of the single monetary policy. The founder of the theory is Nobel prize-winner for economics Robert Mundell. Professor Mundell established the criteria for countries, which could create a monetary union and abandon their currencies. If countries fulfil criteria, the revenues emerging from a membership should exceed its costs. An indicator of the Optimal currency area suggests that economic convergence as well as revenue from membership should proceed in all economic cycles.

Since financial crisis in 2008, there have been countless academical and experts' discussions about inhomogeneity of the Eurozone and even about withdrawal of one of the biggest economies from the Euro zone. This allows me to test a hypothesis if the monetary policy of the European Central Bank is suitable for all members of the monetary union in the context of the theory of Optimal currency area. For that reason, it is legitimate to evaluate if the single monetary policy of countries with so diverse macroeconomic indicators, leads to convergence or not.

The thesis will define the main goal of the monetary policy and tools which are used to reach the primary goal of the European Central Bank. Moreover, thesis will describe a transmission mechanism and the mechanism used for analysing and evaluating risks of price stability. This theoretical framework will be applied on the historical development of monetary policy executed by the European Central Bank since the beginning of the Euro zone to current days.

The empirical part of thesis analyzes the average inflation in the Euro zone, which is the result of the monetary policy of the European Central Bank, and inflation of countries which significantly has been differing from. I would like to find the answer to the hypothesis by

further comparison of countries' GDP growth, Nominal Labor Cost and the external balance of goods and services.

THE EUROPEAN CENTRAL BANK

The European Central Bank, together with the European System of Central Banks (ESCB) began operations on July 1. 1998 and took over the activities of the European monetary Institute (EMI). From 1 January 1999, the European Central Bank started to exercise monetary policy; the euro has become the single currency in eleven member states, and the European Central Bank became the supranational monetary authority in the European monetary union.[1] The share capital was amounted to € 5 billion, and the only shareholders are the Central Bank (CB) of the Member States of the European Union (EU). Objectives, tasks, and power of the European Central Bank and ESCB are governed by Article 105 of the Treaty on European Union. The European Central Bank currently executes monetary policy for nineteen countries that were willing and eligible, according to the evaluation of the fulfilment of the Maastricht criteria of access, to introduce the euro as their currency. The last member of the euro area became Lithuania on 1th January 2015.[2]

The European Central Bank and National Central Banks (NCB) of countries that joined the European Union constitute European System of Central banks. In this context, it is important to distinguish terminologically "euro area," which represents the European Central Bank and national central banks. These central banks entered the third phase of the Economic and Monetary Union (EMU), thus accepted the single currency – Euro. Against that, into ESBC are included also countries, which have not joined the third stage of EMU[3], and thus they do not contribute to be decision-making on monetary policy in the euro area. ESBC does not have a

[1] EMI also resided as the European Central Bank in Frankfurt, which helped to smooth the transition between those intuition

[2] The entry of Lithuania into the Euro zone could face similar trouble as described by B. Hruska in Euro no. 1/2011 (p.51) about Estonia's entry when Estonia has chosen a very inconvenient time for entry into the euro area. After economic crisis and with estimated unemployment 15% for 2011, Estonia must engage in financial assistant to indebted countries such as Greece and Ireland. Even more, in the report of Swedbank, which is one of the leading banks in Baltic States, stated that the introduction of the euro is not expected with significant positive impact on the Estonia economy. Therefore, initiation of euro is not as economical as a more political reason, because in a country quarter of population is Russians with possible connections to Moscow, is further establishing connections to European institution a welcome tool of integration policy.

[3] EMU had three stages. The first stage was established on 1st July 1990 and Maastricht treaty was signed on 7th February 1992. The second phase began on 1st January 1994by creation of the European Monetary Institute (EMI), which strengthened coordination between CB and prepared for the establishment of the ESBC. The third phase started on 1st January 1999 when 11 of 15 EU Members States adopted the euro as its legal tender. Euro worked at first only in scriptural form. The introduction of euro banknotes and coins was held from 1st January 2002.

legal identity. However, at the hand of The European Central Bank[4] and national central bank shall carry out its objectives defined by the Treaty of European Union.

The main decision-making body of the European Central Bank is the Governing Council, which is composed of members of the Executive Board and the governors of the central banks of the euro area. Governing Council's main tasks are primary the formulation and conduct monetary policy, establishing rules for its implementation and definition monetary policy operational tools, including interest rates. Each member of the Governing Council shall have one vote. The supreme executive body of the European Central Bank is a six-member Executive Board, which exercises the MP, while respecting the decisions and directives established by the Council of Governors. Executive Board members are elected for an eight-year term with no possibility of re-election and the governors of the central banks of the European Union, which took over the former task of the European Monetary Institute to several Member States, which have exemptions after the introduction of the euro.

The European Central Bank is based on the German Bundesbank's model with a high degree of independence[5]. On this principle, external influence and the authorities of member states should not influence to a common monetary policy of the European Central Bank[6]. The highest degree of independence of the European Central Bank is a precondition for an effective meeting the objectives of price stability (as many theoretical and empirical researches point that). Pospíšil (1) encountered the most common:

- *Institutional Independence,* which means that members of the decision-making bodies of the European Central Bank and NCBs mean that they can neither receive nor request instructions from institution or bodies of the European Union or national government.
- *Personnel independent* is connected with expertise, apolitical and incompatibilities of the members of a decision-member body of the European Central Bank with function in the executive or self-govern bodies.

[4] For a idea of legal personality of the ECB means that it can e.g. to appear before courts or to acquire or dispose of current assets

[5] This is valid for other central banks

[6] The idea of the ECB's independence was compromised when France as the only disagreed with the appointment of Netherlands' W. Duisenberg as the first President of the ECB due to the fact that supported its candidate J.P. Trichet. The whole situation was resolved that Duisenberg was elected to a full term and then forwarded by Trichet. (1)

- *Financial independence* represents a subscription to the capital budget only NCBs and the European Central Bank cannot be influenced by national government and the EU institutions and vice versa, the European Central Bank or national central banks may provide loans to the EU institutions or public authorities.
- *Functional independence* represents the status of the European Central Bank that can decide when and how to use the available tools and permission necessary for the conduct of monetary policy.

1.1 Objectives of monetary policy

The law of Central Bank defines the objectives of monetary policy. The vast majority of central banks have the main goal of stabilizing the price level. (2)

1.1.1 The primary objective

ESCB under article 127 paragraphs 1 and article 282 paragraph 2 of the treaty on the Functioning of the European Union, the primary objective is to maintain price stability.

The Maastricht treaty (valid from 1993) clearly states that the primary objective of the Euro system is to maintain price stability. This, however, was not defined in the Maastricht treaty, and therefore, the European Central Bank's Governing council has defined price stability, as an annual increase in the Harmonized Index of Consumer Prices (HIPS) for the euro area should be below 2% in October 1998. This should be maintained over the medium term. (3) The primary reasons for this quantitative definition of price stability are:

- To increase the transparency of the monetary policy based on clear rules and procedures. This should prevent that changes in monetary policy are not a surprise for the market, and this predictability is based on the state of the economy and economic statistics. Thus, this system reduces an uncertainty about the state of the monetary policy and increase the European Central Bank more accountable for its behaviour. (4)
- To set explicit targets. Thus, the European Central Bank makes a pledge to the public, and it is straightforward determine the extent to how monetary policy is effective in meeting the objective. Even more, during long-term deviation from the target, the European Central Bank must present how to price stability is reached again.
- To held realistic expectation about the future development of prices. This is related to the efficiency of a new policy and credibility of the European Central Bank, due to the fact

that financial markets and public should assume that the European Central Bank would intervene when inflation exceeds the defined level. (See transmission mechanism)

The Governing Council in 2003, fearing of the deflation (5), has changed the definition, since 1998 that inflation shall keep close to 2 percentage level in the medium term[7] (ECB, 2003 page 8). In the context of the risk of deflation, the European Central Bank determines the liquidity trap, i.e. when the nominal interest rate cannot be negative in a deflationary environment of monetary policy and interest rate may not have enough a stimulating effect for aggregate demand. Therefore, monetary policy could raise a doubt about the credibility and effectiveness (6) . For that reason, the European Central Bank sought a protection zone for determining the level of inflation. According to studies, which were trying to determine how likely interest rates could fall to zero at certain levels of inflation targets, it is suggested that the probability of a decline in nominal interest rates at zero level drops significantly when the central bank aims to keep inflation rates higher than 1% (3).

Another reason could be the fact that the statistical measurement of the Harmonized Index of Consumer Prices (HICP) contains a small positive measurement error. This fact should not be significant in the future with the increasing improvement of the index (3).

As the third reason for a low and positive inflation is the existence of inflation differentials. This is when countries with a lower rate of inflation than the average of the monetary union, which is the main goal for monetary policy, could be facing a longer period of deflation. Need to say that inflation differentials are usually the result of imperfect real convergence.

As Scheller ((p. 81) writes, available studies agree that the sufficient protection level in the euro area should be connected with the annual growth of the harmonized index of the consumer prices slightly below 2% level.

1.1.2 HICP

The Harmonized Index of Consumer Prices (HICP) indicates the consumer prices in the euro area. Word “Harmonized” means that all countries use the same calculation methodology, which is backed by a set of legally binding standards and therefore, there is a guarantee that

[7] Jánáčková (2002, page 769) shows why the definition of price stability is determined as 2% rate of inflation. Reason is thst fictional inflation, which represents growth of prices caused by product innovation and quality improvements is according to calculations by the ECB's 2% and is therefore not a de facto inflation.

data of countries are comparable with the rest of the Euro zone. This measure sould solves the problem that countries use different national procedures and methods for the measurement of inflation (before entering the euro zone).

Calculation of HICP is done every month in all countries of the euro zone. There is selected around 700 representative prices of products and services, representing groups, which are consumer basket. These groups are adjusted each year to be up to date. Therefore, a total amount of data collected monthly represent 1, 8 million prices from more than 1600 cities.

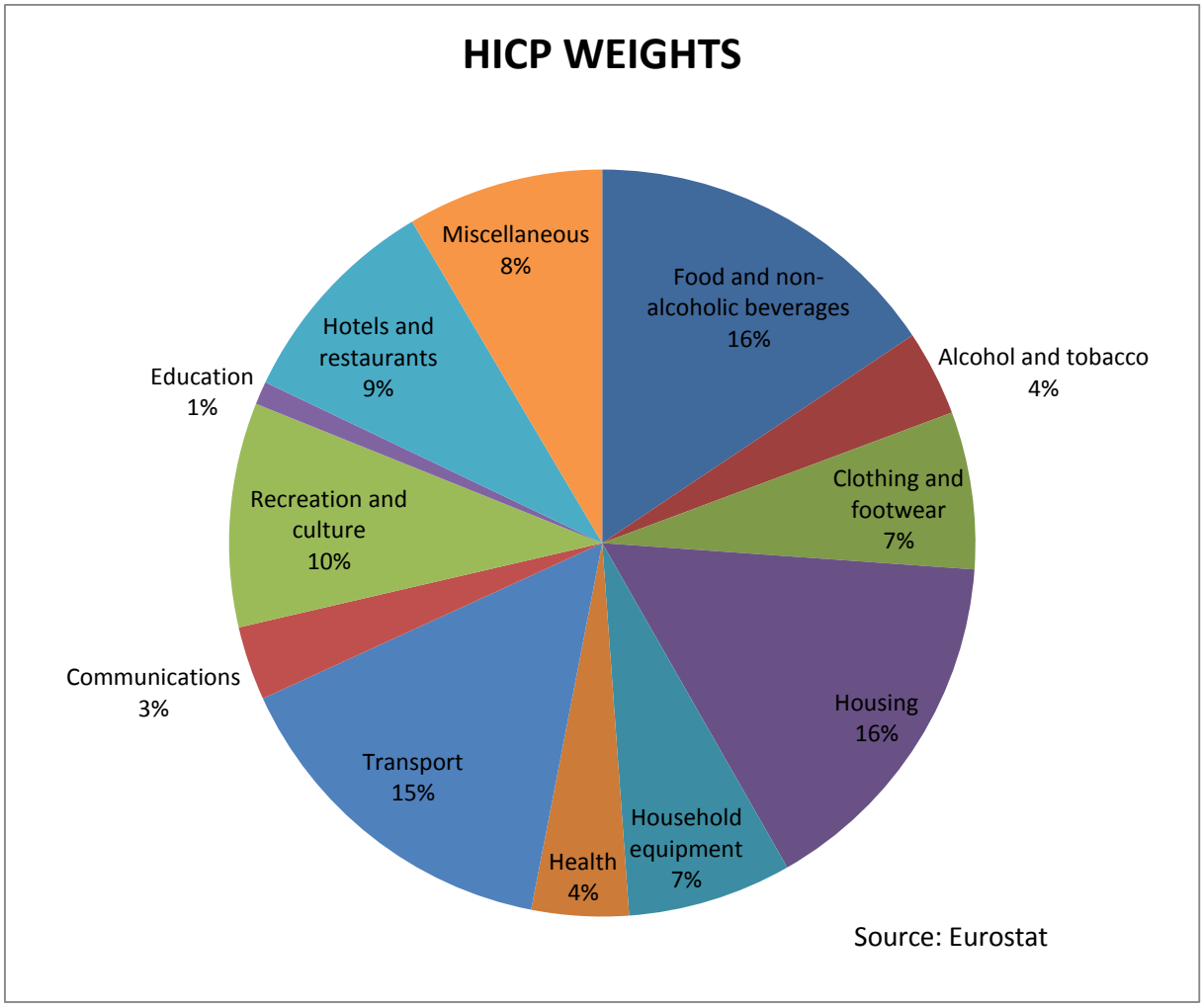


Chart 1 - HICP WEIGHTS

The basic difference between the consumer price index (CPI) and Harmonized Index of Consumer Prices is in the purpose and sometimes in a different way of understanding a methodology. The main use of HICP is for the purpose of monetary policy. HICP defines price stability as an objective of the European Central Bank and represent the convergence criterion of accessing countries to the third stage of Economic and Monetary Union. The CPI

has wide scope (indexation of wages, social protection, etc.) among many states. These states use different approaches to the calculation and thus it is not recommended (7).

1.1.3 Secondary Objectives

Although the main condition to achieve is price-level stability, there are other objectives of the Economy policy[8] (i.e. economic growth, stable exchange rate, balance of payments, "full" employment (2)). The European Central Bank also supports secondary objectives such as:

- Promoting harmonious and balanced development of economic activities
- Supporting sustainable and non-inflationary growth
- The high degree of convergence of economic performance
- High level of employment and social protection
- Improving living standards

As Baldwin criticizes (2008 page 403), the secondary objectives are described in difficult terms to understand and refers to Article 2 of the Maastricht Treaty, which sets out the objectives of the EU. In case that the central bank chooses more than one target, a problem arises in compatibility selected targets as to achieve more goals often require opposite solutions (8). This problematic is know as the "magical rectangle" that represents the impossibility of fulfilling the objectives of economic policy. In achieving the objectives of employment and support economic growth, which requires expansionary monetary policy, does not have to meet the objectives of the domestic price level stability and balance of the current account and vice versa (8). Therefore, all the secondary objectives of the European Central Bank are much more subordinated to the primary objective – i.e. price stability.

1.2 Two pillars of the European Central Bank´s monetary policy

The European Central Bank´s comprehensive approach for the analysis and evaluation of risk of price stability is based on two basic analytical methods. These methods are often referred as two pillars – Economic and monetary analysis. The European Central Bank frames its monetary policy decisions by Economic and Monetary analysis and using that as communication with financial market and the public.

[8] The unpredictability of pricing will be reflected in the planning of future prices business because they have no reliable data measure the effectiveness of their investment opportunities and thus the optimal allocation of resources. Slowdown and reduction in employment in long period of economic is this result (2 p. 447).

The economic analysis focused on the risk, such as the economic shocks that jeopardize the price stability in the short to medium term. The European Central Bank focuses on monitoring a wide range of price and cost indicators, which assesses the dynamics of real activity and the likely development of prices in terms of the interplay between supply and demand of market products, services, and factors of production in the short-term.

The monetary analysis identifies what kind of the risks threaten price stability over the medium to long term. Based on a broad selection of monetary, financial, and economic data as well-founded judgment may recognize the underlying monetary trends. It focuses on the development of the monetary supply, lending, and other factors as inflation is related to the money supply and in the longer term, inflation is a monetary phenomenon. Therefore, the European Central Bank announced every year benchmark annual growth of the monetary aggregate M3[9], depending on the expected development of GDP, the expected change in the price level and expected velocity of circulation of money. (9)

The two-pillar strategy increases the reliability point of view of the Governing Council on monetary policy and streamlines the evaluation of the risks to price stability. This strategy can combine all the important model and analytical information into a single whole. (10)

1.3 The main instruments of monetary policy

ECB uses instruments of monetary policy to achieve its goals. The primary instruments are open market operation, offering standing facilities, and overseeing that the credit institutions are holding minimum reserves on accounts in Euro system. (11) The ECB presents certain criteria for institutions and underlying assets in order to use its monetary instruments.

The eligible counterparty of monetary policy operations in the Euro system must fulfil so-called eligibility criterion. It means that the institution is involved in the system of minimum reserves to meet all operational criteria and is financially healthy. However, the Euro system has created a list of assets that are suitable for all lending operations to try to minimize losses while ensuring equal treatment of counterparties.

[9] M3 is defined as currency (5%), overnight deposits (36%), deposits with a maturity of up to two years (20%), deposits redeemable at notice of up to three months (25%), repurchase agreements (4%), money market securities (8%) and bonds with maturity of up to two years (2%) (9 str. 207)

1.3.1 Open market operation

Open market operations are financial market operation between the ECB and the commercial banks of member countries of the European Monetary Union. It is an important instrument of monetary policy of the Euro system, which manages the interest rates, liquidity, and indicates the stance of monetary policy. (12) However, the basic tool is an interest rate than influencing the whole economy via transmission mechanism. The European Central Bank uses mainly interest rate on the deposit facility, minimum bid rate for refinancing operations otherwise minimum bid rate, and the marginal lending rate facility. Open market operations are divided with regard to their aims, regularity and procedures into four categories (13) :

- Main refinancing operation
- Longer-term refinancing
- Operation fine-tuning
- The structural operations

The Euro system can use five types of the instruments, important one of these is the reverse transaction. These are operations when NCB is buying or selling appropriate assets with repurchase agreement at the instance of the European Central Bank. Reverse transactions are used primarily in the main refinancing operations. However, they can be used both for all categories of open market operations. The Euro system also uses direct transactions, the issuance of debt securities, foreign exchange swaps, and term deposits. (2 (11)

1.3.2 Standing facility

Commercial banks can obtain loans in the form of so-called overnight marginal standing facility. Commercial banks will provide sufficient underlying assets to obtain overnight liquidity. The interest rate is usually an upper bound overnight market interest rate (12). The reason for drawing the marginal lending facility is particularly non-compliance with the minimum reserve requirements. Conversely, when commercial banks have excess liquidity, they can use the deposit facility. This process is similar to when commercial banks will overnight deposits with the national central banks for eligible assets (12). These are voluntary reserves. The interest rates on the deposit facility generally produce lower the

overnight interest rate. Then it creates a space in which should move short-term interest rate controlled by the ECB.

1.3.3 Minimum reserves

Minimum reserves are obligatory created by institution to National Central Banks accounts. European Central Bank Regulation (EC) no. 17545 / 2003 on the application of minimum reserves (ECB/2003/9) ensures that the conditions are uniform throughout the euro area.

The basis for determining the minimum reserve requirement is derived from the balance sheet. These reserves are remunerated at the minimum bid rate (similar to Czech National Bank uses repo rate) for refinancing operation over the maintenance period. The values exceeding the required reserves are not remunerated. (11)

1.4 Transmission mechanism

The transmission mechanism of monetary policy is a chain of causal relationships that the central bank uses to achieve the objectives of its monetary policy. (2) This implies that central banks do not have a direct influence on their ultimate goals. However, they are trying to change settings via the operational objectives (i. e. mostly through the market short-term interest rates), which directly affect the various "intermediate" markets, to achieve the desired rate of inflation as its monetary policy objectives. It should be highlighted that the transmission mechanism is subjected to several paths or channels. (4)

The transmission mechanism is the euro area starts changing money market rates that affect other interest rates. Through the interest rate channels[10] are influenced market interest rates and prices of financial assets (such as shares), which brings changes about decision-making enterprises and household saving, spending, and investment. Changing asset price has two major consequences (3):

- *Income effect* changes in asset prices affect the value of household wealth, which holds these assets. This effect can then be reflected in the change in household consumption.
- *Wealth effect* based on the assumption that the growth of asset prices increases the value of the collateral of the borrower. This can be achieved due to a larger volume of

[10] Interest rate channels represents the main role in transmission of MP on the economy in the euro area (10)

loans or reduce the risk premium that banks with increasing collateral decrease. With the changes of loans in the euro area, this effect can influence aggregate demand.

These changes in aggregate demand may shift labour market condition, and market intermediates and subsequently affect the formation of prices and wages. Even more, changes in consumption and investment shift the domestic market demand of goods and services. For that reason, there is a pressure on prices if demand exceeds supply. (3)

Monetary and credit aggregates and interest rates for short-term bank loans and deposit are affected through interest and monetary channel[11], thus the transmission mechanism affects the overall aggregate demand and consequently inflation.

The exchange rate affects inflation generally in three ways (3):

- The change in the exchange rate has a direct impact on the prices of imported goods and services[12]
- Imported goods are used as input in process production, which can significantly affect prices of final products
- The change in exchange rates can affect a competitiveness of domestic product and services on the global market

As a result, the appreciation of the domestic currency ceteris paribus reduces inflationary pressure in the country; conversely, inflationary pressure grows in the country when the domestic currency is weakening. On the other hand, there is a need to highlight that for the Euro zone as a large and closed economy, the exchange rate channel is minor for monetary policy transmission.

The ECB with its credibility of fulfilling inflationary targets can significantly direct the expectation of companies, trade unions, and price making subjects and thus influence the decision about price setting and wages. (3) The overall scheme of the impact of the monetary policy transmission mechanism is illustrated in Figure 1 - Transmission mechanism

[11] The change in money market interest rates however, does not have enough direct impact on interest rates with longer maturities as the 10-year government bonds, etc.
[12] For instance, imported consumer goods from abroad during appreciation of domestic currency and thus in reducing imported prices helps to reduce inflation

The real point of view on the transmission mechanism in the Euro area implies that operates in different countries in roughly the same way; however, they remain specific differences for individual members of the Euro zone. Monetary Financial Institutions (MFIs) play the main role in the transmission of monetary policy into interest rates. The reason is that businesses and household have still a high dependence on financing through MFIs and still a relatively limited degree of market capitalization in the Euro area as resulting from the annual report of the ECB (ECB, 2008b page 59).

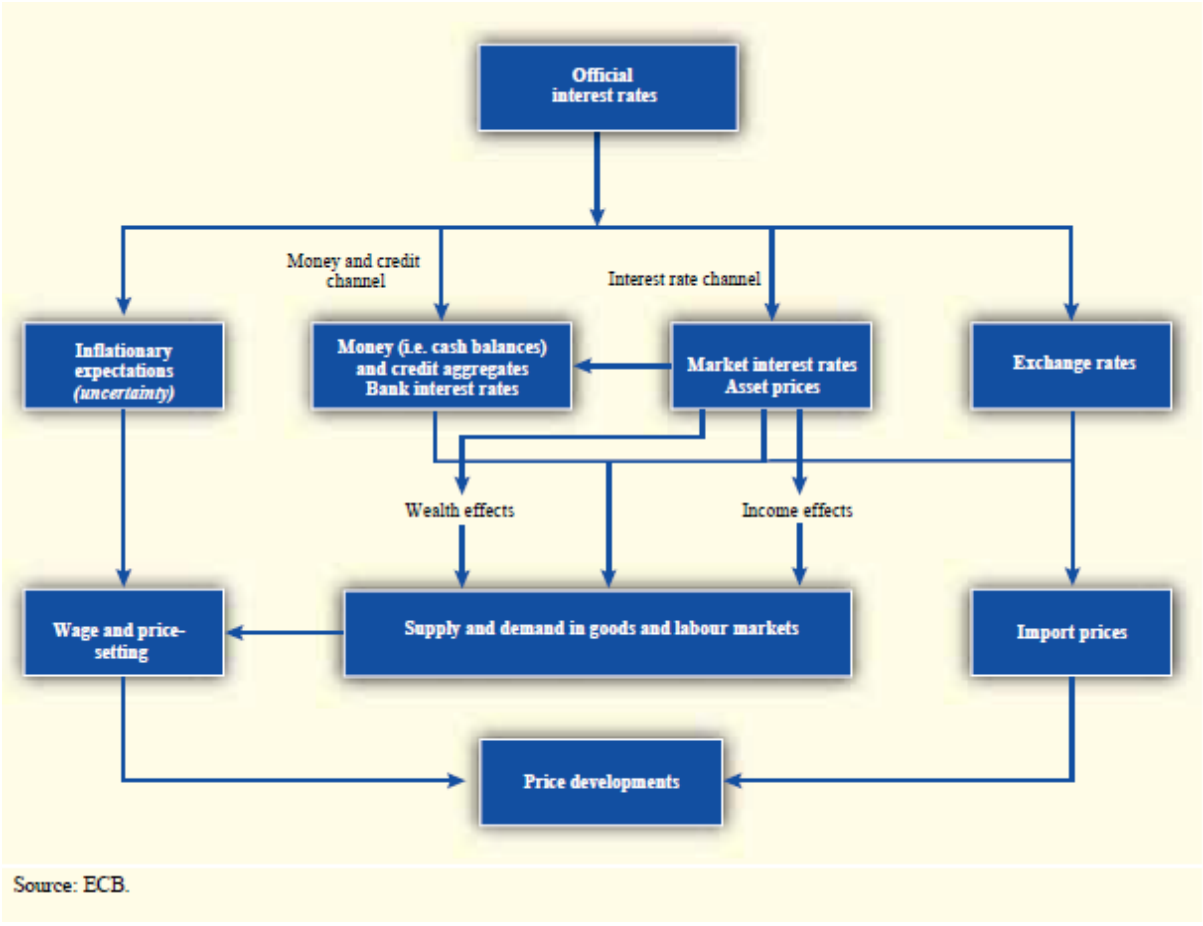


Figure 1 - Transmission mechanism

In case of full transmission mechanism would be changes in rates of monetary financial institutions have equal changes in monetary policy rates. From ECB´s data (ECB, 2008b page 60) it is apparent that the response of banks in different countries is not the same. Also, relations between the client and the MFI, the variability of interest rates, administrative cost, and other factors can all affect the changes in interest rates of monetary financial institution and affect the effectiveness of policy measures. (10)

1.5 Economic and Monetary Union

At the beginning of the ECB´s operation on 1st January 1999, there must have been ensured the smooth completion of the final third stage of Economic and Monetary Union (EMU). This is primarily associated with accepting the common currency – the euro. Eleven member states of Euro zone were using the euro only in a cashless transaction for first three years. This situation is to apply the principle of "no prohibition, no compulsion" which represent fact that no private subjects can be forced to use or prevented from using the euro.

The major change in the integration of Western Europe has happened on January 1. 1999. The euro has replaced a basket unit European Currency Unit (ECU) at a ratio of 1, 1789 USD/EUR. This was preceded by fixing the eleven currencies of future member states and adopting the irrevocable conversion rates on 31th December 1998. Table 1 – shows the coefficients of the participating currencies to the euro.

Belgian Franc	40,3399
Finnish Markka	5,94573
French Franc	6,55957
Irish Pound	0,787564
Italian Lira	1936,27
Luxembourg Franc	40,3399
German Mark	1,95583
Nederland Guider	2,20371
Portuguese Escudo	200,482
Austrian Shilling	13,7603
Spanish Peseta	166,386

Table 1 – The irrevocable conversion rates between the euro and the participating currencies[13]

With the introduction of common currency there had been developed a new payable system that would have ensured safe and efficient settlement of payments. This system was represented as TARGET, which deepened and broadened the integration of the financial market. The payable system TARGET was used by Euro zone countries´ banks, which can conduct their operation and transactions in real time. As cited Marková (2006 page 231) the main aims of the new payment system were:

- Smooth and failure less management of MP
- Reducing the risk of the payment system
- Streamline cross-border payments within the EU

[13] Source: ECB

Currently, payments are arranged via system TARGET2. Other changes that are connected to a date of beginning the action of the ECB, is the replacement of the original exchange rate mechanism of the European Monetary System ERM of new exchange rate system ERM II. This change adjusted the exchange rate policies of the euro against the currencies of EU Member States. The ERM II. becomes the criterion for entering into the monetary union. Countries applying for admission must keep the course of giving currency against the euro within ± 2, 25% without excessive intervention of CB for at least two years. Depreciation over the selected zone is taken as a negative aspect. (14)

After three years from provision the common currency (i.e. 1.1.2002), there was introduced banknotes and coins in circulation in nominal value of € 649 billion. The euro has become the only legal tender two months after the introduction (i.e. 28.2.2002) for all 12-member states.

Because I will focus on an execution of the European Central Bank´s monetary policy, inflation, and economic growth in the euro area, it is necessary to illustrate a weight of GDP and HICP of each member state.

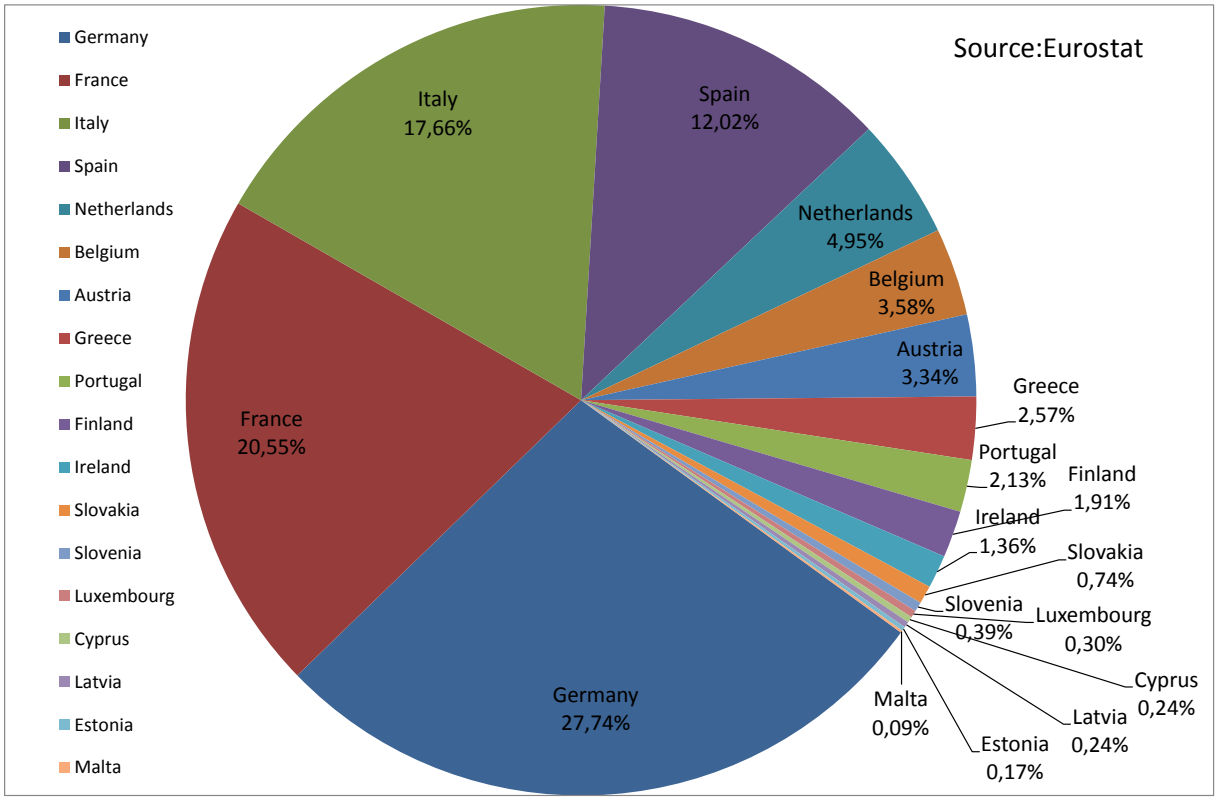


Chart 2 - HICP - The weights of Member States

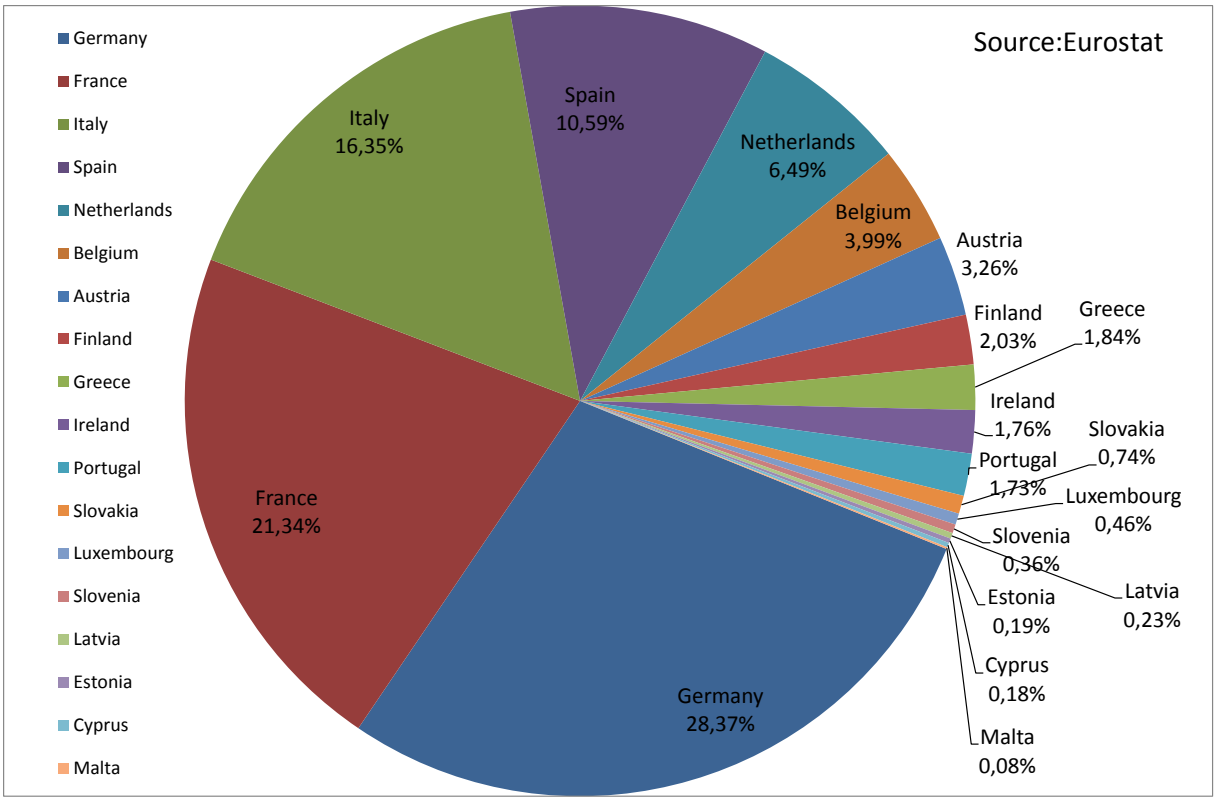


Chart 3 - GDP - The weights of Member States

From the graph, it is evident that the largest position in the euro area has four states – Germany, France, Italy, and Spain. Their share of GDP is for Germany 28, 37%, France 21, 34%, Italy 16, 35% and Spain 10, 59%, which cumulatively presents 76, 65% share for the year 2013. The weight on the HICP has Germany 27, 7%, France, 20, 55%, Italy 17, 66% and Spain 12, 02 that cumulatively employed 77, 98% on the HICP for the euro area for the year 2014.

1.6 Monetary policy of the European Central Bank

The European Central Bank took over responsibility for the monetary policy of the euro area at a time when inflation rates are relatively low and there was a relatively stable outlook for price stability[14]. With the change of monetary policy from the national to the supranational level of the euro area, the interest rates of the national central banks of the member states

[14] In connection with the Asian crisis in 1997 and the crisis in Russia in 1998, which affected the volatility in the markets. This resulting in uncertainty, which led to the reduction in expected economic growth in 1999.

are lowered to the agreed level of 3%[15]. This was the level of interest rates, which the ECB entered into the first phase of EMU[16] with in January 1, 1999.

The economic analysis and the monetary analysis were used to indicate risk of the main objective (i.e. Price stability) of the ECB. This is described in more detail 1.2 Two pillars of the European Central Bank´s monetary policy. This analysis, however, indicates an ambiguous signal at the beginning of the operation of the ECB, which led the Governing Council[17] to the wrong assessment of the situation. Reason of that was a substantial increase in inflation pressure due to increasing prices of oil, depreciation of the euro (which led to higher prices of imported goods), and increase money aggregate M3 over reference value. As a result, the ECB was forced to increase the minimum bid rate by 225 basis points during the nine months to 4,75% at the end of 2000.

Despite a rise of uncertainty on the markets after terroristic attack on September 11, 2001 that showed declining in economic growth, the ECB was trying to hold the level of inflation close to 2 per cent in middle term with the minimum bid rate. This process is more described in 1.4 Transmission mechanism – the ECB is trying to influence inflation mainly with short-term interest rate through various channels.

Euro zone, thereby, got into a situation where inflation exceeds the inflation target of two per cent and at the same time economic growth dramatically slowed in 2002 and 2003. I recall that in mid-2001, the rate of the main refinancing operations of the ECB were around 4, 5%. If we add the time delay of one to two years, it is evident that a restrictive monetary policy of the ECB could significantly strangle growth in the Euro zone. This problem is the issue of the economic policy goals, which is closely mentioned as the magic square in 1.1.3 Secondary Objectives

Appreciating euro and slow economic growth, which arouse anxiety about deflation pressure, led the Governing Council to change the definition of price stability as a growth HICP closely below 2 per cent. This concern was disappeared by the unexpectedly high growth of oil price and unfavourable development of food prices. For that reason, HICP did

[15] The only exception was the Bank d´Italia, which decreased the discount rate to 3,5 per cent
[16] More precisely, in the second part of the third stage of EMU
[17] The governing Council meets twice a month and decide about mid-term monetary policy, defining interest rates and other operational tools of Monetary Policy

not decrease as much as was expected in the second half of 2003. The ECB, at the end of 2005, increased for the first time in two and a half years the interest rates from main refinancing operation from a historical minimum of 2 per cent. At this moment was useful the two-pillar strategy of monetary policy, as the economic analysis did not come to a clear conclusion, the monetary analysis clearly pointed to inflationary pressure in the medium to long term. With economic growth and rising global prices of oil and food, the annual average HICP substantially increased in the second half of 2007 and reached 3,7% in 2008. The interest rate on the main refinancing operation was 4% at the end of 2007. (10)

The economic and financial crisis initially seemed to be particularly on global interbank markets as a liquidity crisis or freezing of credit markets. To this, the ECB responded by increasing the main refinancing operation and refinancing operation of the interbank money market, which aimed to allow better access to liquidity. Similarly, the ECB reduced interest rates on the main refinancing operation to 1% in May 2009. With the severity of the situation, as the ECB lost with low levels of interest rates a room for standard tools of monetary policy, it resorted to non-standard measures. These were mainly quantitative easing and buying the government bonds of members' states that are in financial trouble. (15)

During the year 2010, the global recovery continued and HICP was in the 1-2% zone. The governing council did not change the key ECB interest rates. The interest rate on the main refinancing operation remained unchanged at 1.00%, marginal lending facility stayed at 1.75%, and the rate on the deposit facility at 0.25%. (16) In 2011, with the Great East Japan Earthquake and growing prices of commodities, the global growth slowed and inflation fluctuated around 3 per cent frontier. Among the policy instrument used there also made use of non-standard measures as the second covered bond purchase program and the Securities Markets Program. The interest rate on the main refinancing operations was growing to one, 5 per cent and fell in the last quarter to 1 per cent in 2011. (17) As the debt crisis affecting some euro area countries, uncertainty remains persistently high and the growth momentum with total trade volume growth slowed in 2012. On 31 October 2012 ended, the second covered bond purchase programme, which encourage the banks to lend to their customers and eased funding condition. (18). In 2013, there was a sigh of slow recovery and inflation decrease below one per cent. The interest rate on the refinancing

operation was at 0, 25 per cent with minimum room to the further decrease and slumping inflation in the whole Euro zone.

These days, the Euro zone is facing deflation with low inflation expectation after the steps of negative deposit facility, the series of targeted longer-term refinancing operations, purchasing asset-backed securities on behalf of the ECB, and cover bond purchases. As mentioned Carsten Brzeski (19), there is no guarantee quantitative easing will work because there is a need of further structural reforms, fiscal support, and vision for the Euro zone. Even more, quantitative easing regarding Brzeski was the last trump card of the ECB and there is little room for further steps of monetary policy of the ECB[18].

With the financial crisis was clearly demonstrated the structural weakness of the euro zone as the heterogeneity of the economies and the high rate of debt. Countries such as Greece, Portugal, and Ireland, which requested assistance in the EU debt crisis ahead of a possible restructuring of its debts, are the result. For instance, Greece was granted 110 billion as a temporary relief in May 2, 2009 followed by austerity measures to secure its loan[19]. In 2012 provide bailout packed of 130 billion, with more austerity measures.[20] All mentioned countries experienced a massive increase of public debt and unemployment. This returns the question of whether the euro area is the optimal currency area.

2. The Theory of Optimum Currency Areas

The Theory of Optimum Currency Areas (hereinafter OCA) is considered to be the core doctrine of monetary integration, which gives the possibility to evaluate using defined criteria, whether two or more countries may give up their currencies and create a monetary Union. The possible fulfilment of the criteria would be for countries that the obtained proceeds from membership exceed its cost.

[18] The thesis mainly deals with efficiency/adequacy of MP. Therefore I will not further pursue a detailed measures of the ECB

[19] I note that the problems with the implementation of the Maastricht criteria were almost from the beginning of the euro area. For this thesis, however, this is not essential and therefore I will not deal with that any closer

[20] The temporary aid became the permanent

The development of the theory of the OCA was influenced by both the founder Robert Mundell, and the distribution of the literature into two streams, which deepened or criticized the OCA theory. The first stream, which originated primarily in the 1960s, looking for underlying economic characteristics, that the country should meet to determine the national boundary of the OCA. The second stream, which originated in the 70 years of 20. Century, differed by the fact that did not expect the existence of the country that meet the fulfilment of all the attributes of the OCA and focused more on comparing the cost and benefits arising for creating the monetary Union. (20)

As the first who laid the Foundation of the theory of the OCA was Nobel Laureate Milton Friedman, who argued that the negative supply or demand shock, the economy is better absorbed in a flexible exchange rate regime in the case that wages, prices, and production factors are rigid. In this situation, if the country had a fixed exchange rate, that would have thrust a negative impact on inflation, employment and product. According to Friedman, with the growing mobility of labour and production factors between the countries and immediate adjustment of prices, then the country may have a fixed exchange rate. (21) With a note on the possible difference between the cost-effective uses a single currency in the region and individual countries where the currency is really used, was given almost the entire definition for the OCA. (20)

2.1 Robert A. Mundell

The first time the theory of optimal monetary area was published in the journal of The American Economic Review in 1961 by Robert Mundell. Robert Mundell, originally from Canada, is a Nobel Laureate, partly for the creation of the theory of OCA and partly for the open economy macroeconomics. In these days is the advocate of the single currency worldwide. (14)

Mundell in his article from the year 1961 begins with a simple example of two countries where the asymmetric demand shock occurred. Two countries with balance of payments equilibrium and full employment with fixed currencies to each other. Demand from country B moves to the country A. The new situation thus has an impact on the growth of unemployment and the deficit of the balance of payments in country B and inflationary pressures and the surplus of the balance of payments and in the country A. If the CB had let prices grow, part of the shock would have brought the country A where prices decreased competitiveness of the products, and this alleviates unemployment in country B.

In the case of the flexible rates, the currency of the country A would appreciate and the currency of the country B would depreciate, creating a balance between the countries, since the goods in the country A would lose competitiveness and vice versa, goods of country B it produced. This flexible exchange rate regains countries' balance. (22)

In another case, countries A and countries B shall be divided into the eastern and western regions. In the western region, demand is growing and this creates inflationary pressure, while the east region, demand declines and growing unemployment. For these regions, the flexible exchange rate would not effectively get over the demand shock. Therefore, Mundell

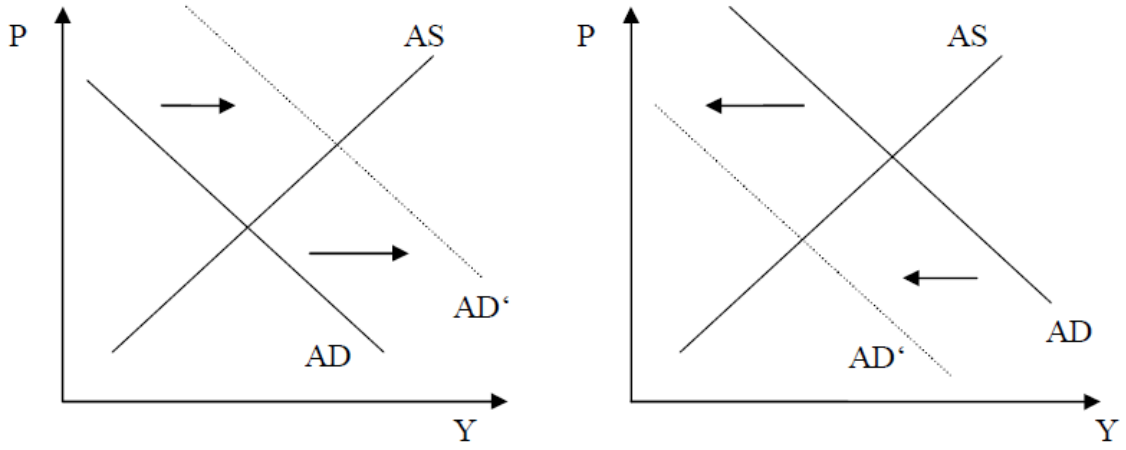


Figure 2 - Assimetric demand shock (Country/Region A – left side; Country/Region B – right side)

comes up with the solution, and criterion of the OCA. If wages are not rigid, they may grow in the western region and decline in the east. The second possible solution is to move the workforce from the eastern part in the western region. This means that with the increasing mobility of the factors of production, the flexible exchange rate loses the benefit. According to Mundell, the region is characterized by a large internal mobility of production factors and

the immobility of external factors[21]. For that reason, it is appropriate for this region to use the flexible exchange rate against other currencies – the optimal currency area is a region (Mundell, 1961 page. 660) and it is just a matter of how the country can meet the characteristics of the region. (Mundell, 1961 page 664)

Mundell's model the OCA, which introduced in his article from the year 1961, was subsequently criticized and he was faulted, in particular, that wages are rigid in a downward direction, thanks to the strong representation of trade unions. Furthermore, fiscal policy[22] cannot be regarded, as an operational tool due to the fact that may be subject to the political cycle or a common culture and language are barriers to the mobility of labour between national States. As a serious point of criticism is the fact that in the model of the OCA from the year 1961 is implicitly working with Phillips curve and Mundell believes that we can choose between inflation and unemployment in the long run. (22) Peter B. Kenen (2002 page 147) also speaks about the earlier theory of OCA as a side product of Keynesian macroeconomics.

Therefore, Mundell comes up with a new theory of OCA. Member countries of the Monetary Union can help affected members with loans – that means flowing capital to country with shock from the remaining members. In addition, borrowers and lenders are more scattered in a monetary Union and thus in an asymmetric shock, not all investors who are hit in the affected parts of the economy, and vice versa. This asymmetric shock becomes symmetric. (23)Beside, it will not be necessary that foreign exchange reserves have to grow proportionally with the economies. (22)

In 1996, Mundell issued by the appendix to his theory of OCA article from 1961 entitled "Updating the Agenda for Monetary Union". He points out that with the greater size of the monetary area the better absorption of the shock in the country within the monetary area, as the country turns out a smaller part of the total portion of the pie to offset the shock. The more countries enter into monetary zone, the more effective it will be for the country. From

[21] The high mobility of the factors of production absorbs shock in the region that would otherwise be absorbed with a flexible exchange rate in the country without any pressure on inflation or unemployment

[22] Mundell shows the ability to cope with asymmetric shocks in the region with fiscal policy - in region with the pressure on inflation growth should be increased taxes and region with pressure on unemployment growth should be financed by transfers (22)

this perspective, Mundell provocatively considered the optimal monetary area as the whole world. (24)

Mundell in his article from the year 1996 points out that the convergence in the euro area should take place very quickly. It also brings 17 reasons for entry and 17 reasons against the entry into the Monetary Union. Although revenues and expenses regarding monetary union depend on a number of characteristics of the economy, in brief summary there are mentioned generally tolerated the benefits and risks of monetary union. Kučerová (2005 page 33) states as revenues primarily:

- Reduction of transaction cost
- Reduction of speculative capital flows
- Exchange rate volatility restrictions
- Deepening economic integration
- Interest rates decline
- Yields of the macroeconomic nature

The common currency is to reduce transaction costs of converting currencies in trade or tourism or growing price transparency in Monetary Union increases competition in the common market and with that there are growing the revenues of a microeconomic nature. Also the decline in interest rates, decreasing the level of risk premiums investors for currency fluctuation and the exchange rates[23] or the growth of trust in countries where political stability, sound economic, policy and legal environment was not perceived by the markets to be sufficiently stable markets, can be considered as income from entry into the Monetary Union.

In contrast, the costs of monetary integration are particularly in:

- Loss of economic-political tool in form of exchange rate
- Loss of autonomy of monetary policy
- Possible loss of fiscal autonomy
- Possible increase inequalities between different economically developed regions

[23] Proponent of the freely floating exchange rates however, respond that risks fluctuating exchange rate can be relatively cheaply ensure by the derivatives (36)

- Cost of macroeconomic nature

Of these costs, I emphasized above all the loss of autonomy of monetary policy, where one central Bank performs a single monetary policy, and then the country in a monetary Union cannot autonomously use the necessary changes in the instruments of the Central Bank to cope with rising inflation or deflation. This issue presents the so-called "magic triangle" when the country can choose only two goals from Trinity-exchange rate stability, the monetary policy independence and mobility of capital.

2.1 Additional criteria

Others who contributed to the theory of the OCA and other criteria were primarily Ronald McKinnon from the Stanford University, and Peter Kenen from Princeton University

The McKinnon's criterion of the degree of openness of its economy concludes that flexible exchange rates are rather for less open economies and open economies should take more fixed rate in currency Union such, even assuming that the economy has minimal mobility of factors of production, because of the change of exchange rate changes in import prices. Kenen comes with the criterion of economic diversification. The conclusion is that countries with diversified production should hold a fixed exchange rate regime and, conversely, countries with low diversification of production should rather join the flexible mode of exchange rates. (25)

Besides already mentioned mobility of production factors, fiscal transfers and the integration of financial markets, which are mentioned by Baldwin (2008 page 377). The criterion for the single priority of the Monetary Union with countries dealing with economic shocks or the criterion of coherence, whether the common monetary policy inevitably raises conflicts between national interests, and the country should adopt these costs in the name of a common destiny.

2.1.1 Synchronization of economic cycles

As reported by Frankel and Rose (1998 page 1), countries with symmetric economic cycles are more probable members of the OCA.[24]

[24] Frankel and Rose came up with the endogenous character of the OCA. With changing structure of the economy in time, the applicant country does not have to meet the entry criteria of Monetary Union ex-ante

This symmetry of economic cycles has been investigated and empirically, it was confirmed that depends on the development of mutual trade. The countries with the common currency trade with each other as much as three times more than, if each of these countries uses their own currency. On the contrary, the countries, which exited from the Monetary Union, they experience the drop in bilateral trade in half, how to inform Kučerová (2005 page 62) in summary of empirical studies of the impact of Monetary Union on trade between the Member countries.

The front two economists, Paul de Grauwe and Paul Krugman, who deal with the theory of OCA, contributed to the synchronization of economic cycles, by its conception of the single currency on a geographic area. Economists agree that trade integration, enhanced by the single currency, brings economies of scale, and these will lead to the growth of the concentration of production in a particular place. In the absence of perfect competition, economies have differential production – trade with the same kind of products, e.g. cars are possible and shocks are more symmetrical. Subsequently, however, Krugman argues that specialization will be done within a country, because the country will focus on production, where they have a competitive advantage. Therefore, countries should experience more asymmetric shocks when creates monetary Union. In contrast, de Grauwe sees the specialization of the industrial zones, which will extend beyond the boundaries of States and, therefore, within the States in monetary union, creating symmetric shocks. (26)

Kučerová (2005 page 61) represent the empirical work that in most cases, incline in the opinion of Paul de Grawe, thus with growing trade integration, economic cycles are more synchronized, however, points out that these studies focusing only on the euro area with too short time series data and should be done more extensive empirical research.

2.1.2 Inflation

Harmful effects of inflation were presented by many economists. One of them was the Nobel Laureate Milton Friedman in *Dollars and Deficits* in 1968. This Friedman's visionary gaze was achieved since as the main goal of the current monetary policy is inflation-targeting (sometimes supplemented by economic growth). As evidence of its importance to

but it can meet up after adoption of the common currency ex-post, thanks to the growth of trade integration in the context of Monetary Union.

the economy is the fact that the ECB and the CNB have price stability as their main and only goal.

Inflation is the result of the internal and external environment, where the internal environment is influenced by the pressures of demand and cost pressure. The pressure of demand is household consumption and Government spending, while cost pressures can be made unfounded wage growth lacking labor productivity or continuous growth of monopoly prices. (2)The external environment is influenced mainly by increases in commodity prices such as oil, gas or food, and changing currency exchange rates, which reduce or increase the imported prices that have an impact on the competitiveness of the economy. In the context of the fixed exchange rate of the Member States, the flexibility of the economies is rapidly changing due to the abandonment of the floating system. Conditions in all countries of the Monetary Union are the same, therefore, depends more on responsible fiscal policy and other microeconomic policies (social, pension, environmental, etc.)

The thesis focuses mainly on the countries for which the rate of inflation is significantly deviates from the average in the euro area. This inflation differential can be mainly affected by the process of convergence or divergence. Member State will be compared in the Euro zone and it will be tested different development in GDP growth, the nominal labor cost, and the external balance of goods and services.

3. Effect of the ECB's monetary policy in the euro area

When assessing the suitability of the MP for the euro area is an effective way of assessing the specific macroeconomic data, which are influenced by the monetary policy of the ECB. This comparison will be represented graphically and, above all, based on the statistical data obtained mainly from Eurostat and the ECB and supplemented by its own calculations. For the assessment of inflation, which is the primary target of monetary policy of the ECB, I'll use the harmonized index of consumer prices (HICP), which is used by Eurostat and all euro-zone countries are bound to use the same calculation methodology. The goal of monetary policy should be enforced under and close to 2% level as closer is presented in the chapter of the HICP.

To better illustrate the point I'll split all 18 members (with respect that Lithuania as the 19. The member is entering to Euro zone in January 1, 2015) of the Monetary Union in 3 basic groups. I'll do this so that the four largest economies, with the largest weight on the HICP, consist in the first group. The rest of the country is further divided by the entry into monetary Union, when the second group will be composed of the founding Euro zone countries, and the third group will consist of the acceding countries in the existence of the Monetary Union. Thus the first group will be named "group leaders" and made up of Germany, France, Italy and Spain. These 4 largest economies in 2013 were more than 76,7% of the GDP of the euro area (see Chart 3 - GDP - The weights of Member States) and almost 78% of the scales on the HICP in the euro area that is determined by the consumption of households (see Chart 2 - HICP - The weights of Member States). The second group will be composed of the remaining founding members of the year 1999, Belgium, Finland, Ireland, Luxembourg, the Netherlands, Portugal and Austria. Those in 2014 accounted for almost 20% of the GDP of the euro area and over 17% of the HICP in the euro area the scales on. The third group is made up of acceding members of the Monetary Union and Greece, Slovenia, Cyprus, Malta, Slovakia, Estonia and Latvia. These seven States represent less than 4% of the GDP of the euro area and over 5% of the weight on the HICP.

History of the development of inflation in the euro area is introduced in the monetary policy chapter of the European Central Bank, however, you can still observe that despite the ECB'S approach when there are obvious movements in rates of main refinancing operations, the target of the ECB's monetary policy is not achieved, since the growth of the HICP, should keep close and under the 2% level. How is the most visible from Chart 4 - ECB interest rate and HICP of Euro zone, the ECB accepted responsibility for monetary policy in a time of moderate growth of the HICP moving around 1%.

In the second half of the year 2000, the growth was over the HICP objective of the ECB until the second half of 2006. It is evident that the ECB has maintained the base bid rate of the main refinancing operations at a relatively low level of 2% since the second half of the year 2003 until 2005 however, for the most part of this period; the annual growth rate of the HICP was not maintained to the 2% level. With the increasing price of commodities and economic growth, inflation has achieved 4% in 2008 and a year later, with the financial crisis in 2009, appeared in more than half a percent deflation. From 2011, the annual inflation rise

to 3% border, mainly due to renewed economic growth in the major economies such as Germany. The ECB has raised its basic interest rate by 0, 25 percentage points to 1, 25% in May. Due to the continuous high prices of commodities, the inflation almost reaches the 3 per cent border and policy rates we kept at low level of 0, 75 per cent. Diminished inflationary pressure led to the historically low level of ECB rates 0, 25 per cent. Europe now has to deal with deflation pressure and this situation is compared with Japan´s 20-year Deflationary Spiral.

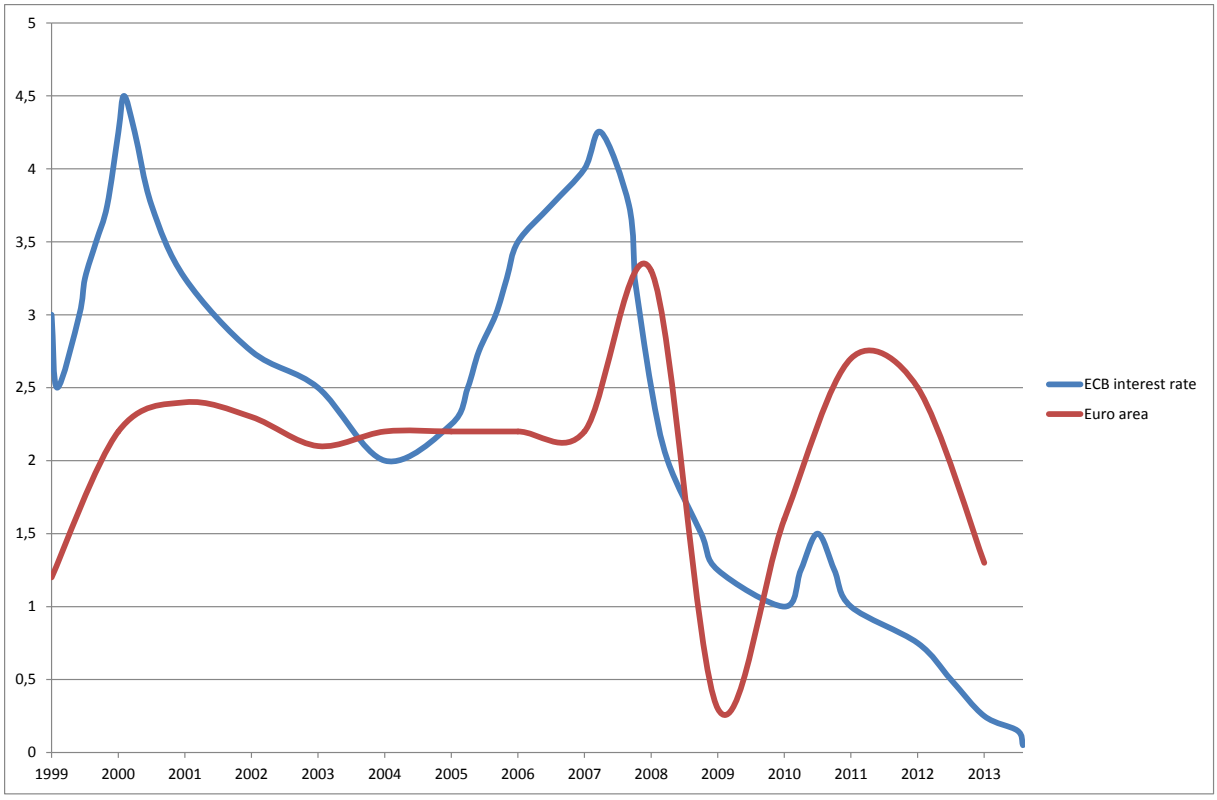


Chart 4 - ECB interest rate and HICP of Euro zone

After the transition to a common currency, the exchange rates were fixed and the Member states lost access to a mechanism in the form of exchange rate channel and subsequently began to fully demonstrate the effects of different fiscal and other microeconomic policies, as well as the differences in the level of the economies and economic growth of the States. This started fully projecting into the pace of inflation in these countries, i.e. inflation channel was fully showed. Therefore, the absolute deviations from the overall Euro zone inflation may give clues to which the members of the ECB's monetary policy and the suits for that set common monetary policy is less appropriate.

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Euro area	1,2	2,2	2,4	2,3	2,1	2,2	2,2	2,2	2,2	3,3	0,3	1,6	2,7	2,5	1,3

	Absolute deviation of countries from average of Eurozone															Average Abs. Deviation	
Germany	-0,6	-0,8	-0,5	-0,9	**-1,1**	-0,4	-0,3	-0,4	0,1	-0,5	-0,1	-0,4	-0,2	-0,4	0,3	0,47	
France	-0,6	-0,4	-0,6	-0,4	0,1	0,1	-0,3	-0,3	-0,6	-0,1	-0,2	0,1	-0,4	-0,3	-0,3	0,32	
Italy	0,5	0,4	-0,1	0,3	0,7	0,1	0,0	0,0	-0,2	0,2	0,5	0,0	0,2	0,8	0,0	0,27	
Spain	**1,0**	**1,3**	0,4	**1,3**	**1,0**	0,9	**1,2**	**1,4**	0,6	0,8	-0,5	0,4	0,4	-0,1	0,2	0,77	
Average for the first group	0,68	0,73	0,40	0,73	0,73	0,38	0,45	0,53	0,38	0,40	0,33	0,23	0,30	0,40	0,20	0,46	
Belgium	-0,1	0,5	0,0	-0,7	-0,6	-0,3	0,3	0,1	-0,4	**1,2**	-0,3	0,7	0,7	0,1	-0,1	0,41	
Finland	0,1	0,7	0,3	-0,3	-0,8	**-2,1**	**-1,4**	-0,9	-0,6	0,6	**1,3**	0,1	0,6	0,7	0,9	0,76	
Ireland	**1,3**	**3,1**	**1,6**	**2,4**	**1,9**	0,1	0,0	0,5	0,7	-0,2	**-2,0**	**-3,2**	**-1,5**	-0,6	-0,8	1,33	
Luxembourg	-0,2	**1,6**	0,0	-0,2	0,4	**1,0**	**1,6**	0,8	0,5	0,8	-0,3	**1,2**	**1,0**	0,4	0,4	0,69	
Netherlands	0,8	0,1	**2,7**	**1,6**	0,1	-0,8	-0,7	-0,5	-0,6	**-1,1**	0,7	-0,7	-0,2	0,3	**1,3**	0,81	
Portugal	**1,0**	0,6	**2,0**	**1,4**	**1,2**	0,3	-0,1	0,8	0,2	-0,6	**-1,2**	-0,2	0,9	0,3	-0,9	0,78	
Austria	-0,7	-0,2	-0,1	-0,6	-0,8	-0,2	-0,1	-0,5	0,0	-0,1	0,1	0,1	0,9	0,1	0,8	0,35	
Average for the second group	0,60	0,97	0,96	1,03	0,83	0,69	0,60	0,59	0,43	0,66	0,84	0,89	0,83	0,36	0,74	0,73	

																	Average Abs. Deviation as Eurozone member
Greece	0,9	0,7	**1,3**	**1,6**	**1,3**	0,8	**1,3**	**1,1**	0,8	0,9	**1,0**	**3,1**	0,4	**-1,5**	**-2,2**	1,26	1,33
Slovenia	**4,9**	**6,7**	**6,2**	**5,2**	**3,6**	**1,5**	0,3	0,3	**1,6**	**2,2**	0,6	0,5	-0,6	0,3	0,6	2,34	0,91
Malta	**1,1**	0,8	0,1	0,3	-0,2	0,5	0,3	0,4	**-1,5**	**1,4**	**1,5**	0,4	-0,2	0,7	-0,3	0,65	0,75
Cyprus	-0,1	**2,7**	-0,4	0,5	**1,9**	-0,3	-0,2	0,0	0,0	**1,1**	-0,1	**1,0**	0,8	0,6	-0,9	0,71	0,75
Slovakia	**9,2**	**10,0**	**4,8**	**1,2**	**6,3**	**5,3**	0,6	**2,1**	-0,3	0,6	0,6	-0,9	**1,4**	**1,2**	0,2	2,98	0,86
Estonia	**1,9**	**1,7**	**3,2**	**1,3**	-0,7	0,8	**1,9**	**2,2**	**4,5**	**7,3**	-0,1	**1,1**	**2,4**	**1,7**	**1,9**	2,18	2,00
Latvia	0,9	0,4	0,1	-0,3	0,8	**4,0**	**4,7**	**4,4**	**7,9**	**12,0**	**3,0**	**-2,8**	**1,5**	-0,2	**-1,3**	2,95	
Lithuania	0,3	**-1,1**	-0,8	**-2,0**	**-3,2**	**-1,0**	0,5	**1,6**	**3,6**	**7,8**	**3,9**	-0,4	**1,4**	0,7	-0,1	1,89	
Average for the third group	2,41	3,01	2,11	1,55	2,25	1,78	1,23	1,51	2,53	4,16	1,35	1,28	1,09	0,86	0,94		1,10

Chart 5 - absolute deviation of inflation of Member States from the average of the Eurozone

As can be seen from Chart 5 - absolute deviation of inflation of Member States from the average of the Eurozone, in the upper part are plotted values of the average inflation in the Euro area. Further, there are calculated deviations of the Member States from the average inflation in the euro area, which are divided into three groups. This should make development in the Euro zone, more noticeable - who, how much and in which direction deviates. In the penultimate column are plotted the average of the absolute deviations of the Member states of the euro-zone average inflation for the period 1999-2013. In the last column are the averages of the absolute deviations from average inflation in the euro area of the acceding Member States during their membership in the Monetary Union. The data of the lowest row represent the average of the absolute deviations of the Euro zone countries for each year in the period 1999-2013. The average of the absolute deviations should be by the time of the functioning of the euro area to reduce according to the theory of the OCA.

Chart 5 - absolute deviation of inflation of Member States from the average of the Eurozone is divided into the field with a light pink/light yellow background, where the deviations from the average inflation in the euro area differ in the range of positive/negative 1-1.4 percentage points and with a dark red/yellow background that deviate by more than the positive/negative 1.5 percentage points. From this, it is evident that inflation, countries such as Ireland, Greece, Portugal, the Netherlands, and Spain has long been different from the average inflation in the euro area. In contrast, countries such as Germany, Italy, and France with the majority of the weight on the HICP are not significantly depart from the average. It points to the problem that the monetary policy is formed from the average of the HICP in the euro area and does not take special account of the States with different levels of inflation.

3.1 Group of Leaders

The first group of so-called "Leaders", i.e. countries with a large share of the GDP and the weight of the HICP in the euro area are made up of Germany, France, Italy and Spain. Chart 5 - absolute deviation of inflation of Member States from the average of the Eurozoneleaders shows the progress of the HICP inflation rates for each country and the growth of inflation for the entire group (is taken into account the weight of each country; the calculation, see annex). There is the obvious inadequacy of the fulfillment of the objectives of monetary policy for the euro area. Between the periods 2003-2006, the HICP of Spain grew by three and a half

per cent, more than one and a half percentage points above the ECB'S target, but the ECB did not intervene, and left the rate of the main refinancing operations on the border of 2% almost all the time. It is therefore evident that inflation of Germany, France and Italy significantly correlates with the euro area, while in the case of Spain, there is a significant difference.

Chart 5 - absolute deviation of inflation of Member States from the average of the Eurozoneit is evident that Spain is significantly different in the development of inflation from the rest of the group "leaders" followed by Germany. However, in this case, German inflation converges to the average inflation in the euro area during the membership in the Monetary Union. Italy and France have relatively small deviations from the average of euro area inflation, which over time will reduce. You can monitor the overall trend in the reduction of the absolute deviations in time for the group.

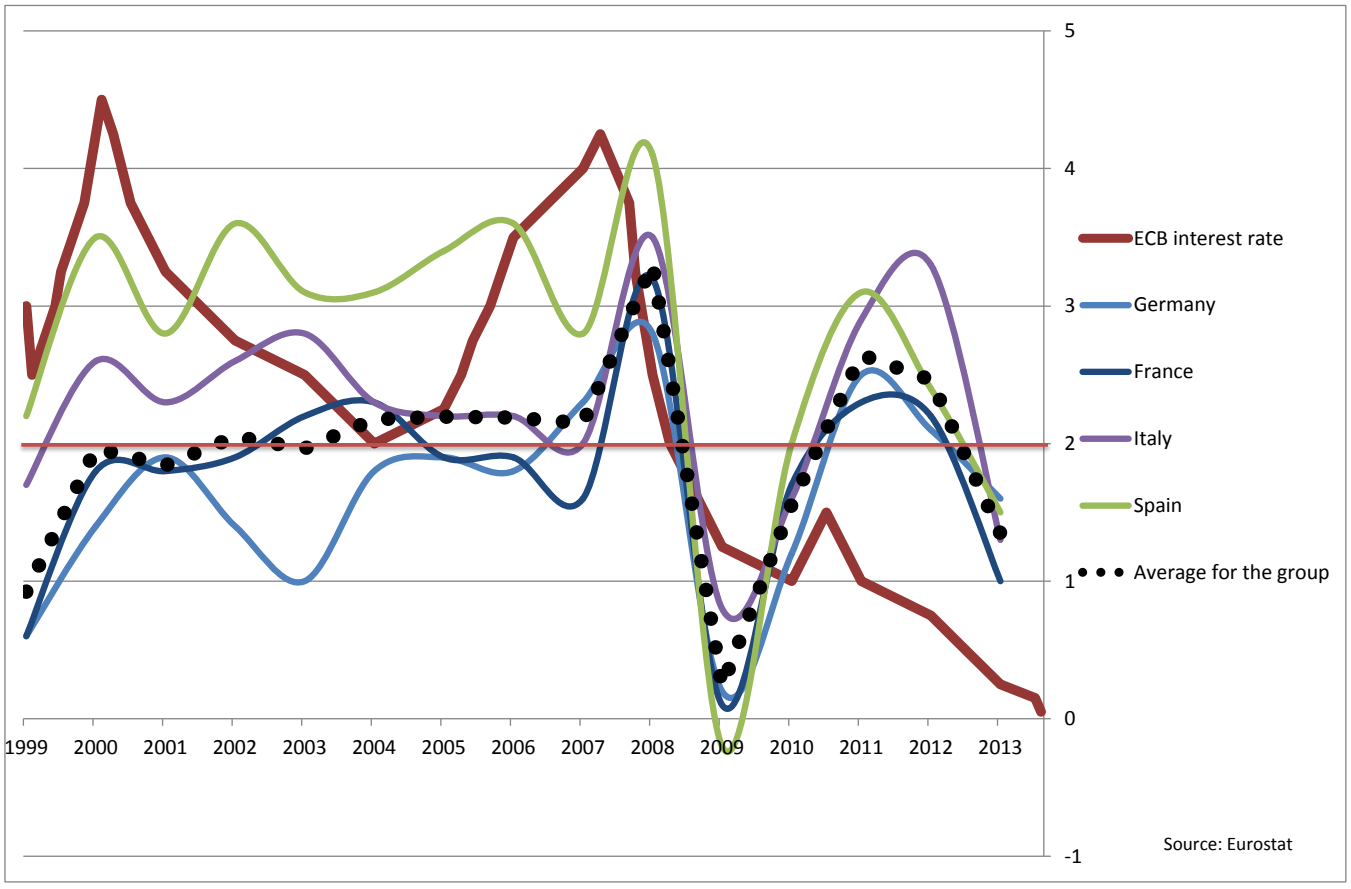


Chart 6 -The development of the base rate of the ECB and the HICP of the first group

Spain, however, has been struggling with one of the highest unemployment in the euro area, which currently reaches more than 25% (see appendix). The enormous increase in the public

debt to GDP, which in 2008 increased (more than 230%) from 39.8% to 92.1% in 2013 (see annex) influenced the development of interest rates of State bonds, except for Estonia, is fifth highest in the euro area (see appendix) in 2013. However, not only this fiscal indiscipline was the reason. Paul De Grauwe points out in his article "The Governance of Fragile Euro zone" from April 2011, when Spain is compared with Great Britain. An interesting finding is conducted that even though Spain has a less public debt to GDP of 17 p. (b). than the United Kingdom and comparable state of the banking sector, however, the market's perception of the risk is higher fir Spain's government bonds. De Grauwe explains that the membership of Spain in a monetary Union, when investors, who bought Spanish bonds, fear that the Spanish Government does not repay, they sell these bonds and gained the Euros investing in German bonds. This can result in a liquidity crisis in Spain, since the Euros leave the Spanish banking system.

This fiscal imbalance and falling competitiveness cannot, however, be balanced with depreciation, which would increase the export. This inhomogeneity of Spain, does not meet the conditions of the theory of OCA, is a great threat, as the fourth largest economy in the Euro zone.

3.2 The group of the other founding members

The second group is the remaining founding euro-zone countries, i.e. Belgium, Finland, Ireland, Luxembourg, Portugal, Austria and the Netherlands. Here is the in homogeneity of the group, perhaps even more evident than in the first group, when the chart 7-development of the base rate of the ECB and the other founding members of the HICP, for example, shows the inflation differential between Finland and Luxembourg in 2004, which accounted for more than 3 percentage points. Low basic interest rate tender the ECB rather fit in this period, Finland, which is approaching the objectives of monetary policy, but on the contrary avenues Luxembourg, which the HICP rose almost 4% in 2005.

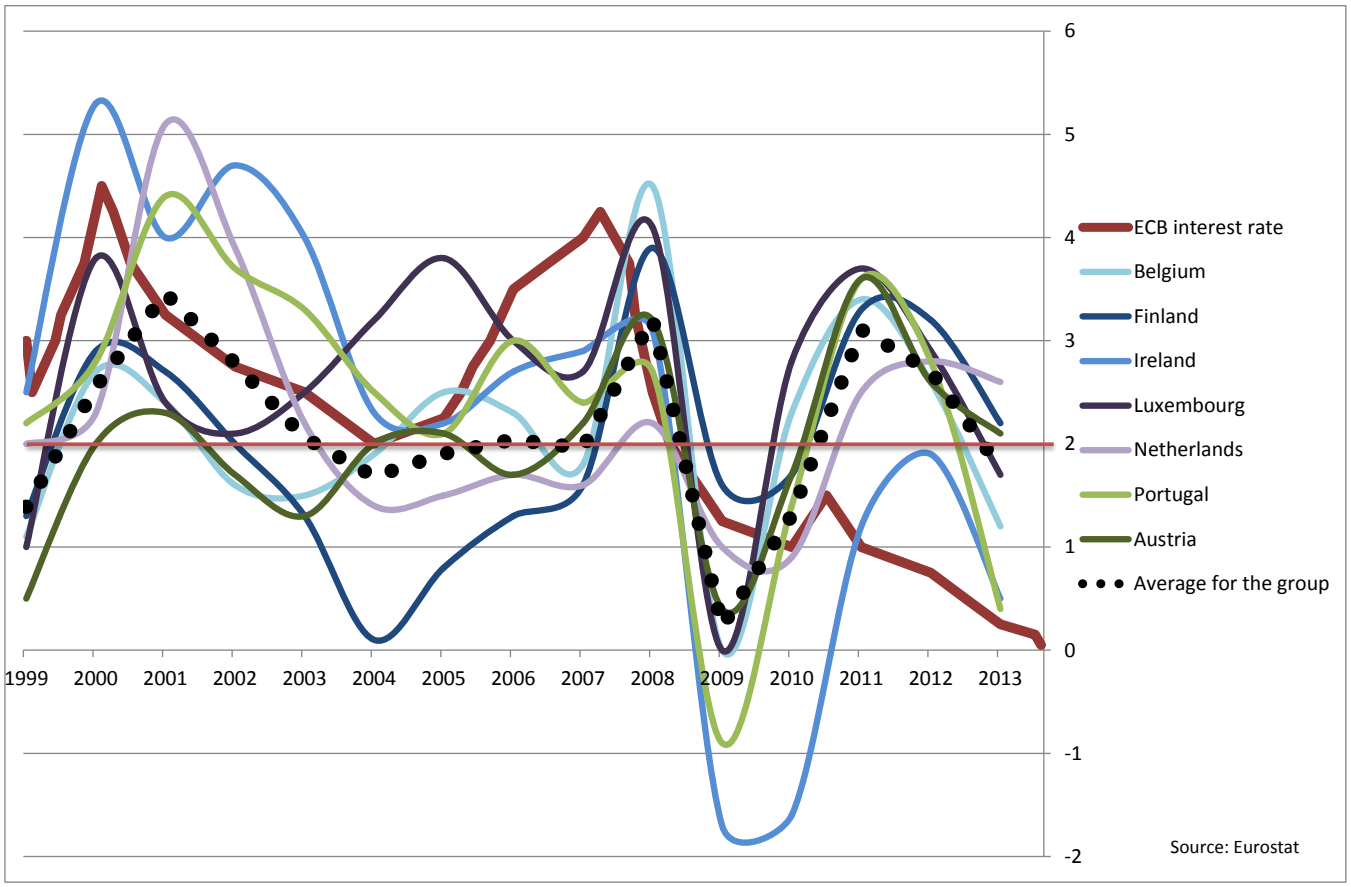


Chart 7 - The development of the base rate of the ECB and the HICP of the second group

The biggest problem, however, of the Group is Ireland that has taken a loan from the EU and the International Monetary Fund worth 85 billion during the financial crisis. The State budget deficit to GDP for the year 2010 accounted for 32.4%, where nearly 2/3 of this deficit is the cost of the bank bailout. (Singer, 2011) Also the Government debt to GDP, which before the financial crisis amounted to 25%, increased almost five times, at 123, 3%. This is reflected in the growth of interest rates on Irish bonds, which in the year 2011 were around 9.5% of the level. (See. Annex) European leaders agreed to cut interest rates to 3, 5 per cent and extended maturities to 15 years. (27) For the year 2010 is the inflation differential between Ireland and Luxembourg almost four and a half of a percentage point, and the ECB must have addressed, whether with the growth of its basic interest rates to suppress inflationary pressure in Luxembourg or expensive servicing of public debt and deflation in Ireland. On 3 May 2011 Portugal agreed on 78 billion euro bailout from the EU and IMF and exited after three years. The ratio of government debt to GDP is 128% in 2013, which increased from 71, 7 in 2008 (see Annex).

From the Chart 5 - absolute deviation of inflation of Member States from the average of the Eurozoneit can be observed that the inflation in countries such as Ireland, Portugal, the Netherlands, and Finland is significantly different from the average inflation in the euro area. Ireland was the most differentiating states from the second group that in seven years of membership in the Monetary Union differs from the average inflation by more than 1.5 percentage points (and in two cases by more than 3 percentage points). The Netherlands has the second largest different values of the absolute deviations of inflation. Average inflation in Portugal for their membership in the Monetary Union, a discrepancy of nearly 0.8 percentage points from the average inflation in the euro area and Finland's average inflation deviates by 0.76 percentage points from the average in the euro area in the period of the functioning of the Monetary Union.

The trend of the average deviations from the average inflation in the Euro zone has not been diminishing as in the case of the first group. It is easier to see on the next chart, where the deviation of the first groups decreased from 0.7 to 0.2 percentage points in the range from 1999 to 2013. This trend is evident even in the second group, but its pace is significantly different. Derogation was 0.6 percentage points in 1999 while even increased to 0.75 in 2013. A trend is not fulfilling the OCA condition, as the development of deviation seems asymmetric for the first and second group in the last six years. Even more the crisis discovers another disconcerting fact videlicet the correlation coefficient is more than -0, 81 which is defined as a strong negative relationship during the financial crisis. This could be considered as a significant problem for the subject of monetary policy of the European central bank,

which is mainly influenced by the first group.

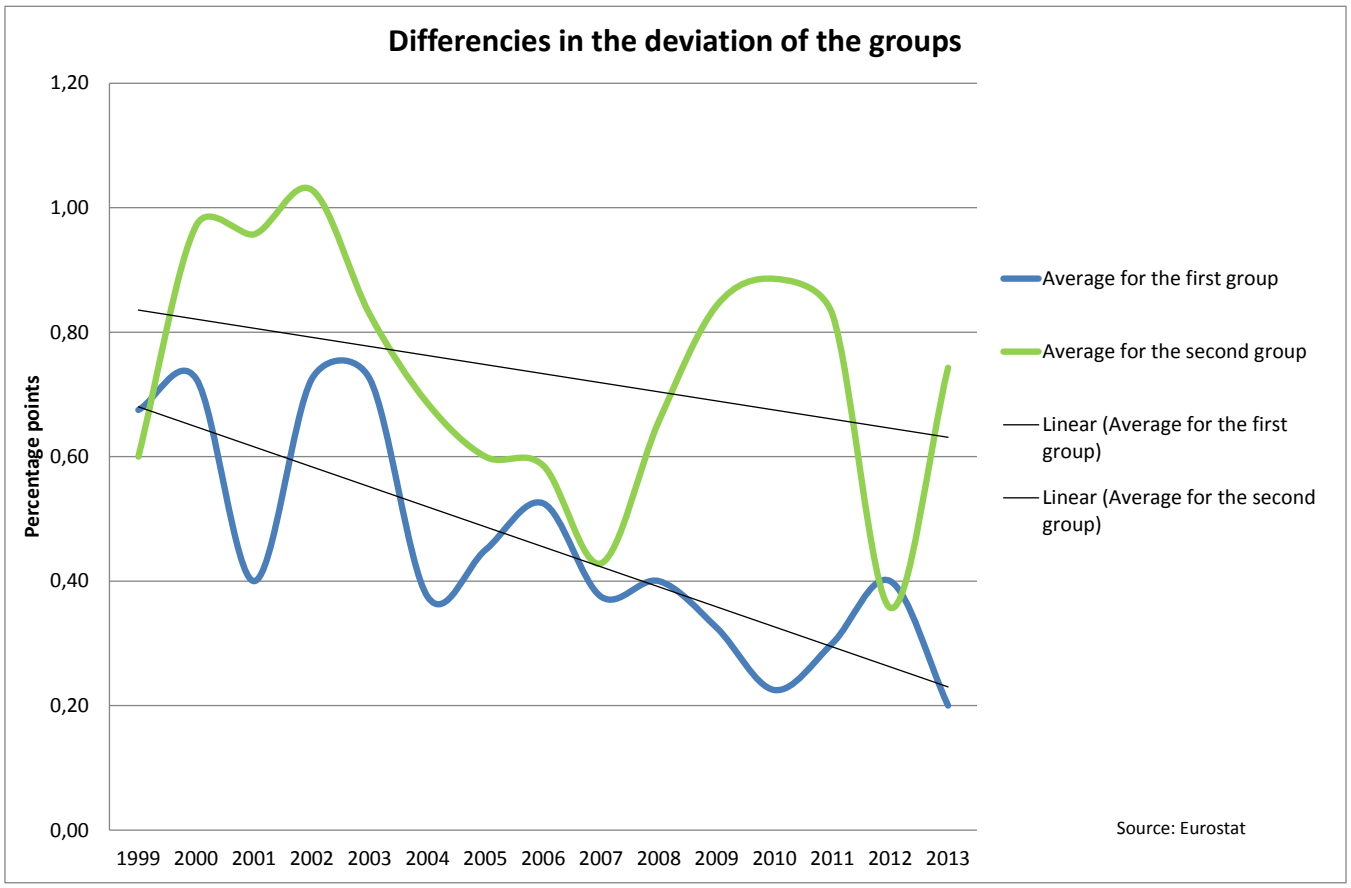


Chart 8 – The differences of the deviations of the first and second group

3.3 A group of acceding members

The third group of States is made up of the countries acceding in progress since the establishment of the euro in 1999 until 1.1. 2015. Therefore, these are Greece, Slovenia, Cyprus, Malta, Slovakia, Estonia, Latvia, and Lithuania. The chart shows the base rate of the ECB and the development of the HICP each member state even during the period it was not part of the euro area. The development of inflation for the entire group is not shown here, since it is not specifically defined, as should be the weight of the country of the HICP during its absence in the euro area. However, it can be considered that in some countries, as potential members of the Euro zone, was their different development of the HICP striking.

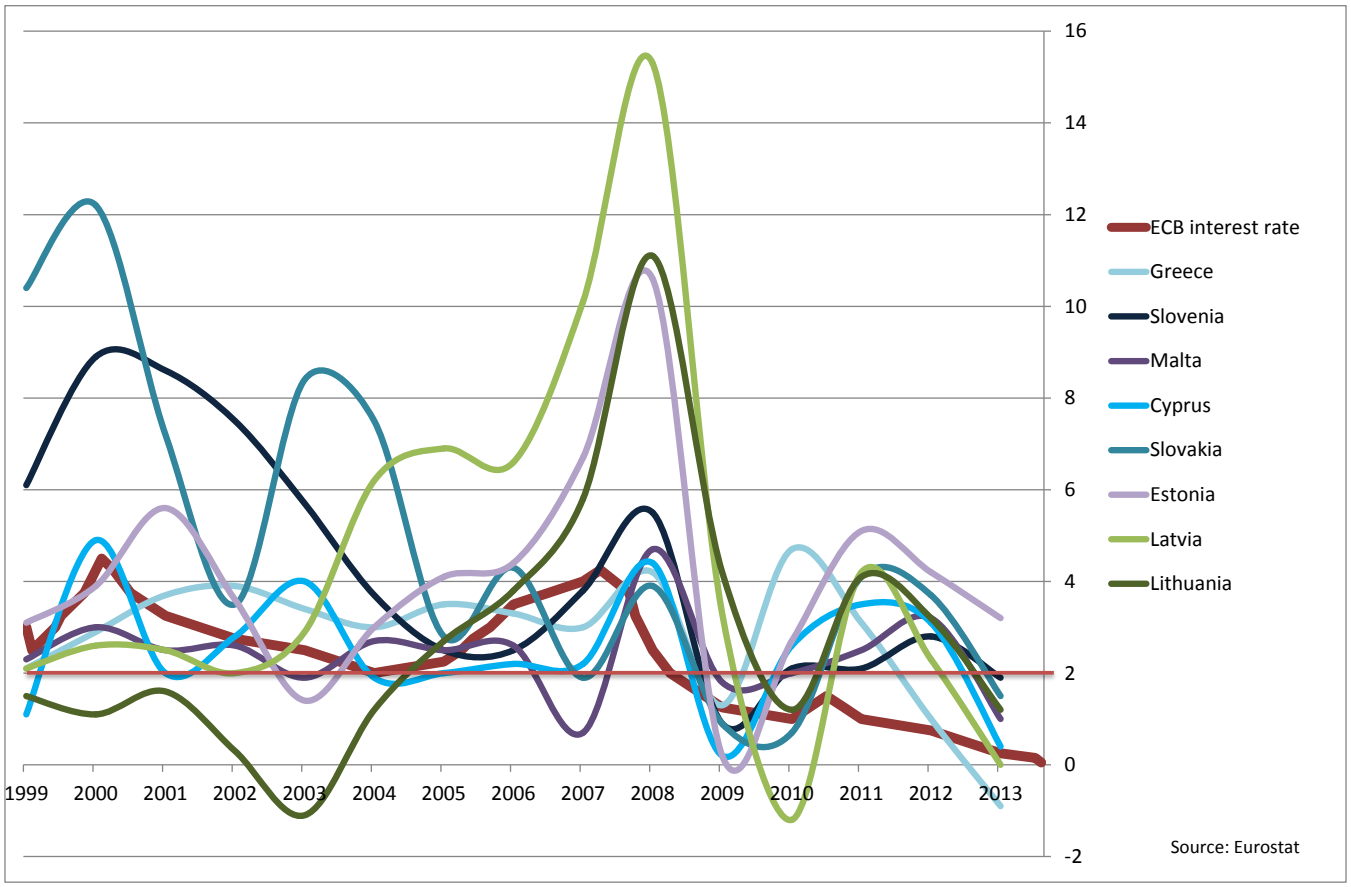


Chart 9 - The development of the base rate of the ECB and the HICP of the third group

Chart 9 - The development of the base rate of the ECB and the HICP of the third group proves that some countries, in order to meet the Maastricht criteria in access (see annex) were approaching their inflation to average inflation in the euro area. However, after the adoption of the euro, the development of the inflation began to significantly differ from the average inflation in the euro area. For instance, Slovenia that in 2007 (i.e. the year of acceptance into the Monetary Union) as a member of the euro area, has the HICP's growth 3.8%, which is 1.7 percentage point difference from the average. Greece, which joined the euro area in 2001, distinct from the average inflation in the euro area by 1.6 percentage points in 2002. Greece itself is a major concern for the euro area, when a double-digit deficit increase; for the years 2009 to 2011 and 2013.The public debt-to-GDP is 174, 9% per year 2013 and Greece draws a loan from the EU and the International Monetary Fund worth 110 billion EUR in 2010 and 130 billion in 2012. The debt restructuring, however, has already been approved in March 2011, when it was extended the maturity of 110 billion loans from 3 to 7 years, and the interest that has been reduced to an average of around 4.2%. With unemployment of 27, 5 per cent in 2013 and constant decrease of GDP since 2008, there is significant risk of leaving

the Euro zone after the Syriza (Coalition of the Radical Left) has won the election in Greece. This could still create the snowball effect as warned Singer (2011).

4. Comparison of countries

In this chapter, I would like to compare countries by groups and evaluate main macroeconomic indicators during their time in a monetary union with respect to the inflation as the main aim of the ECB. In the first part, I would like to focus on the synchronization of economic cycles in each group and compare the groups the Euro zone, i.e. development of the Gross domestic product as one of the condition for the OCA theory. In the second part, it will be examined the Nominal Unit Labor Cost (NULC) in countries of monetary union, which is a fundamental condition of the Optimum Currency Area and should be adjusted with respect to shocks that affect the monetary union. In the third part, I would like to focus on the relationship of Nominal Unit Labor Cost and External balance of goods and services as a percentage of GDP; especially with respect to countries with the main problems in the Euro zone. For that, I use correlation analysis (correlation coefficient should be negative (in a scale from -1 to 1) if there is dependent of decreasing Nominal Unit Labor Cost (respectively increasing competitiveness) and increasing External balance of goods and services (respectively increasing export or/and decreasing an import).

4.1 Gross Domestic Product

In this chapter, it has examined the development of the Gross Domestic Product as the main macroeconomic indicator and the condition of output synchronization in the Optimum Currency Area theory. I repeat that according De Grauwe (28) the increase in the trade integration, which should lead in the specialization of the industrial zones beyond the boundaries of states and create symmetric shocks. The precedent, however, as is described in the Theory of Optimal Currency Area and its implication on countries of central and Eastern Europe (25), is changing. According the data, the Euro zone is facing a dichotomy more in each group itself than in the case of the weighted average of first and second groups.

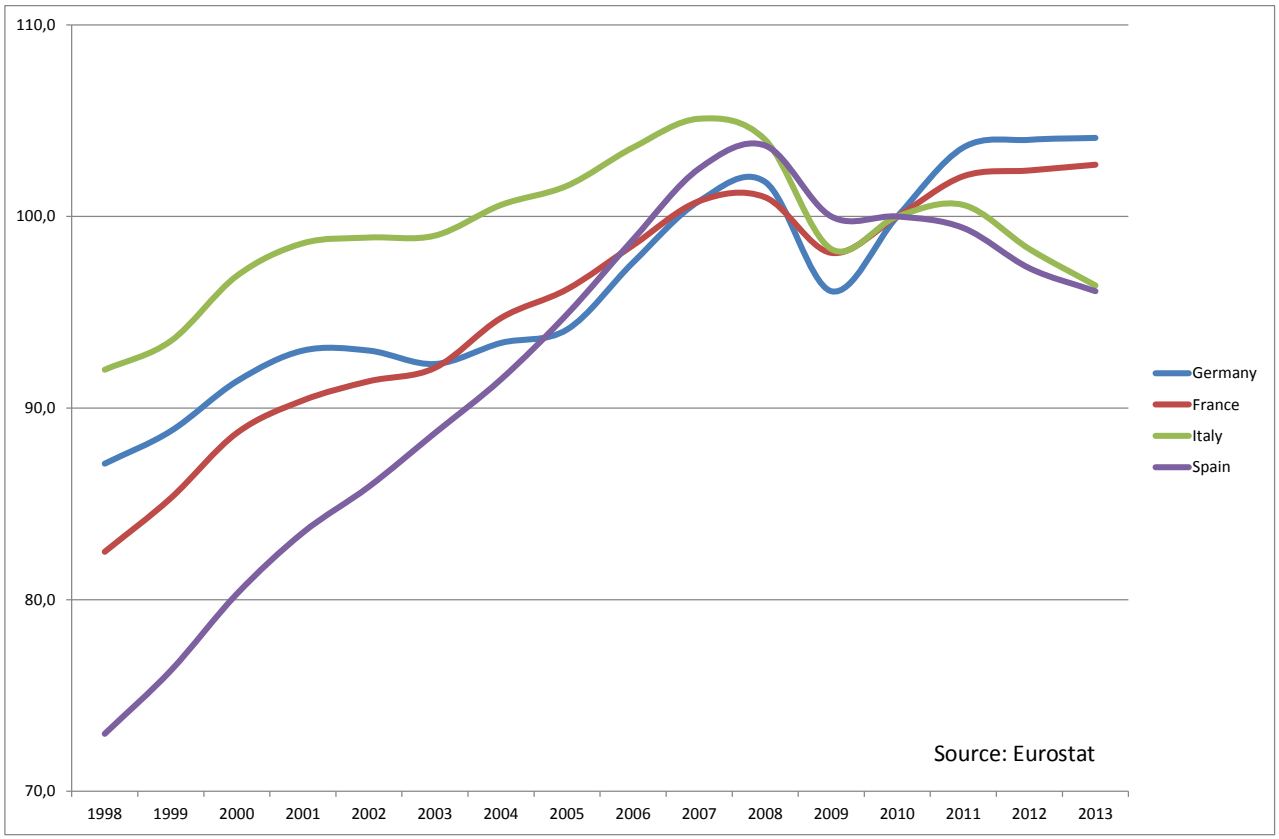


Chart 10 - The development of GDP of the first group

Chart 10 - The development of GDP of the first group represents the output of the group of Leaders and development of members from 1998 to 2013 as a chained volume series where 100% is the year 2010. The more vertical is the time series in the chart, the faster the economy has grown and vice versa. As evidenced by the Chart 10 - The development of GDP of the first group, Spain as the fourth largest economy has experienced the a relatively high growth from 1998 to 2008, which was almost three times and more than two times higher than Italian and German respectively. However, at the same period Spain significantly exceed the average HICP for the Euro zone and for the same period has average HICP around 3, 2%. This leads to substantial overheats of the economy, as the ECB did not curb inflation, which caused that Spain is in a recession in years 2012 and 2013 and differencing with Italy in the synchronization of the economic cycle with two major economies of Germany and France. The case of Italy is different. Italy has the lowest difference from average HICP in the Euro zone, however, According to Paolo Pizzoli, is dealing with the stagnation of export in the last two years (29). Now is a question if Italy could adjust its fiscal policy (which has gross government debts 129, 7 per cent of GDP in 2013) with decreasing taxes, and increase

incentives for creating new job opportunities, as proclaim Italian Prime minister Matteo Renzi, to stop decreasing GDP. (30)

In the second group is evident that the highest growth of GDP has Ireland, which on the other hand has the highest deviation of HICP in the group. In the case of Ireland, inflation was higher than average inflation by 2, 3 percentage points during the years 2000 and 2003 (see appendix). The inflation channel was fully revealed. The ECB, instead of suppressing the inflation pressure, was executing expansive monetary policy from 2000 until 2004, which could be the reason for one of the highest slump in the group in 2009 and 2010. Even more, for the years 2012 and 2013, was an average growth negative 0, 1 per cent, which is a sign that the Irish economy is still not out of the recession. Similar example is Portugal, which differentiated in average upward from overall HICP for the Euro zone almost 1, 25 percentage points between 1999 and 2003, is a third most deviated country in the group, and now is in serious economic problems with recession in years 2011, 2012, and 2013. The difference between the country with the highest growth and the lowest one is 10, 9 percentage points in 2013 and this again poses a question if countries that are in monetary union for 16 years should have so unequal economic cycle with respect to the OCA Theory.

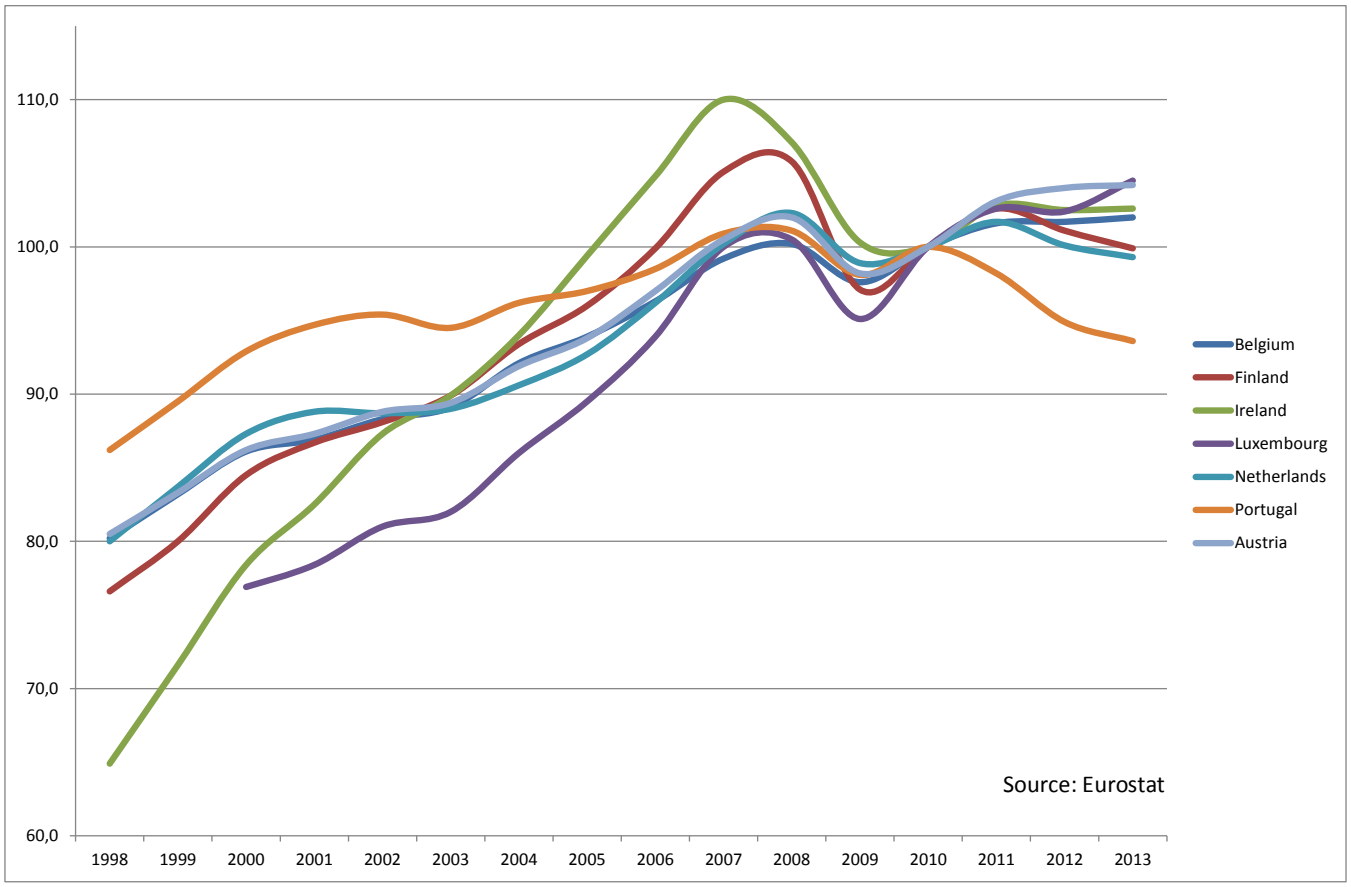


Chart 11 - The development of GDP of the second group

The chart of the third group is showing that doted part of the curve represents the country as a non-member of the Euro zone and solid part a time as a member. The biggest economy in the group is Greece that represents more than the sum of the rest of the third group members in the Euro zone in 2013. Greece, however, is the biggest problem for the Euro zone with the highest deviation from the HICP for the Euro zone, which reached 1,32 percentage points above the average HICP of the Euro zone during the years 2001 and 2010 and now it is facing the massive slump in the GDP with high deflation in years 2012 and 2013. Other countries with declining GDP are Slovenia and Cyprus. With respect to these countries, it is suitable question if for small open countries is not better to have own currency to absorb shock and support export with depreciation their currencies than have a monetary policy that is mainly influenced by a group of leaders.

The country with the highest growth is Estonia, which is, however slowing as adopted the euro. Another fact is that the Baltic States have entered into the Euro zone, more for political integration to the Europe than for the economic benefits, due to the possible

influence of Russian politics as warns Hruška (31). The homogeneity in this group is significantly diverged and common currency of the Euro zone has not apparently synchronized the Economic cycle. The difference between Greece and Estonia represent 33, 3 percentage points in 2013.

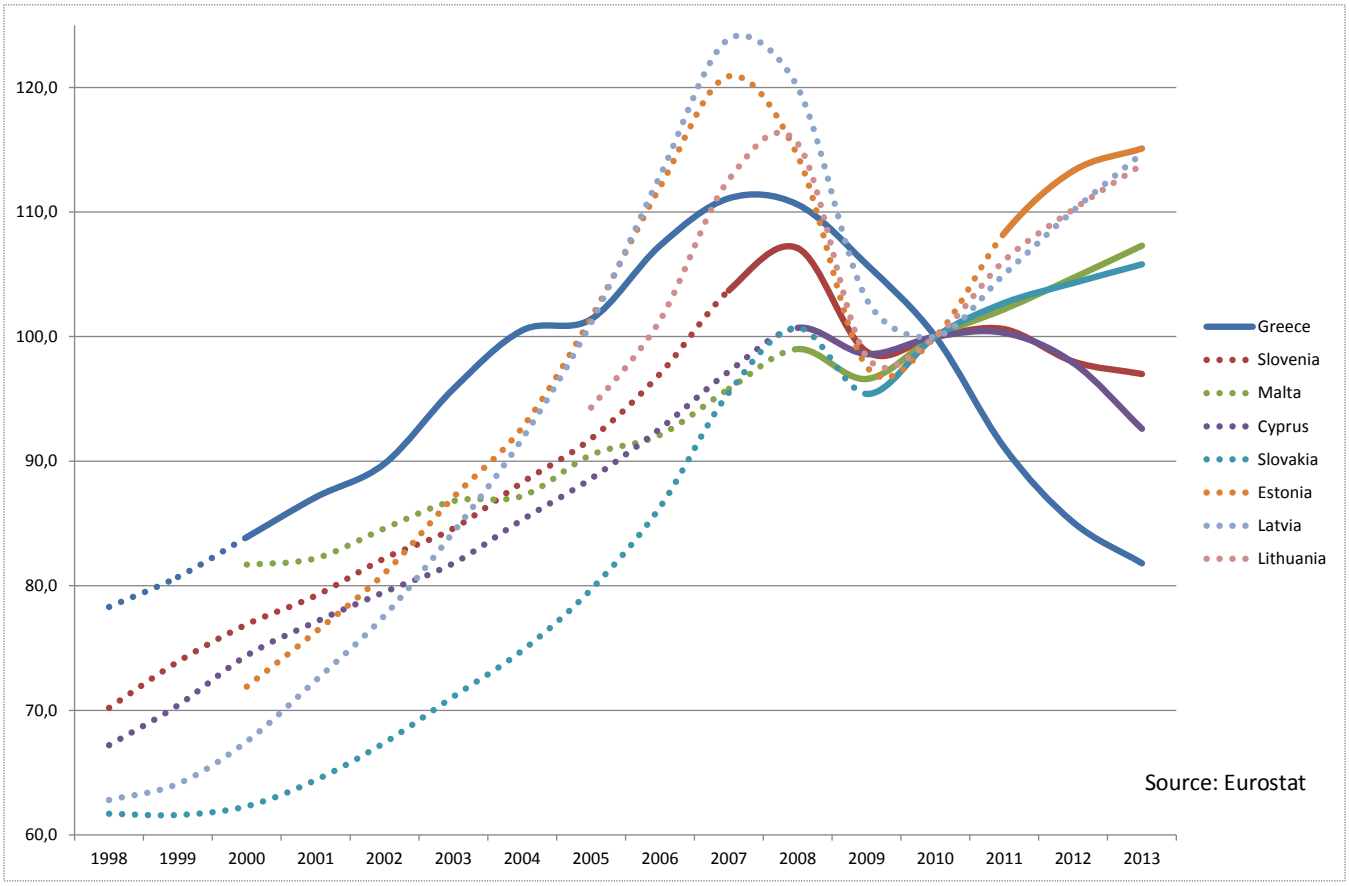


Chart 12 - The development of GDP of the third group

4.2 Nominal Unit Labor Cost

Considering another condition of the OCA Theory as the relative immobility of labor force within the Euro zone with USA (32) or fiscal transfer to affected area, i.e. in case of the Euro zone, from the core to the periphery and as pointed out Marga Peeters this could be one way transfer (33).

As was mentioned, with common currency there is lost possibility of depreciation of the national currency to increase competitiveness. As mentioned Marga Peeters (33), with flexible unit labor cost, the Euro zone's periphery imbalances and persistent current account deficits could be solved with nominal-wage growth (respectively decline) and productivity growth. For that reason I have chosen development of Nominal Unit Labor Cost (NULC) to

support and serve for better understanding the next chapter – The External balance of goods and services.

According to Stefan Collignon (34) the nominal unit labor costs (NULC) are defined as total wage compensation per unit of output (in different words a nominal wage per worker divided by labor productivity (34)). This is a very significant indicator of the economic competitiveness and crucial part of the condition of the OCA theory. Indexes of the nominal unit labor costs in this thesis are averages of the year 2005 and membership of countries in the third group is divided into two kinds of line - dotted line as a non-member and solid line as a member

Germany's nominal unit labor costs was rising one of the slow pace in the Euro zone in the years from 1998 to 2003 and even constantly decreases during the period from 2003 to 2007. From the year 2007, the growing trend is more significant due to growing wages and decreased in labor productivity between the years 2008 and 2009 (35). With the increase of minimal wage at level 8, 5 euro per hour in 2015, this trend could continue (30). In the case of Spain is an apparent decreasing trend from 2007, which is mainly caused by increasing labor productivity and stagnation of wages as mentioned Remi Bourgeot in his article Labor Costs and Crisis Management in the Euro Zone: A Reinterpretation of Divergences in Competitiveness (35). On the other hand, Spain´s unemployment rose during 2008-2013 from 11, 3% to 26, and 1% and has the fastest growth of NULC in the group of leaders in the period from 2000 to 2008 with stagnating labor productivity. Italy is a question of future development. As promised Mateo Renzi, Italian Prime Minister, Italy should increase incentives for firms to create new jobs and accomplish a revolution in the education. With gross government debt of 129, 7 per cent of GDP and with unemployment people younger 25 years of 40 per cent; this is a bold promise. (30)

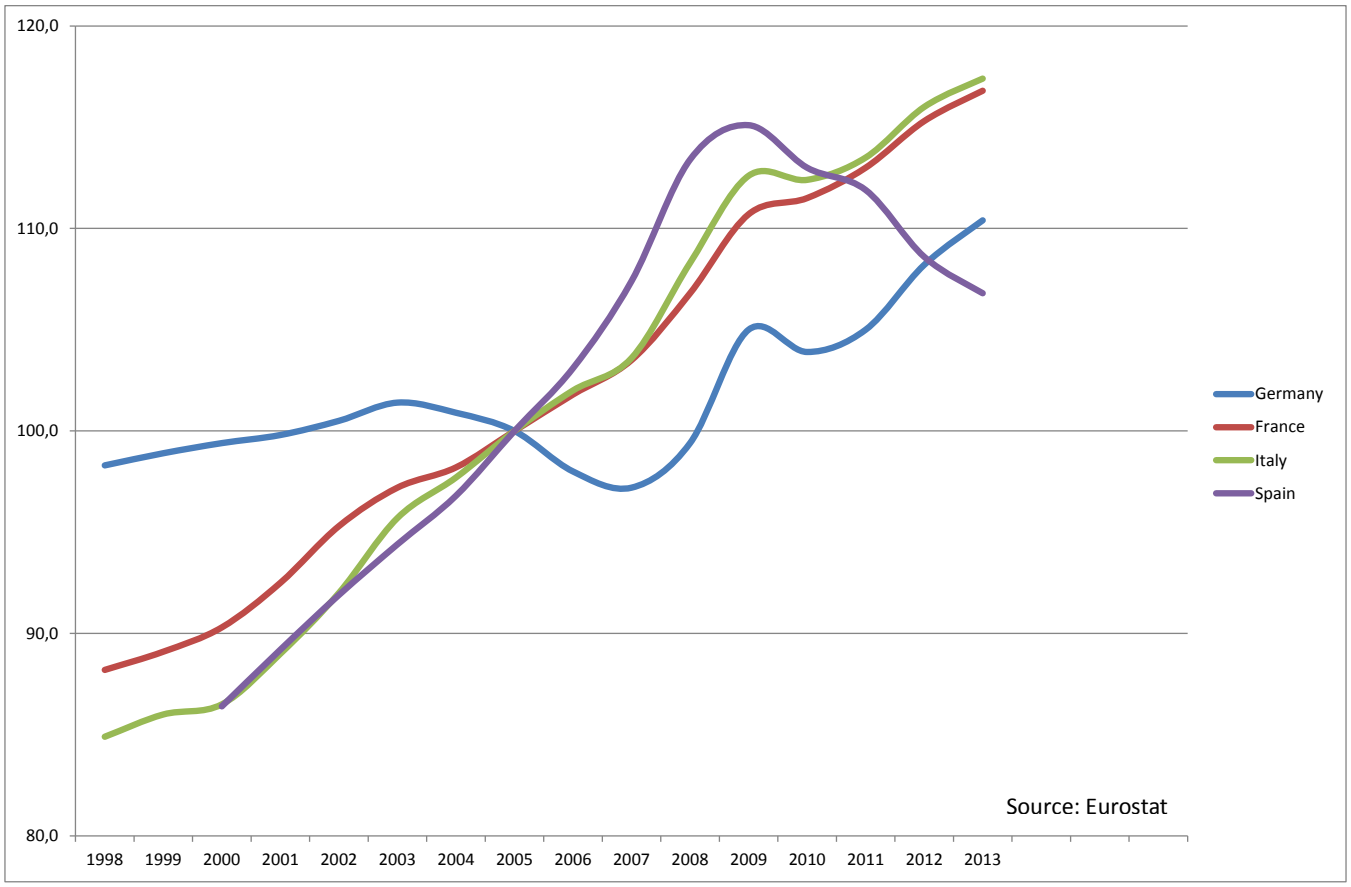


Chart 13 - The development of NULC of the first group

In the second group is dominating the NULC growth of Ireland between the years 2000 and 2008, which was caused by the increase in wages and thereafter inflation pressure. However, with increased problems of Irish banking crisis in the years 2008 and 2009, the level of wages became stabilized and with growing labor productivity during the years 2008 and 2013 is an apparent decreasing trend in NULC. (35) Another economy in problems is Portugal, which has one of the most significant increasing trends in NULC until 2009. After the financial crisis fully reveals the steady growing trend in labor productivity has appeared since 2010.

On the other hand, there is visible the soar of Luxembourg NULC in periods 2007-2009 and 2010-2011. The reason was decreasing productivity (see appendix) in the same periods, however, there need to be emphasized that during the years 2010 and 2011 when Luxembourg had inflation of 2, 7 and 3, 8 per cent respectively – i.e. significantly higher than the goal of the ECB however, this was higher by 1, 2 and 1, 0 percentage points than were average HICP for the Euro zone.

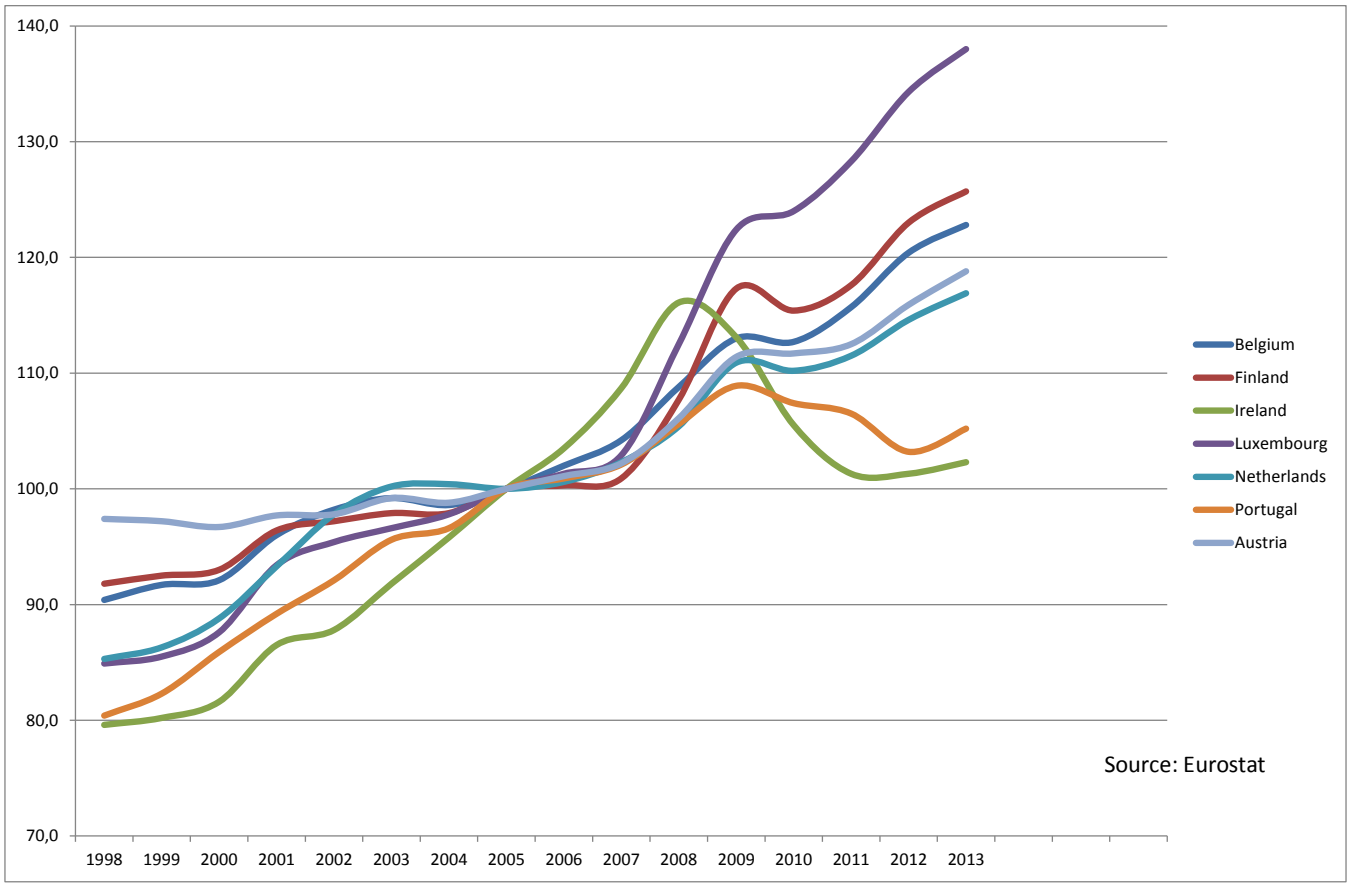


Chart 14 - The development of NULC of the second group

In the third group as the largest economy is Greece in the most considerable economic problems. As wages have started decreasing since 2009, the NUCL has been decreasing as well. On the other hand, there must be taken into account the fact that labor productivity significantly declined since 2007 and found the bottom in 2011. During the years 2012 and 2013 there was only a weak growth (see appendix). Even more, there must be taken in account fact that decreases in NULC were relatively slight with respect to GDP decline.

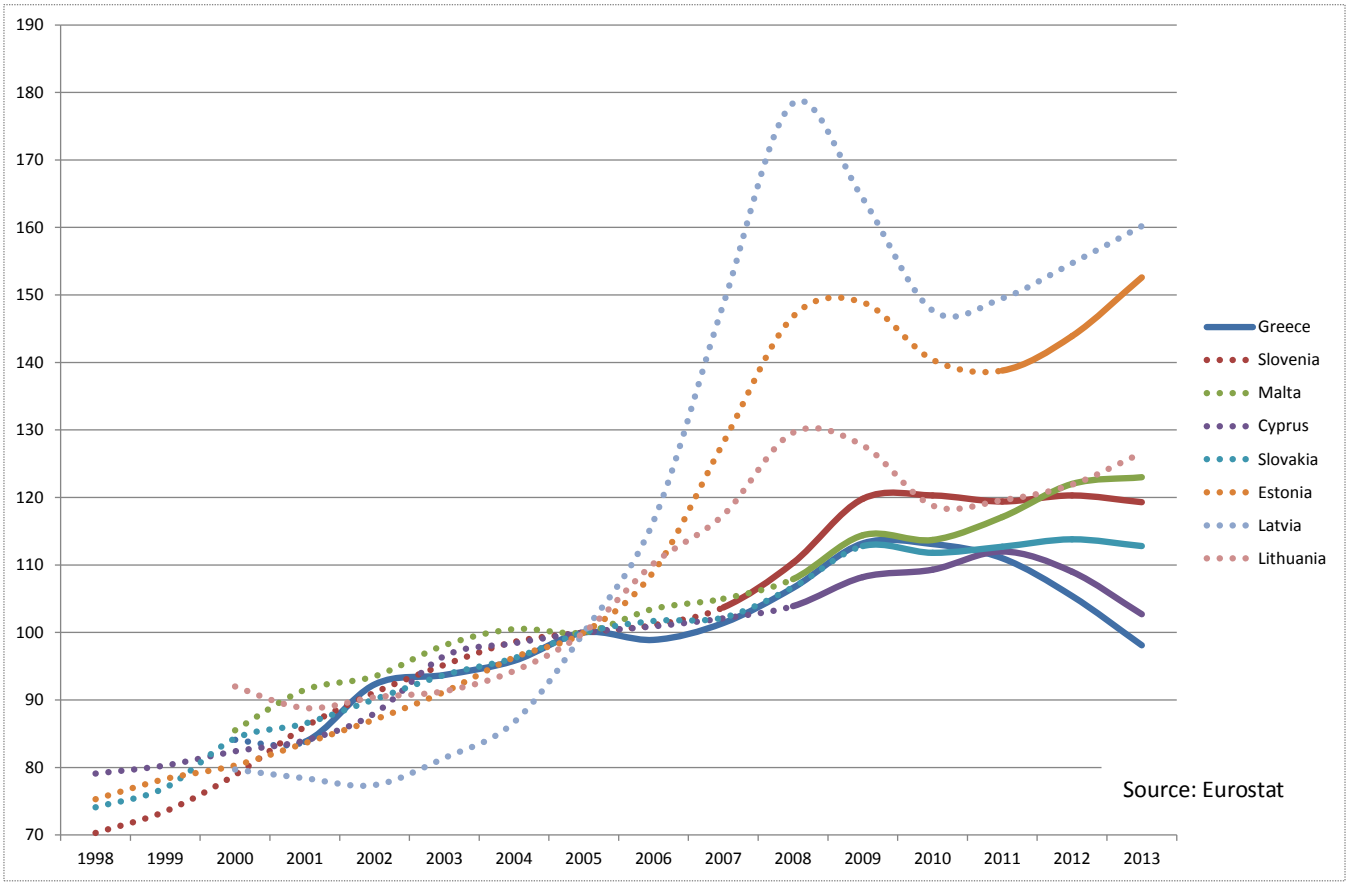


Chart 15 - The development of NULC of the third group

4.3 External balance of goods and services

Prof. Durčáková with Prof. Mandel define the Current Account of Balance of Payments that include the export and import of goods and services, income and cost associated with the international movement of capital and labor and international unilateral transfers (36). As shows Peeters, the Euro zone should foster competitiveness in periphery countries of Greece, Ireland, Portugal and Spain (33).

Kang and Shambaugh show parallels between deteriorating export performance and deterioration of competitiveness in the periphery (37).

With respect to the first group, Germany, as the largest economy in the Euro zone, has had a constant surplus of the External balance of goods and services. As shows Chart 16 - Export and Import of goods and services of Germany and External balance of goods and services of the Euro zone NULC of the first group, between the years 1998 to 2008, the NUCL was changed at minimum scale by comparison to others members of the Euro zone. This made the real exchange rate significantly under valuated to the rest of the majority members of the Euro

zone and for that reason goods and services were more competitive regarding euro zone's ones and this could even support export to non-members of Monetary Union. The reason is that German surplus was diminished by deficits of other members of the monetary union and euro did not adjust (appreciated) as much as the single currency of Germany itself (see chart).

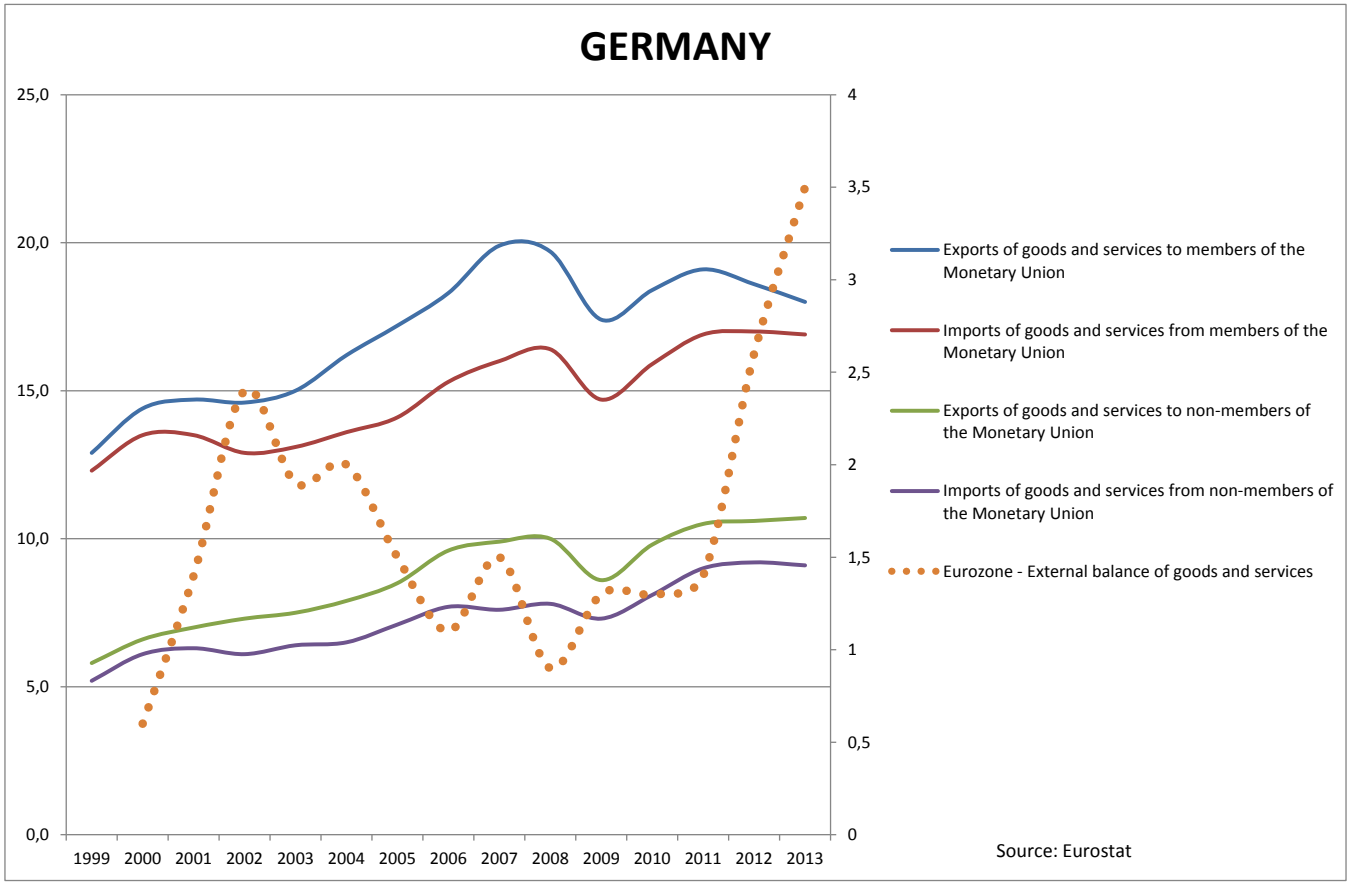


Chart 16 - Export and Import of goods and services of Germany and External balance of goods and services of the Euro zone

The zone represents German exports of goods and services to/from members and non-members of the Monetary Union (the left Axis) and External balance of goods and services of the Euro zone (the right Axis). As is apparent the surplus was enlarged from 1999 to 2008-2009 when German NUCL reached the minimum in chart NULC of the first group. However, at the same period is visible that the Euro zone's surplus is smaller due to deficits of other members.

Laureate of Nobel Prize, Paul Krugman, estimated that Germany has prices around 20% lower than the countries of the periphery (38). This represents massive deflation in the

periphery if countries want to be able to retake market share with even deepening the unemployment and worsening the debt burden as the debt is in Euros. Another option is significantly increasing inflationary pressure and consumption demand in Germany, which would make Germany less competitive in the Euro zone (decrease German surplus) and thus support exports of periphery countries (due to the fact that if one country has a surplus, the other needs to have a deficit) as explain Springford and Tilford (39).

From the Chart 17 - External balance of goods and services of the first group is apparent the that Spain had a break point in the external balance of goods and services to GDP between the years 2007-2008, at the same year what NUCL reached its peak, and Spain experienced the first surplus in 2012, after almost fifteen years in the Euro zone. The correlation between changes in NUCL and external balance of goods and services is negative 0, 81, which represent strong negative relationship (see appendix).

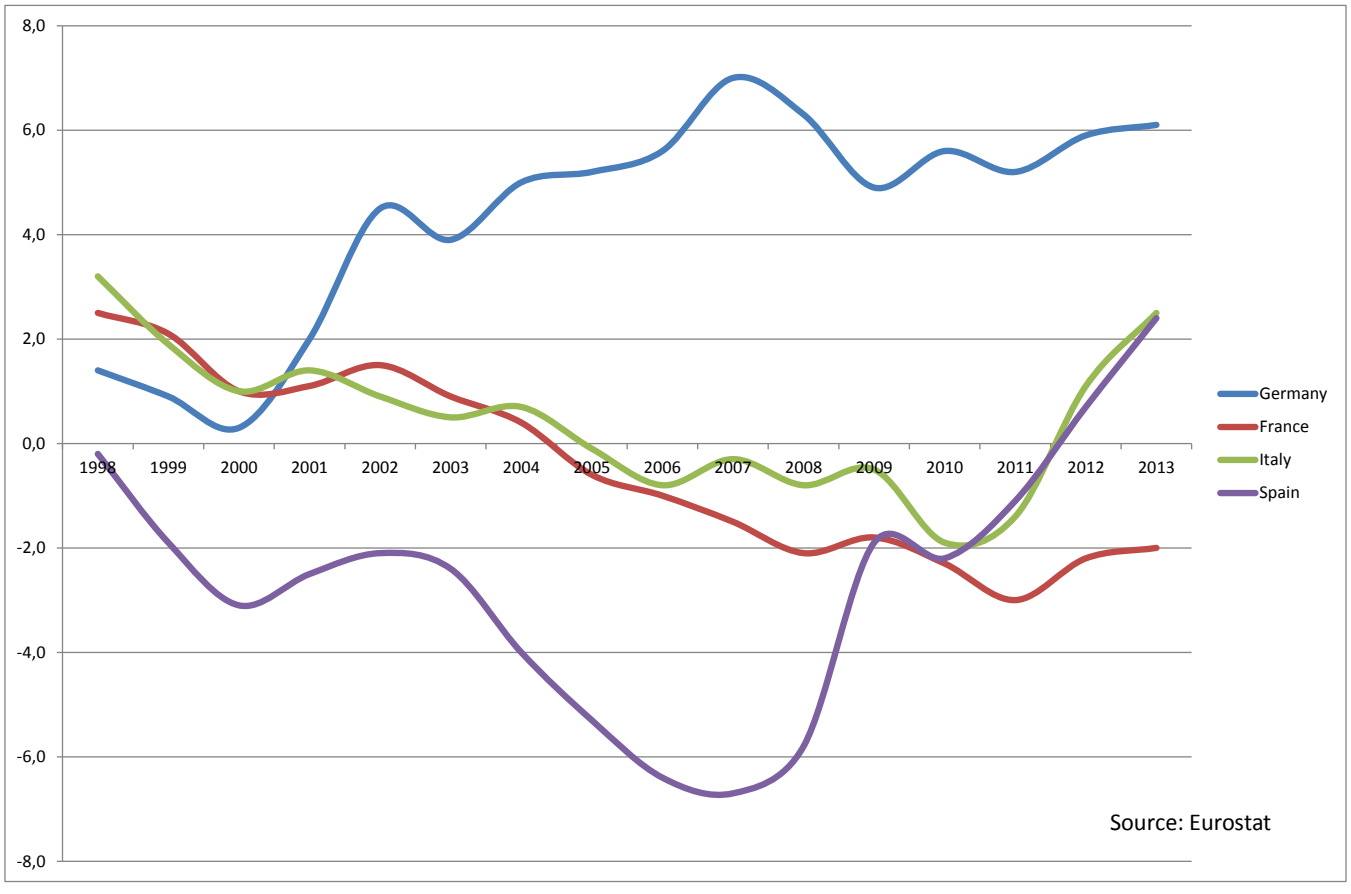
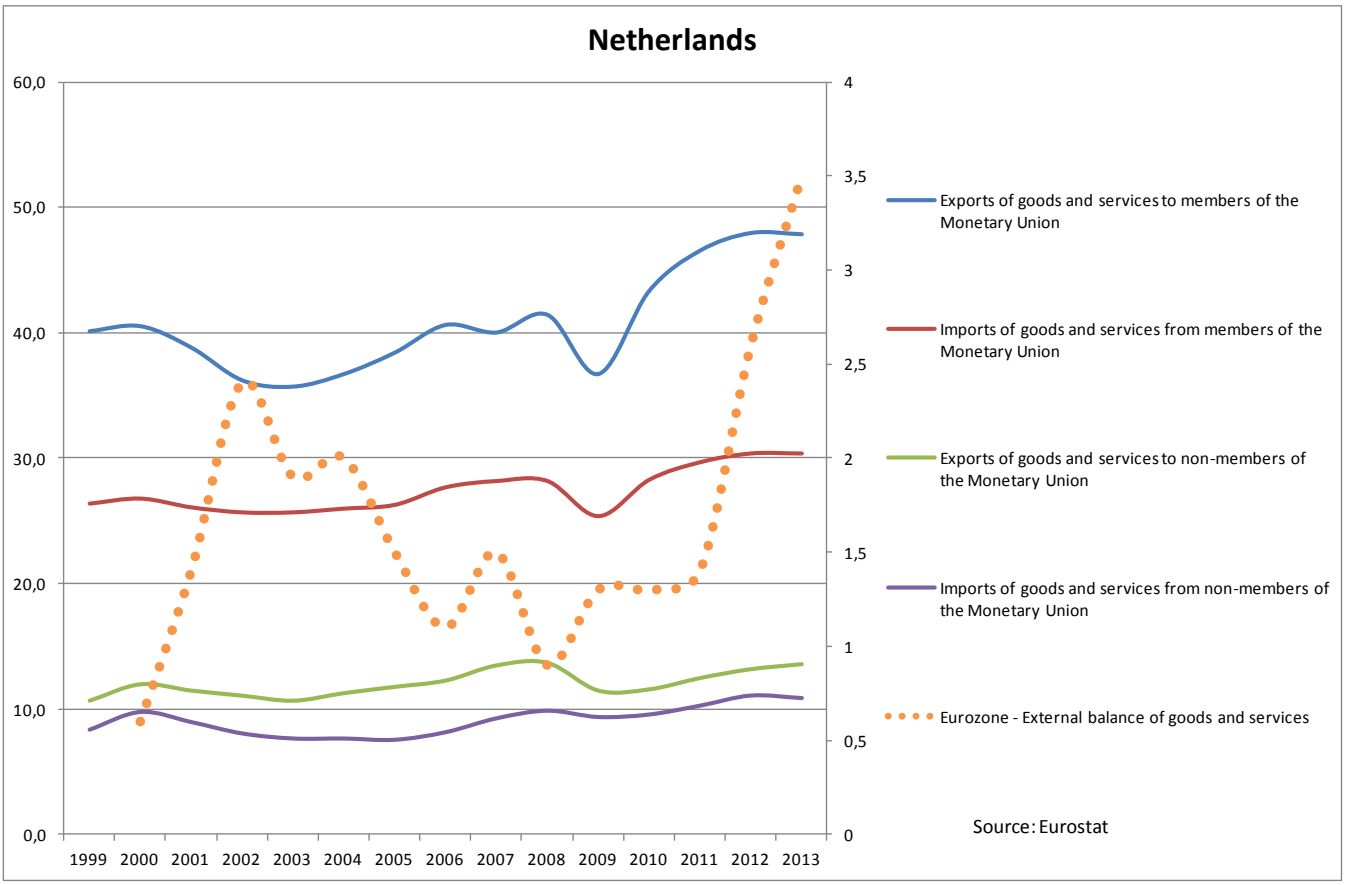


Chart 17 - External balance of goods and services of the first group

In the second group the highest surplus in the external balance of goods and services to GDP has the Luxemburg, which correlation coefficient is positive 0, 3. This number represents the

weak positive relationship between change in NUCL and the external balance of goods and services to GDP; in other words, that even if nominal unit cost of labor increase, the export is growing faster than import or import is falling faster than export. Correlation coefficients of Ireland and Portugal are negative 0, 61 and 0, 59, which support a hypothesis that with decreasing NUCL is growing the surplus of the external balance of goods and services.



The largest economy in the second group is the Netherlands, which represents about 6, 5 percent of Euro zone's GDP and constantly has had the significant surplus in external balance. Considering that NUCL of the Netherlands was growing the slowest pace in the group from 2003 to 2013 (not counting Ireland and Portugal which were hit the financial crisis and receive help from the EU).

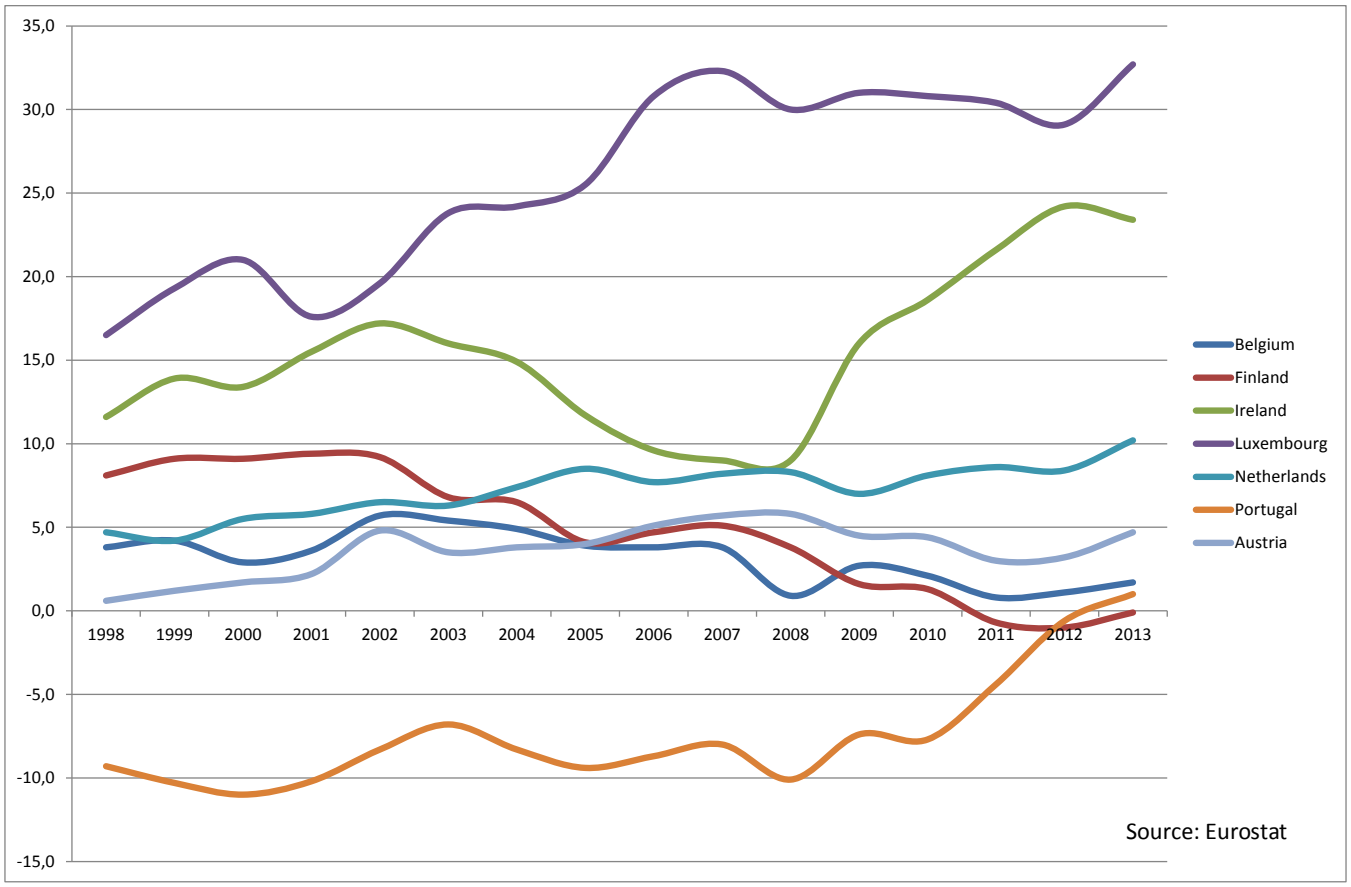


Chart 18 - External balance of goods and services of the second group

The third group shows the overall growing trend in the external balance of goods and services to GDP (only Estonian external balance was felt in 2012) as NUCL is growing the slowest pace and in the case of Greece and Cyprus is the substantial decreasing trend.[25] Regarding Greece is correlation coefficient is - 0, 76, which is a strong negative correlation and shows how Greece needed to adjust its NULC to become again more competitive. The correlation coefficient of the whole group is -0, 5.

[25] Need to say that majority of the External balance of goods and services of Members States in third group were negative for significant period of time

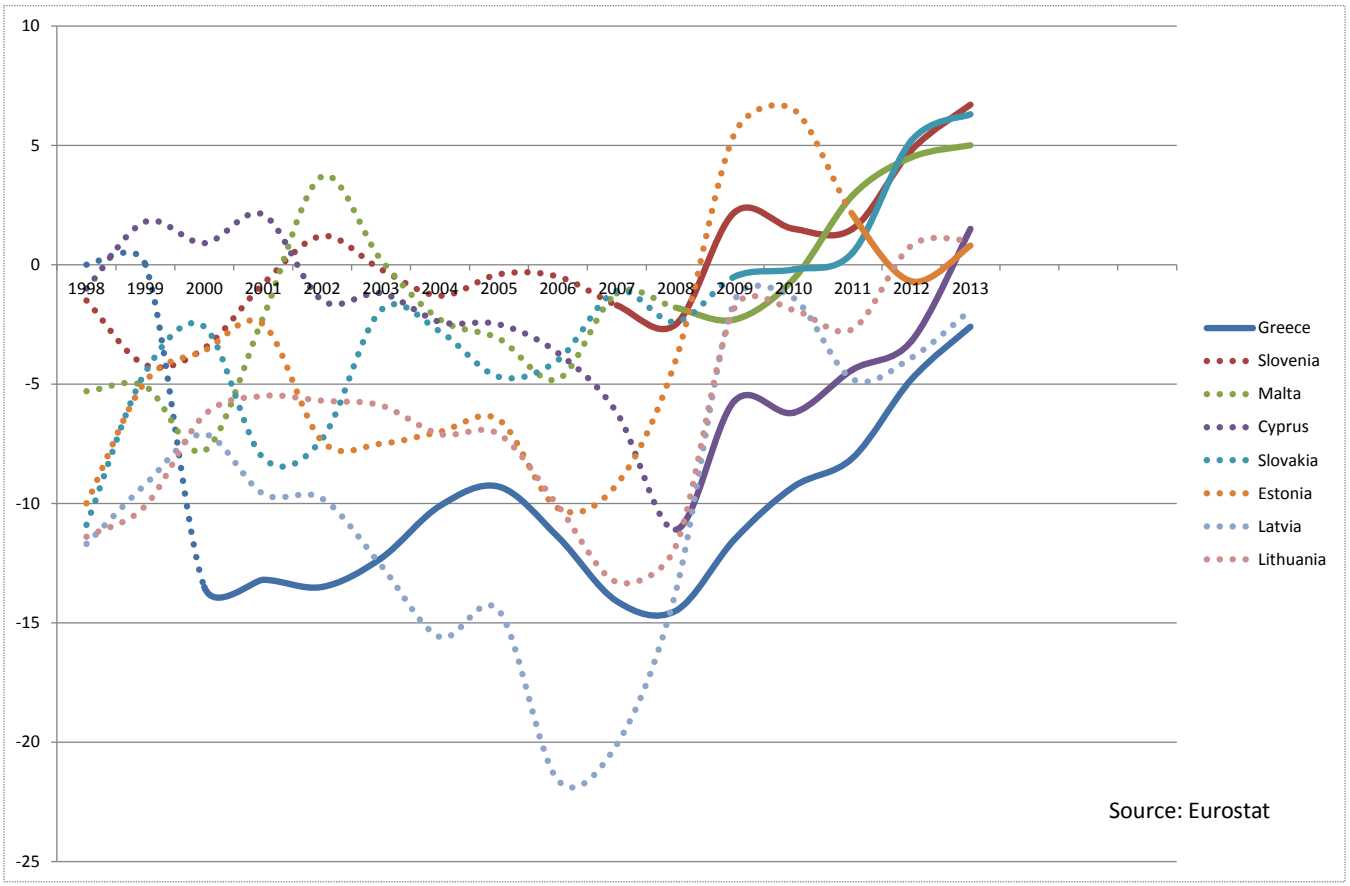


Chart 19 - External balance of goods and services of the third group

Conclusion

With the chosen problematic, I aim to analyze the monetary policy of the European Central Bank and to assess its impact on the States of the Euro area by using the main macro-economic indicators-the rate of inflation, economic growth, Nominal Unit Labor Cost and the External balance of goods and services. The work is divided into a theoretical and an empirical part. The theoretical part defines the main objective of the monetary policy of the European Central Bank and monetary policy instruments, approaches that are used to achieve the main objectives. Furthermore, the influence of the transmission mechanism that represents a chain of casual relations is highlighted. Vis-a-vis European Central Bank affects the change in monetary policy rates. The following chapeter elaborates on the theory compared in the context of the historical development of monetary policy since the inception of the European Central Bank after the current problems in the Euro zone. The theoretical part is concluded by the theory of the Optimal Currency Area, which specifies the criteria that a functional monetary zone should fulfill to revenues in these countries beyond the cost of losing sovereign monetary policy.

The empirical part based on specific macroeconomic date examines the impact of monetary policy by the European Central Bank for the Euro area and the individual States. For greater clearness Euro zone States are divided into three basic groups. The first group is made up of the four biggest economies, which have a major influence on the evolution of monetary policy by the European Central Bank and are at work identified as "Leaders". The second group is composed of the remaining founding countries. The third group consists of the acceding countries, which joined the area in its functioning.

The analysis shows that the European Central Bank almost throughout the entire period of the Euro area has problems with fulfilling its primary objective, which is the growth of the harmonized index of consumer prices, less than two percent, and at the same time close to this level. The deviation of the harmonized index of consumer prices of certain countries has constantly diverged from the Euro zone average. This is mainly due to the fact that keeping these exchange rates fixed with accepting the common currency; the Member States have lost the adjustment mechanism in the form of the exchange rate channel. It subsequently became more depend on responsible fiscal policy, since the condition for all countries of the

Monetary Union began to be the same and differences of microeconomic policies began to be fully visible in the pace of inflation.

In the empirical part I concluded that countries which are currently in the biggest economic problems - Greece, Spain, Portugal and partly Ireland, have been markedly different from the average, and the development of the harmonized index of consumer prices. In the case of Spain, Ireland and Greece from accession to the Euro area to the financial crisis, all countries had an above average economic growth, accompanied by higher inflation, which, for example, in Ireland for the period 1999-2003 ranged, on average, about two percentage points above the average inflation in the Euro area.

It is evident that the single monetary policy of the European Central Bank could not provide the average absolute deviation from the average inflation for the period of 15 years in the half percentage point tolerance in Spain, Finland, Luxemburg, the Netherlands, Portugal and for Ireland and Greece (13 years of membership in the Euro area), this was a deviation of more than 1 percentage point.

This occurs due to the fact that the monetary policy of the European Central Bank is mainly made up of the Group of "leaders", which has a weight on an average of the harmonized index of consumer prices almost 80%. On the contrary, the Member country with a small, open economy, that a small weight on the HICP will be the appropriateness of monetary policy in the Euro area is less, because with the loss of its own monetary policy, which had absorbed the economic shocks, the volatility of inflation will grow. Even in the group of “leaders” there is no homogeneity, since Spain has significantly deviated from the average inflation in the euro area and with distinct economic problems, together with Greece, Ireland and Portugal this represents a great potential threat to Monetary Union.

According to Mundell, who is a supporter of Monetary Union in Europe, the convergence of countries should take place very quickly. The analysis, however, pointed out that between first and second groups the reduction of absolute deviation of inflation from average is different and slow. Period of time after the financial crisis showed that the deviation of the first and second group has a strong negative correlation, which supports a hypothesis of the inhomogenity of the Euro area. The synchronization of the economic cycle, as another condition of the Optimum currency area, should Monetary Union meet as at the time of the

boom as in a time of recession. This has not happened and clearly shows inhomogeniety in all groups.

Considering the fact that different development of inflation, GDP and accompanying with the Nominal Labor Unit cost in the Euro zone, even widens the differences in competitiveness of countries. Countries as Germany or the Netherlands could exploit relatively favorable condition for export, which was caused by the incompetitiveness and deficits of the external balances of goods and services of other members. Analysis shows that there is a negative correlation between the development of the Nominal Labor Unit Cost and external balance of goods and services. In other words, countries which significantly differentiate from the HICP from the Euro zone's average, needed to adjust NUCL, which was not as fast as would be a change in the exchange rate to become again competitive. This adjustment in some cases represents a painful and dramatic way to decrease a standard of living to become again competitive and extricate itself from deficit of the external balance of goods and services to GDP in the historically high period of unemployment and gross government debts. Based on these results, it can be concluded that the monetary policy of the ECB is not suitable for all Member Countries of the euro area since the basic aim of fulfilling the growth of the HICP of less and close to two percent has not been accomplished, which was an important condition for homogeneity in the Euro area.

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Appendix

Convergence criteria

To ensure sustainable convergence, the Treaty on the Functioning of the European Union (Lisbon Treaty - TFEU) sets criteria which must be met by each EU Member State before taking part in the third stage of Economic and Monetary Union (EMU).

- *The Member State must not be subject to a Council decision that an excessive budgetary deficit exists;*
- *There must be a sustainable degree of price stability and an average inflation rate, observed over a period of one year before the examination; which does not exceed by more than one and a half percentage points that of the three best performing Member States in terms of price stability;*
- *There must be a long-term nominal interest rate which does not exceed by more than two percentage points that of the three best performing Member States in terms of price stability;*
- *The normal fluctuation margins provided for by the exchange rate mechanism must be respected without severe tensions for at least the last two years before the examination;*
- *Each Member State should ensure that its national legislation, including the statute of its national central bank (NCB), is compatible with Articles 130 and 131 of the Treaty and with the Statute of the European System of Central Banks (ESCB Statute). This obligation applying to Member States with derogation is also referred to as "legal convergence".*

The convergence criteria are meant to ensure that economic development within EMU is balanced and does not give rise to tensions between the EU Member States. It must also be remembered that the criteria relating to government deficit and government debt must continue to be met after the start of the third stage of EMU (1 January 1999). A Stability and Growth Pact with this end in view was adopted at the Amsterdam European Council in June 1997.[26]

[26] (63)

Gross domestic product at market prices; Chain linked volumes, index 2010=100

GEO/TIME	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium	80,2	83,2	86,1	86,9	88,3	89,1	92,1	93,9	96,3	99,2	100,2	97,6	100,0	101,6	101,7	102,0
Germany (u	87,1	88,8	91,4	93,0	93,0	92,3	93,4	94,1	97,6	100,8	101,8	96,1	100,0	103,6	104,0	104,1
Estonia	:	:	71,9	76,3	81,0	87,1	92,7	101,5	112,0	120,9	114,5	97,6	100,0	108,3	113,3	115,1
Ireland	64,9	71,6	78,4	82,5	87,3	89,9	94,0	99,4	104,8	110,0	107,1	100,3	100,0	102,8	102,5	102,6
Greece	78,3	80,7	83,9	87,1	89,8	95,8	100,5	101,4	107,3	111,1	110,6	105,8	100,0	91,1	85,1	81,8
Spain	73,0	76,3	80,3	83,5	85,9	88,7	91,5	94,9	98,8	102,5	103,7	100,0	100,0	99,4	97,3	96,1
France	82,5	85,3	88,7	90,4	91,4	92,1	94,7	96,2	98,5	100,8	101,0	98,1	100,0	102,1	102,4	102,7
Italy	92,0	93,5	96,9	98,6	98,9	99,0	100,6	101,6	103,6	105,1	104,0	98,3	100,0	100,6	98,3	96,4
Cyprus	67,2	70,4	74,4	77,1	79,5	81,8	85,3	88,6	92,6	97,2	100,7	98,6	100,0	100,3	97,9	92,6
Latvia	62,8	64,1	67,5	72,4	77,6	84,3	91,8	101,1	112,9	123,9	120,0	103,0	100,0	105,0	110,1	114,7
Lithuania	:	:	:	:	:	:	:	94,3	101,3	112,6	115,5	98,4	100,0	106,1	110,2	113,8
Luxembourg	:	:	76,9	78,4	81,0	82,0	86,0	89,5	93,9	100,0	100,5	95,1	100,0	102,6	102,4	104,5
Malta	:	:	81,7	82,2	84,6	86,8	87,2	90,5	92,1	95,8	99,0	96,6	100,0	102,2	104,7	107,3
Netherlands	80,0	83,7	87,3	88,8	88,7	89,0	90,6	92,7	96,2	100,2	102,3	98,9	100,0	101,7	100,1	99,3
Austria	80,5	83,3	86,2	87,3	88,8	89,4	91,9	93,8	97,0	100,5	102,0	98,2	100,0	103,1	104,0	104,2
Portugal	86,2	89,5	92,9	94,7	95,4	94,5	96,2	97,0	98,5	100,9	101,1	98,1	100,0	98,2	94,9	93,6
Slovenia	70,2	73,9	76,9	79,2	82,2	84,6	88,3	91,8	97,0	103,7	107,1	98,8	100,0	100,6	98,0	97,0
Slovakia	61,7	61,6	62,3	64,4	67,4	71,1	74,8	79,7	86,3	95,5	100,7	95,4	100,0	102,7	104,3	105,8
Finland	76,6	80,0	84,5	86,7	88,1	89,9	93,4	96,0	99,9	105,1	105,8	97,1	100,0	102,6	101,1	99,9

Source: Eurostat

Gross domestic product at market prices; Percentage change over previous period

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Germany (until 1990 former territory of t	1,9	1,9	3,1	1,5	0,0	-0,4	1,2	0,7	3,7	3,3	1,1	-5,1	4,0	3,3	0,7	0,4
France	3,4	3,3	3,7	1,8	0,9	0,9	2,5	1,8	2,5	2,3	-0,1	-3,1	1,7	2,0	0,0	0,2
Italy	1,4	1,5	3,7	1,9	0,5	0,0	1,7	0,9	2,2	1,7	-1,2	-5,5	1,7	0,4	-2,4	-1,9
Spain	4,5	4,7	5,0	3,7	2,7	3,1	3,3	3,6	4,1	3,5	0,9	-3,8	-0,2	0,1	-1,6	-1,2

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium	1,9	3,5	3,7	0,8	1,4	0,8	3,3	1,8	2,7	2,9	1,0	-2,8	2,3	1,8	-0,1	0,2
Finland	5,0	3,9	5,3	2,3	1,8	2,0	4,1	2,9	4,4	5,3	0,3	-8,5	3,4	2,8	-1,0	-1,4
Ireland	8,9	11,0	10,6	5,0	5,4	3,7	4,2	6,1	5,5	5,0	-2,2	-6,4	-1,1	2,2	0,2	-0,3
Luxembourg	6,5	8,4	8,4	2,5	4,1	1,7	4,4	5,3	4,9	6,6	-0,7	-5,6	3,1	1,9	-0,2	2,1
Netherlands	3,9	4,7	3,9	1,9	0,1	0,3	2,2	2,0	3,4	3,9	1,8	-3,7	1,5	0,9	-1,2	-0,8
Portugal	5,1	4,1	3,9	2,0	0,8	-0,9	1,6	0,8	1,4	2,4	0,0	-2,9	1,9	-1,3	-3,2	-1,4
Austria	3,8	3,5	3,7	0,9	1,7	0,9	2,6	2,4	3,7	3,7	1,4	-3,8	1,8	2,8	0,9	0,3

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Greece	3,4	3,4	4,5	4,2	3,4	5,9	4,4	2,3	5,5	3,5	-0,2	-3,1	-4,9	-7,1	-7,0	-3,9
Slovenia	3,5	5,3	4,3	2,9	3,8	2,9	4,4	4,0	5,8	7,0	3,4	-7,9	1,3	0,7	-2,5	-1,1
Malta	:	:	:	0,0	2,4	0,7	-0,3	3,6	2,6	4,1	3,9	-2,8	4,3	1,4	1,1	2,9
Cyprus	5,0	4,8	5,0	4,0	2,1	1,9	4,2	3,9	4,1	5,1	3,6	-1,9	1,3	0,4	-2,4	-5,4
Slovakia	4,4	0,0	1,4	3,5	4,6	4,8	5,1	6,7	8,3	10,5	5,8	-4,9	4,4	3,0	1,8	0,9
Estonia	6,8	-0,3	9,9	6,2	6,2	8,1	6,2	8,9	10,2	7,3	-4,1	-14,1	3,3	8,7	4,5	2,2
Latvia	5,6	2,9	5,3	7,3	7,1	7,7	8,8	10,1	11,0	10,0	-2,8	-17,7	-1,3	5,3	5,2	4,1
Lithuania	7,6	-1,0	3,6	6,7	6,8	10,3	7,4	7,8	7,8	9,8	2,9	-14,8	1,6	6,0	3,7	3,3

Source:Eurostat

HICP

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Euro area	1,2	2,2	2,4	2,3	2,1	2,2	2,2	2,2	2,2	3,3	0,3	1,6	2,7	2,5	1,3
Germany	0,6	1,4	1,9	1,4	1,0	1,8	1,9	1,8	2,3	2,8	0,2	1,2	2,5	2,1	1,6
France	0,6	1,8	1,8	1,9	2,2	2,3	1,9	1,9	1,6	3,2	0,1	1,7	2,3	2,2	1,0
Italy	1,7	2,6	2,3	2,6	2,8	2,3	2,2	2,2	2,0	3,5	0,8	1,6	2,9	3,3	1,3
Spain	2,2	3,5	2,8	3,6	3,1	3,1	3,4	3,6	2,8	4,1	-0,2	2,0	3,1	2,4	1,5

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium	1,1	2,7	2,4	1,6	1,5	1,9	2,5	2,3	1,8	4,5	0,0	2,3	3,4	2,6	1,2
Finland	1,3	2,9	2,7	2,0	1,3	0,1	0,8	1,3	1,6	3,9	1,6	1,7	3,3	3,2	2,2
Ireland	2,5	5,3	4,0	4,7	4,0	2,3	2,2	2,7	2,9	3,1	-1,7	-1,6	1,2	1,9	0,5
Luxembourg	1,0	3,8	2,4	2,1	2,5	3,2	3,8	3,0	2,7	4,1	0,0	2,8	3,7	2,9	1,7
Netherlands	2,0	2,3	5,1	3,9	2,2	1,4	1,5	1,7	1,6	2,2	1,0	0,9	2,5	2,8	2,6
Portugal	2,2	2,8	4,4	3,7	3,3	2,5	2,1	3,0	2,4	2,7	-0,9	1,4	3,6	2,8	0,4
Austria	0,5	2,0	2,3	1,7	1,3	2,0	2,1	1,7	2,2	3,2	0,4	1,7	3,6	2,6	2,1
Greece	2,1	2,9	3,7	3,9	3,4	3,0	3,5	3,3	3,0	4,2	1,3	4,7	3,1	1,0	-0,9
Slovenia	6,1	8,9	8,6	7,5	5,7	3,7	2,5	2,5	3,8	5,5	0,9	2,1	2,1	2,8	1,9
Malta	2,3	3,0	2,5	2,6	1,9	2,7	2,5	2,6	0,7	4,7	1,8	2,0	2,5	3,2	1,0
Cyprus	1,1	4,9	2,0	2,8	4,0	1,9	2,0	2,2	2,2	4,4	0,2	2,6	3,5	3,1	0,4
Slovakia	10,4	12,2	7,2	3,5	8,4	7,5	2,8	4,3	1,9	3,9	0,9	0,7	4,1	3,7	1,5
Estonia	3,1	3,9	5,6	3,6	1,4	3,0	4,1	4,4	6,7	10,6	0,2	2,7	5,1	4,2	3,2
Latvia	2,1	2,6	2,5	2,0	2,9	6,2	6,9	6,6	10,1	15,3	3,3	-1,2	4,2	2,3	0,0
Lithuania	1,5	1,1	1,6	0,3	-1,1	1,2	2,7	3,8	5,8	11,1	4,2	1,2	4,1	3,2	1,2

Source: Eurostat

Government deficit/surplus, debt and associated data [gov_10dd_edpt1]

GEO/TIME	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium	118,8	114,7	109,1	107,8	104,9	101,3	96,6	94,8	90,8	86,9	92,2	99,3	99,6	102,1	104,0	104,5
Germany (until 1990 former territory of the FRG)	59,3	59,9	58,7	57,5	59,2	62,9	64,6	66,8	66,3	63,5	64,9	72,4	80,3	77,6	79,0	76,9
Estonia	:	:	:	:	:	:	:	:	:	:	:	:	6,5	6,0	9,7	10,1
Ireland	51,6	46,7	36,3	33,4	30,7	30,1	28,3	26,2	23,8	24,0	42,6	62,2	87,4	111,1	121,7	123,3
Greece	:	:	:	:	:	:	:	:	103,4	103,1	109,3	126,8	146,0	171,3	156,9	174,9
Spain	62,5	60,9	58,0	54,2	51,3	47,6	45,3	42,3	38,9	35,5	39,4	52,7	60,1	69,2	84,4	92,1
France	60,8	60,0	58,4	57,9	59,8	63,9	65,5	67,0	64,2	64,2	67,8	78,8	81,5	85,0	89,2	92,2
Italy	110,8	109,6	105,1	104,7	101,9	100,4	100,0	101,9	102,5	99,7	102,3	112,5	115,3	116,4	122,2	127,9
Cyprus	54,9	55,1	55,2	56,9	60,1	63,6	64,7	63,3	58,9	53,7	44,7	53,5	56,5	66,0	79,5	102,2
Latvia	9,1	12,2	12,2	14,0	13,2	13,9	14,2	11,7	9,9	8,4	18,6	36,4	46,8	42,7	40,9	38,2
Lithuania	16,5	23,0	23,8	22,9	22,4	21,4	19,3	18,3	18,0	16,7	15,4	29,0	36,3	37,3	39,9	39,0
Luxembourg	7,6	6,7	6,1	6,6	6,5	6,4	6,5	6,3	7,0	7,2	14,4	15,5	19,6	18,5	21,4	23,6
Malta	51,2	62,1	60,9	65,5	63,2	69,1	72,0	70,1	64,6	62,4	62,7	67,8	67,6	69,8	67,9	69,8
Netherlands	62,7	58,5	51,3	48,8	48,3	49,4	50,0	49,4	44,9	42,7	54,8	56,5	59,0	61,3	66,5	68,6
Austria	63,6	66,4	65,9	66,5	66,3	65,5	64,8	68,3	67,0	64,8	68,5	79,7	82,4	82,1	81,7	81,2
Portugal	51,8	51,0	50,3	53,4	56,2	58,7	62,0	67,4	69,2	68,4	71,7	83,6	96,2	111,1	124,8	128,0
Slovenia	22,8	23,7	25,9	26,1	27,3	26,7	26,8	26,3	26,0	22,7	21,6	34,5	37,9	46,2	53,4	70,4
Slovakia	33,9	47,1	49,6	48,3	42,8	41,5	40,6	33,8	30,7	29,8	28,2	36,0	41,1	43,5	52,1	54,6
Finland	46,9	44,1	42,5	41,0	40,2	42,8	42,7	40,0	38,2	34,0	32,7	41,7	47,1	48,5	53,0	56,0

Source: Eurostat

Labour share in total factor productivity: total economy																	
:	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Belgium	94,04	95,34	96,20	95,95	96,95	97,51	98,94	99,21	100,11	100,91	100,40	98,93	100,00	100,14	100,02	100,35	
Germany (	95,90	96,10	96,48	97,57	97,83	98,04	98,50	98,92	100,56	101,42	101,27	97,90	100,00	101,27	100,84	100,57	
Estonia	75,57	77,25	81,63	83,93	86,53	88,83	91,92	95,19	97,73	101,52	98,81	96,22	100,00	100,83	102,36	102,55	
Ireland	87,95	89,73	92,22	93,34	95,61	96,21	96,85	97,26	97,72	98,02	96,88	97,78	100,00	102,67	102,83	101,55	
Greece	91,91	93,42	95,25	96,98	97,35	100,06	101,41	101,39	103,53	104,74	103,77	101,58	100,00	98,85	99,58	99,87	
Spain	94,55	94,48	94,72	95,00	95,22	95,39	95,59	95,66	95,94	96,25	96,79	98,36	100,00	101,21	102,71	104,03	
France	94,39	95,05	95,69	95,76	95,95	96,40	97,92	98,46	99,20	99,83	99,67	98,67	100,00	100,99	101,28	101,60	
Italy	97,78	98,42	99,59	99,62	99,14	98,88	99,56	100,11	100,29	100,59	100,19	98,44	100,00	100,28	99,44	99,31	
Cyprus	92,88	94,19	96,06	96,73	97,27	96,89	97,08	97,24	98,54	99,25	100,03	99,21	100,00	99,90	100,84	100,78	
Latvia	73,98	75,40	78,53	80,72	82,31	84,86	87,91	91,41	96,51	99,14	98,02	98,10	100,00	101,64	103,26	104,18	
Lithuania	73,83	74,26	77,10	80,98	82,17	85,18	88,57	91,43	94,72	98,62	100,47	96,71	100,00	102,63	103,61	104,54	
Luxembou	99,32	100,99	102,42	100,53	100,72	100,38	101,68	102,38	102,93	103,98	101,74	98,34	100,00	99,83	98,50	98,51	
Malta	90,36	91,91	95,48	94,92	96,23	97,67	97,70	98,94	99,11	99,98	100,38	99,08	100,00	99,73	99,58	98,92	
Netherlan	91,93	93,04	94,66	94,73	94,83	95,67	97,20	98,38	99,34	100,19	100,33	98,97	100,00	100,65	100,01	100,41	
Austria	91,77	93,08	94,25	95,10	96,33	96,49	97,47	98,26	99,74	100,83	100,67	99,26	100,00	100,96	100,70	100,40	
Portugal	91,16	92,49	93,39	93,50	93,73	93,75	95,24	95,98	96,68	98,19	98,09	97,93	100,00	100,07	100,58	101,57	
Slovenia	84,41	86,32	87,69	88,97	90,19	91,95	94,24	96,85	99,25	101,37	101,82	97,91	100,00	101,41	100,25	100,55	
Slovakia	81,81	82,66	83,82	84,81	86,50	88,10	90,19	92,07	94,47	97,87	98,79	97,31	100,00	100,40	101,08	102,05	
Finland	91,70	92,75	94,64	95,28	95,62	96,69	98,63	99,35	100,66	102,48	101,56	97,82	100,00	100,77	99,35	99,53	
																Source: AMECO	

	BOND YIELDS																
:	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998
Austria	1,55	2,01	2,37	3,71	3,23	3,94	4,36	4,3	3,8	3,39	4,13	4,14	4,96	5,08	5,56	4,68	4,71
Belgium	1,79	2,41	3,00	4,24	3,46	3,9	4,42	4,33	3,82	3,43	4,15	4,18	4,99	5,13	5,59	4,75	4,75
Cyprus	6,00	6,50	7,00	4,6	4,6	4,6	4,6	4,48	4,13	5,16	5,8	4,74	5,7	7,63	:	:	:
Estonia	:	:	:	:	5,97	7,98	8,16	6,09	5,01	4,17	4,39	5,25	8,42	10,15	:	:	:
Finland	1,50	1,86	1,89	3,48	3,01	3,74	4,29	4,29	3,78	3,35	4,11	4,13	4,98	5,04	5,48	4,72	4,79
France	1,73	2,20	2,54	3,63	3,12	3,65	4,23	4,3	3,8	3,41	4,1	4,13	4,86	4,94	5,39	4,61	4,64
Germany	1,22	1,57	1,50	3,25	2,74	3,22	3,98	4,22	3,76	3,35	4,04	4,07	4,78	4,8	5,26	4,49	4,57
Greece	6,79	10,05	22,50	12,57	9,09	5,17	4,8	4,5	4,07	3,59	4,26	4,27	5,12	5,3	6,1	6,3	8,48
Ireland	2,46	3,79	6,17	9,52	5,74	5,23	4,53	4,31	3,77	3,33	4,08	4,13	5,01	5,01	5,51	4,71	4,8
Italy	2,97	4,32	5,49	4,82	4,04	4,31	4,68	4,49	4,05	3,56	4,26	4,25	5,04	5,19	5,58	4,73	4,88
Latvia	2,59	3,34	4,57	5,91	10,34	12,36	6,43	5,28	4,13	3,88	4,86	4,90	5,41	7,57	:	:	:
Lithuania	2,87	3,83	4,83	5,57	14,00	5,61	5,61	4,55	4,08	3,70	4,50	5,32	6,06	8,15	:	:	:
Luxembourg	1,40	1,85	1,82	3,5	3,17	4,23	4,61	4,46	3,3	2,41	2,84	3,32	4,7	4,86	5,52	4,67	4,73
Malta	2,67	3,36	4,13	4,67	4,19	4,54	4,81	4,72	4,32	4,56	4,69	5,04	5,82	6,1			
Netherlands	1,51	1,96	1,93	3,49	2,99	3,69	4,23	4,29	3,78	3,37	4,1	4,12	4,89	4,96	5,4	4,63	4,63
Portugal	3,84	6,29	10,55	8,11	5,4	4,21	4,52	4,43	3,92	3,44	4,14	4,18	5,01	5,16	5,6	4,78	4,88
Slovakia	2,15	3,19	4,55	4,3	3,87	4,71	4,72	4,49	4,41	3,52	5,03	4,99	6,94	8,04	:	:	:
Slovenia	3,38	5,81	5,81	4,36	3,83	4,38	4,61	4,53	3,85	3,81	4,68	6,4	8,71	:	:	:	:
Spain	2,81	4,56	5,85	5,28	4,25	3,98	4,37	4,31	3,79	3,39	4,1	4,12	4,96	5,12	5,53	4,73	4,83
																Source: Eurostat	

GERMANY

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Exports of goods and services to members of the Monetary Union	12,9	14,4	14,7	14,6	15,0	16,2	17,2	18,3	19,9	19,7	17,4	18,4	19,1	18,6	18,0
Imports of goods and services from members of the Monetary Union	12,3	13,5	13,5	12,9	13,1	13,6	14,1	15,3	16,0	16,4	14,7	15,9	16,9	17,0	16,9
Exports of goods and services to non-members of the Monetary Union	5,8	6,6	7,0	7,3	7,5	7,9	8,5	9,6	9,9	10,0	8,6	9,8	10,5	10,6	10,7
Imports of goods and services from non-members of the Monetary Union	5,2	6,1	6,3	6,1	6,4	6,5	7,1	7,7	7,6	7,8	7,3	8,1	9,0	9,2	9,1
Exchange rate - EUR/USD		0,9236	0,8956	0,9456	1,1312	1,2439	1,2441	1,2556	1,3705	1,4708	1,3948	1,3257	1,3920	1,2848	1,3281
Eurozone - External balance of goods and services		0,6	1,4	2,4	1,9	2,0	1,5	1,1	1,5	0,9	1,3	1,3	1,4	2,6	3,5

NETHERLAND

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Exports of goods and services to members of the Monetary Union	40,1	40,5	38,8	36,2	35,7	36,7	38,4	40,6	40,0	41,4	36,7	43,3	46,5	47,9	47,8
Imports of goods and services from members of the Monetary Union	26,4	26,8	26,1	25,7	25,7	26,0	26,3	27,7	28,2	28,2	25,4	28,3	29,7	30,4	30,4
Exports of goods and services to non-members of the Monetary Union	10,7	12,0	11,5	11,1	10,7	11,3	11,8	12,3	13,5	13,7	11,5	11,6	12,5	13,2	13,6
Imports of goods and services from non-members of the Monetary Union	8,4	9,8	9,0	8,1	7,7	7,7	7,6	8,2	9,3	9,9	9,4	9,6	10,3	11,1	10,9
Eurozone - External balance of goods and services		0,6	1,4	2,4	1,9	2,0	1,5	1,1	1,5	0,9	1,3	1,3	1,4	2,6	3,5

Source: Eurostat

UNIT Percentage of GDP

INDIC_NA Imports of goods and services from members of the Monetary Union

GEO/TIME	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium	:	39,6	44,3	44,3	43,8	42,7	44,4	46,6	48,1	48,3	51,5	44,0	47,3	51,0	52,5	:
Germany	:	12,3	13,5	13,5	12,9	13,1	13,6	14,1	15,3	16,0	16,4	14,7	15,9	16,9	17,0	16,9
Estonia	:	:	47,2	42,9	39,0	36,4	38,1	38,9	39,1	34,4	30,8	24,4	29,1	33,3	36,5	33,5
Ireland	:	:	:	:	19,9	19,6	20,2	20,0	20,3	20,4	23,3	23,7	26,2	26,4	28,0	28,0
Greece	:	:	:	:	:	14,7	14,4	14,5	14,1	15,3	15,9	13,8	12,2	12,9	11,6	11,6
Spain	0,0	15,8	17,0	16,7	16,0	15,8	15,9	15,6	17,0	16,7	15,2	12,4	13,5	14,1	:	:
France	11,5	11,5	12,7	12,5	12,3	11,9	12,1	12,8	12,9	13,2	13,3	11,9	13,0	13,8	13,8	13,8
Italy	:	11,1	12,2	12,3	12,0	11,8	12,1	12,2	13,0	13,4	12,9	11,2	12,8	13,2	12,7	12,4
Cyprus	:	:	:	20,6	20,2	19,8	24,4	25,6	26,3	27,6	28,8	24,3	24,3	23,2	22,7	20,7
Latvia	:	:	17,0	19,7	19,2	19,9	19,3	19,8	21,8	21,1	17,7	13,2	17,0	24,0	24,7	22,8
Lithuania	:	:	17,1	18,8	20,5	19,8	20,3	20,3	22,1	:	:	:	:	:	:	:
Luxembourg	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Malta	:	:	:	:	:	:	43,1	44,2	51,3	46,6	44,3	40,7	48,2	49,6	52,6	44,1
Netherlands	27,2	26,4	26,8	26,1	25,7	25,7	26,0	26,3	27,7	28,2	28,2	25,4	28,3	29,7	30,4	30,4
Austria	:	23,8	25,8	26,7	25,6	26,1	28,8	28,9	30,0	31,4	31,2	27,2	29,6	31,6	30,9	30,3
Portugal	:	25,6	26,6	26,0	25,2	24,3	25,3	25,2	26,8	27,2	28,2	24,5	26,1	26,0	24,8	25,3
Slovenia	:	:	:	:	:	:	:	42,3	44,9	45,8	44,4	36,1	40,6	44,0	43,7	42,0
Slovakia	32,2	30,8	32,6	37,4	33,2	35,6	39,2	38,2	33,1	30,7	32,3	22,7	25,1	27,3	27,6	27,4
Finland	:	:	:	:	:	:	:	:	:	:	:	12,8	13,6	13,8	14,1	13,4

Source: Eurostat

UNIT	Percentage of GDP															
INDIC_NA	Imports of goods and services from non-members of the Monetary Union															
GEO/TIME	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium	:	9,6	11,1	10,7	10,1	9,8	10,2	10,3	10,8	10,6	10,8	8,8	10,0	11,1	10,5	:
Germany (u	:	5,2	6,1	6,3	6,1	6,4	6,5	7,1	7,7	7,6	7,8	7,3	8,1	9,0	9,2	9,1
Estonia	:	:	:	:	15,3	22,1	24,3	25,6	25,6	27,8	29,2	23,9	29,8	37,6	38,2	38,6
Ireland	:	:	:	:	27,0	20,0	19,3	19,8	20,2	21,3	21,5	19,1	20,8	20,9	20,7	20,6
Greece	:	:	:	:	:	2,7	3,4	3,8	4,8	6,0	4,7	4,4	5,0	4,2	4,9	4,2
Spain	17,9	3,3	3,5	3,3	3,1	2,8	3,8	3,9	2,9	4,3	3,8	3,5	3,9	4,0	:	:
France	3,0	3,1	3,4	3,2	3,6	3,3	3,4	3,5	3,7	3,8	3,7	2,8	3,1	3,3	3,2	3,1
Italy	:	2,7	2,9	2,7	2,7	2,7	2,6	2,8	3,0	3,5	3,3	2,8	3,1	3,3	3,2	3,2
Cyprus	27,7	26,2	28,6	6,8	7,0	6,7	7,1	7,6	7,4	9,3	9,7	8,0	7,9	7,5	7,2	6,6
Latvia	:	:	16,9	17,7	18,5	19,5	22,9	25,4	26,9	25,4	23,5	19,2	22,6	22,7	24,1	22,9
Lithuania	0,0	0,0	6,4	7,0	7,7	7,4	16,5	17,6	20,8	:	:	:	:	:	:	:
Luxembourg	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Malta	:	:	:	:	:	:	13,9	13,2	16,1	20,7	18,6	17,6	14,5	17,5	16,6	16,9
Netherlands	8,4	8,4	9,8	9,0	8,1	7,7	7,7	7,6	8,2	9,3	9,9	9,4	9,6	10,3	11,1	10,9
Austria	:	6,3	6,8	7,1	6,8	7,0	6,4	8,2	7,9	8,3	8,4	6,0	6,7	7,4	7,5	7,6
Portugal	28,9	3,5	3,5	2,9	2,8	2,6	3,1	3,3	3,4	3,4	3,5	3,1	3,5	3,4	3,3	3,3
Slovenia	:	:	:	:	:	:	:	7,3	7,8	8,5	8,7	7,2	8,2	9,3	9,3	9,9
Slovakia	2,7	2,7	3,1	3,6	3,4	2,8	15,8	20,0	29,3	30,9	27,4	27,4	28,9	31,6	32,4	31,5
Finland	:	:	:	:	:	:	:	:	:	:	:	10,9	11,9	12,2	13,2	14,0
														Source of data		Eurostat

UNIT	Percentage of GDP															
INDIC_NA	Exports of goods and services to members of the Monetary Union															
GEO/TIME	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium	:	42,8	46,6	47,1	45,5	44,6	45,6	46,5	47,7	48,8	50,1	42,9	44,8	46,7	46,8	:
Germany (u	:	12,9	14,4	14,7	14,6	15,0	16,2	17,2	18,3	19,9	19,7	17,4	18,4	19,1	18,6	18,0
Estonia	:	:	38,8	36,9	31,1	30,7	30,1	32,4	26,8	24,3	25,5	25,7	29,1	31,5	29,9	27,9
Ireland	:	:	:	:	35,6	33,7	34,5	35,0	32,2	32,3	33,2	36,6	38,5	38,2	39,4	37,3
Greece	:	:	:	:	:	7,8	8,0	7,5	7,2	7,6	8,1	6,8	7,4	8,9	8,8	9,9
Spain	0,0	15,3	16,3	15,6	15,0	14,6	14,3	13,6	14,7	14,2	14,0	13,0	14,6	15,9	:	:
France	12,6	12,7	13,6	13,2	12,8	12,4	12,5	12,4	12,4	12,3	12,2	10,8	11,7	12,4	12,2	12,3
Italy	:	11,2	11,8	12,1	11,5	11,2	11,3	11,4	12,0	12,7	12,3	10,4	11,5	12,1	12,2	12,1
Cyprus	:	:	:	8,3	7,4	7,8	9,9	12,4	14,4	16,3	15,3	13,4	11,7	13,4	11,6	12,5
Latvia	:	:	9,7	10,1	10,1	10,7	10,2	10,9	10,5	9,3	9,3	9,5	11,6	18,3	18,6	17,8
Lithuania	0,0	0,0	12,9	14,3	15,2	13,9	15,1	15,7	14,5	:	:	:	:	:	:	:
Luxembourg	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Malta	:	:	:	:	:	:	26,5	27,3	31,0	28,7	30,5	28,0	33,4	33,9	34,6	32,1
Netherlands	39,9	40,1	40,5	38,8	36,2	35,7	36,7	38,4	40,6	40,0	41,4	36,7	43,3	46,5	47,9	47,8
Austria	:	22,0	24,1	25,2	25,6	25,4	27,6	28,7	29,8	31,7	31,6	27,6	30,0	31,2	30,8	30,9
Portugal	0,0	17,6	18,4	18,0	17,8	17,9	18,2	17,9	19,7	20,3	19,9	17,2	19,2	21,6	22,2	23,1
Slovenia	:	:	:	:	:	:	:	35,4	37,7	38,2	36,3	32,2	36,7	40,5	41,6	42,4
Slovakia	30,2	32,3	36,0	38,8	37,0	40,7	41,7	36,5	42,0	43,4	39,5	33,6	37,6	41,2	43,3	43,1
Finland	:	:	:	:	:	:	:	:	:	:	:	10,3	10,6	10,7	10,4	10,8
														Source of data		Eurostat

UNIT	Percentage of GDP															
INDIC_NA	Exports of goods and services to non-members of the Monetary Union															
GEO/TIME	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium	:	10,3	11,6	11,5	11,5	10,8	11,2	11,7	12,3	11,7	11,7	10,2	10,7	11,0	11,0	:
Germany (u	:	5,8	6,6	7,0	7,3	7,5	7,9	8,5	9,6	9,9	10,0	8,6	9,8	10,5	10,6	10,7
Estonia	:	:	:	:	17,5	23,0	25,3	25,2	24,9	24,8	24,5	22,0	27,6	31,6	31,5	33,9
Ireland	:	:	:	:	27,4	20,0	20,5	20,1	19,5	20,8	20,8	20,2	21,8	22,4	24,6	25,4
Greece	:	:	:	:	:	3,3	4,1	4,7	4,9	5,9	5,1	4,3	4,6	4,5	5,0	5,5
Spain	19,3	4,2	4,5	5,0	4,7	4,6	5,1	5,2	4,3	5,2	4,7	3,8	4,1	4,9	:	:
France	3,8	3,9	4,2	4,1	4,8	4,4	4,4	4,4	4,4	4,6	4,3	3,1	3,4	3,5	3,5	3,5
Italy	:	3,7	4,0	3,7	3,6	3,7	3,8	3,8	4,1	4,6	4,3	3,3	3,7	3,9	4,0	4,0
Cyprus	18,9	20,6	22,5	15,3	17,3	18,5	17,8	16,6	17,0	16,9	13,9	10,7	10,9	11,0	10,3	9,1
Latvia	:	:	15,3	16,9	16,7	16,9	18,9	21,6	19,6	19,0	18,6	18,3	22,8	19,8	20,3	20,5
Lithuania	0,0	0,0	6,9	7,6	8,2	7,5	17,7	20,1	21,2	:	:	:	:	:	:	:
Luxembourg	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Malta	:	:	:	:	:	:	18,7	19,2	20,6	26,5	24,0	20,4	21,0	23,4	22,8	23,0
Netherlands	10,3	10,7	12,0	11,5	11,1	10,7	11,3	11,8	12,3	13,5	13,7	11,5	11,6	12,5	13,2	13,6
Austria	:	7,9	8,6	8,8	8,8	8,8	8,1	10,2	10,3	11,6	11,8	8,3	8,8	9,3	9,0	9,1
Portugal	22,2	4,3	4,4	4,2	4,1	4,0	4,2	4,0	4,3	4,4	4,2	3,7	4,1	4,6	5,1	5,3
Slovenia	:	:	:	:	:	:	:	8,1	9,5	11,1	10,6	8,6	10,3	11,2	11,3	11,7
Slovakia	1,5	1,9	2,5	3,0	3,1	2,3	17,3	27,7	29,9	31,2	31,0	26,4	30,4	34,1	37,6	37,6
Finland	:	:	:	:	:	:	:	:	:	:	:	8,9	10,1	10,6	10,9	11,4
														Source of data		Eurostat

External balance of goods and services; percentage of GDP

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Germany	1,4	0,9	0,3	2,0	4,5	3,9	5,0	5,2	5,6	7,0	6,3	4,9	5,6	5,2	5,9	6,1
France	2,5	2,1	1,0	1,1	1,5	0,9	0,4	-0,6	-1,0	-1,5	-2,1	-1,8	-2,3	-3,0	-2,2	-2,0
Italy	3,2	1,9	1,0	1,4	0,9	0,5	0,7	-0,1	-0,8	-0,3	-0,8	-0,5	-1,9	-1,4	1,1	2,5
Spain	-0,2	-1,9	-3,1	-2,5	-2,1	-2,4	-4,0	-5,3	-6,4	-6,7	-5,8	-1,9	-2,2	-1,1	0,7	2,4

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium	3,8	4,2	2,9	3,6	5,7	5,4	4,9	3,9	3,8	3,8	0,9	2,7	2,1	0,8	1,1	1,7
Finland	8,1	9,1	9,1	9,4	9,2	6,8	6,5	4,1	4,7	5,1	3,8	1,6	1,3	-0,7	-1,0	-0,1
Ireland	11,6	13,9	13,4	15,5	17,2	16,0	14,9	11,7	9,6	9,0	9,0	16,0	18,6	21,6	24,2	23,4
Luxembourg	16,5	19,3	21,0	17,6	19,6	23,8	24,2	25,5	30,8	32,3	30,0	31,0	30,8	30,4	29,1	32,7
Netherlands	4,7	4,2	5,5	5,8	6,5	6,3	7,4	8,5	7,7	8,2	8,3	7,0	8,1	8,6	8,4	10,2
Portugal	-9,3	-10,3	-11,0	-10,2	-8,3	-6,8	-8,3	-9,4	-8,7	-8,0	-10,1	-7,4	-7,7	-4,4	-0,6	1,0
Austria	0,6	1,2	1,7	2,2	4,8	3,5	3,8	4,0	5,1	5,7	5,8	4,5	4,4	3,0	3,2	4,7

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Greece	:	:	-13,5	-13,2	-13,5	-12,3	-10,1	-9,3	-11,4	-14,1	-14,5	-11,5	-9,3	-8,1	-4,8	-2,6
Slovenia	-1,5	-4,2	-3,5	-0,8	1,2	-0,2	-1,3	-0,4	-0,5	-1,7	-2,5	2,2	1,5	1,5	4,8	6,7
Malta	-5,3	-5,1	-7,8	-2,2	3,7	0,2	-2,3	-3,1	-4,8	-1,2	-1,8	-2,3	-0,6	2,9	4,5	5,0
Cyprus	-1,0	1,8	0,9	2,1	-1,5	-1,2	-2,4	-2,5	-3,7	-6,2	-11,1	-5,7	-6,2	-4,4	-3,2	1,5
Slovakia	-10,9	-4,5	-2,6	-8,1	-7,3	-1,9	-2,8	-4,7	-4,0	-1,1	-2,4	-0,5	-0,2	0,5	5,2	6,3
Estonia	-10,0	-4,9	-3,6	-2,5	-7,4	-7,5	-7,0	-6,5	-10,2	-9,2	-4,0	5,5	6,5	2,1	-0,7	0,8
Latvia	-11,7	-9,2	-7,1	-9,6	-9,8	-12,6	-15,6	-14,5	-21,6	-20,1	-13,7	-1,5	-1,4	-4,8	-3,9	-1,9
Lithuania	-11,4	-10,1	-6,3	-5,5	-5,7	-5,9	-7,1	-7,1	-10,1	-13,3	-11,8	-1,8	-1,9	-2,7	0,8	1,0

Change in Nominal unit labour cost

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Germany	0,2	0,6	0,5	0,4	0,7	0,9	-0,5	-0,9	-2,0	-0,8	2,3	5,6	-1,1	1,0	3,1	2,1
France	-0,1	1,0	1,4	2,4	3,1	2,0	1,0	1,9	1,8	1,7	3,2	3,7	0,7	1,3	2,1	1,2
Italy	-2,0	1,2	0,6	2,8	3,4	4,1	2,0	2,4	2,0	1,6	4,5	4,0	-0,2	1,0	2,2	1,2
Spain	:	:	:	3,2	3,1	2,7	2,5	3,3	3,1	4,1	5,6	1,4	-1,8	-1,0	-3,0	-1,7

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium	1,1	1,4	0,4	4,2	2,3	1,0	-0,6	1,4	2,0	2,2	4,4	3,9	-0,3	2,7	4,1	1,9
Finland	1,3	0,7	0,6	3,6	0,8	0,8	-0,1	2,2	0,3	0,5	6,7	9,0	-1,6	1,9	4,6	2,2
Ireland	:	0,7	1,7	5,9	1,5	4,5	4,4	4,4	3,5	5,0	6,8	-2,6	-6,7	-4,0	0,0	1,0
Luxembourg	-1,0	0,7	2,5	6,5	2,2	1,3	1,2	2,3	1,3	1,6	9,4	8,7	1,4	3,4	4,7	2,7
Netherlands	2,7	1,3	2,9	5,0	4,8	2,5	0,2	-0,4	0,6	1,6	3,0	5,3	-0,7	1,1	2,8	2,0
Portugal	3,3	2,4	4,4	3,9	3,2	3,8	1,0	3,6	0,9	1,1	3,5	3,1	-1,4	-0,9	-3,0	1,9
Austria	-0,2	-0,2	-0,5	1,1	0,1	1,4	-0,4	1,2	1,1	1,2	3,7	5,0	0,3	0,8	3,0	2,5

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Greece	:	:	:	-0,3	10,2	1,5	2,2	4,4	-1,1	2,6	5,1	6,2	-0,1	-1,8	-5,1	-6,8
Slovenia	4,9	4,5	7,3	9,0	6,0	4,4	3,6	1,5	1,1	2,6	6,4	8,6	0,4	-0,7	0,8	-0,8
Malta	:	:	:	7,0	2,2	4,9	2,5	-0,5	3,5	1,4	2,8	6,0	-0,5	2,9	4,2	0,8
Cyprus	-0,5	1,5	2,6	1,9	4,8	9,7	1,9	1,7	0,9	1,2	1,8	4,1	1,0	2,5	-2,7	-5,8
Slovakia	4,8	3,9	9,5	2,7	4,2	4,0	2,6	3,9	1,7	0,5	4,4	5,7	-0,9	0,8	1,0	-0,9
Estonia	4,4	4,0	2,7	4,1	4,1	4,7	5,7	3,8	9,0	17,5	14,6	1,5	-5,7	-1,2	3,7	6,0
Latvia	:	:	:	-1,6	-1,2	5,2	6,5	15,4	16,5	27,5	20,0	-7,9	-10,1	1,2	3,5	3,5
Lithuania	:	:	:	-3,5	1,8	1,0	3,3	6,0	10,2	6,6	10,4	-1,5	-7,0	0,7	1,9	3,8

CORRELATION

	1998-2013
Germany	0,06484
France	-0,23673
Italy	-0,30567
Spain	-0,81143
Averarage	-0,32224
Belgium	-0,43757
Finland	-0,31977
Ireland	-0,60565
Luxembourg	0,299903
Netherlands	-0,33286
Portugal	-0,58588
Austria	0,494108
Averarage	-0,21253
Greece	-0,76013
Slovenia	-0,48949
Malta	-0,12039
Cyprus	-0,10465
Slovakia	-0,47688
Estonia	-0,61969
Latvia	-0,81869
Lithuania	-0,63747
Averarage	-0,50342