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ECONOMIA E POLÍTICAS PÚBLICAS

TRABALHO FINAL DE MESTRADO

Dissertação

THE EUROPEAN CENTRAL BANK'S ROLE IN THE EUROZONE CRISIS

POR SÍLVIA SIMÕES ESTEVES

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ORIENTAÇÃO:

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RESUMO

Esta dissertação pretende analisar o papel do Banco Central Europeu (BCE) na União Europeia e na crise da zona euro. Especialmente, procura compreender se a arquitetura inicial sobre a qual o BCE foi construído era adequada para responder aos desafios que se vieram colocar durante a crise, procurando analisar as alterações motivadas pelo desenvolvimento da crise.

O BCE é uma instituição fundamental para a união monetária. Estando no centro da questão, dadas as características financeira e bancária da crise, o BCE tem vindo a enfrentar muitos desafios. Muitos têm criticado o papel do BCE na crise da zona euro, realçando a sua limitação de poderes pelos Tratados e a sua lentidão na resolução dos problemas de liquidez dos estados membros. Outros consideram que o BCE tem sido a instituição determinante para a resolução da crise. Mas durante o período em que a crise se foi aprofundando, e em que a crise financeira inicial evoluiu para a crise da zona euro, o BCE enfrentou e continua a enfrentar muitos desafios e mudanças, assumindo um papel decisivo na crise.

No Sistema Monetário Europeu, o BCE é agora uma instituição mais forte com mais instrumentos e novos poderes. A União Europeia enfrentou o seu maior desafio e conseguiu sobreviver unida pelo euro. Contudo, o BCE, que tinha a estabilidade de preços como o seu principal objetivo, enfrenta agora o perigo de deflação. Manter a estabilidade financeira é agora um objetivo fundamental e a regulação das instituições financeiras é fundamental para a estabilidade da zona euro. Uma união bancária eficaz, capaz de regular a integração financeira e de efetuar uma supervisão bancária centralizada adequada é fundamental para a continuidade da zona euro. Nesta presumível fase final da crise europeia, o BCE tornou-se num banco central muito mais interventivo devido às circunstâncias excepcionais que tem vindo a enfrentar.

Esta dissertação começa por caracterizar o papel de um banco central numa união monetária e os seus constrangimentos. Seguidamente, expõe as políticas, os instrumentos e a arquitetura original do BCE. No final, é abordado concretamente o papel do BCE na crise da zona euro com a análise paramétrica dos efeitos das políticas do BCE nas taxas de juro das dívidas soberanas.

Palavras-Chave: Banco Central Europeu; Crise Zona Euro; União Monetária

ABSTRACT

This dissertation is an attempt to explain the role of the European Central Bank (ECB) in the European Union and in the Eurozone crisis. In depth, it attempts to comprehend if the initial framework on which the ECB was built was designed to respond to the problems faced by the Eurozone, and to analyze the changes motivated by the course of the Eurozone crisis.

The ECB is a key institution in the monetary union. Being at the heart of the problem, the ECB faces many challenges. Many have criticized the ECB's role in the current crisis, pointing out its lack of power and slowness in solving the Eurozone's problems, while others see the ECB as the main contributor to solving the ongoing crisis. But as the crisis deepened, and the initial financial crisis became the Eurozone crisis, the ECB has experienced many challenges and changes, playing a key role in the Eurozone crisis.

The ECB is now a stronger European institution with more instruments and power. The European Union has faced its biggest challenge and has, for now, survived united by the euro. However, the ECB that saw price stability as its primary objective now faces the danger of deflation. Financial stability is now of major importance and the regulation of financial and banking institutions must be undertaken by the ECB in order to prevent future crisis. A strong Banking Union, capable to regulate financial integration and to supervise banking institutions is fundamental to the Eurozone. In this presumably final stage of the Eurozone crisis, the ECB has evolved into a much more active central bank, due to the exceptional circumstances.

This work characterizes the role of a central bank in a monetary union and its constraints. After, it describes the ECB's framework, instruments and policies. Lastly, this dissertation addresses the ECB's role in the Eurozone crisis supported by a parametrical analysis of the effects of the ECB's measures on sovereign debts.

Key-Words: European Central Bank; Eurozone Crisis; Monetary Union

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Introduction

The long lasting euro zone crisis has put Europe and the European Monetary Union's (EMU) future at the crossroads. The EMU's framework and its road to a monetary union are the key issues that initiate this analysis. Though with an ambitious beginning the monetary union faced numerous challenges, both economic and political, from the start.

The European Central Bank (ECB) is a key institution in the monetary union. Being at the heart of the problem, the ECB faces many challenges. Many have criticized the ECB's role in the current crisis, pointing out its lack of power and slowness in solving Eurozone's problems, while others see the ECB as the main contributor to solving the ongoing crisis. But as the crisis deepened, and the initial financial crisis became the Eurozone crisis, the ECB has experienced many challenges and changes, playing a key role in the Eurozone crisis.

This dissertation is an attempt to explain the role of the European Central Bank in the European Union and in the Eurozone crisis. In depth, it attempts to comprehend if the original framework on which the ECB was built on was originally designed to respond to the problems faced by the Eurozone, and to analyze the changes motivated by the course of the Eurozone crisis.

The first chapter characterizes the role of a central bank in a monetary union and its constraints. Chapter two and three define the ECB's framework and policies. Finally, the fourth chapter addresses the ECB's role in the Eurozone crisis supported by a parametrical analysis of the effects of the ECB's measures on sovereign debts.

1. The role of a central bank in a monetary union

Before the European Central Bank was created there was an intense debate over the viability of the monetary union. The common currency and the European Central Bank are the core elements of the Euro System. The theoretical framework of the monetary unions is based on the Mundell's Theory of Optimum Currency Areas.

1.1 The theory of Optimum Currency Areas and asymmetric shocks

Mundell presented his Optimum Currency Areas Theory in an article in 1961[1], based on the cost side of the cost-benefit analysis of a monetary union. The costs of a Monetary Union derive from the fact that countries loose their national currencies, and consequently their monetary and exchange rate policies. The national central banks lose capabilities, and a new common central bank is created for the common currency. The loss of the monetary and exchange rate policies implies that countries will be no longer able to change the price of their currency through devaluations and revaluations, and neither will they be able to change the interest rate and determine the quantity of money in circulation.

The Optimum Currencies Areas Theory determines the conditions that countries should satisfy so that a monetary union is advisable, pointing the conditions that ensure that the benefits of the monetary union are bigger than its costs.

Given two countries in a monetary union, for example Italy and Germany, which have a common currency, the euro, and a common central bank, let's consider an asymmetric demand shift.

[1] In Mundell, R. (1961), "A Theory of Optimum Currency Areas", *American Economic Review*, 51

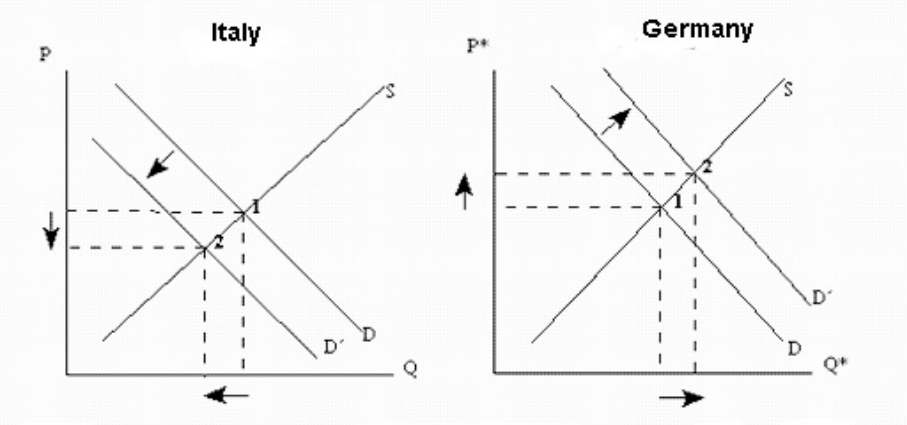


Figure 1: An asymetric shock in a Monetary Union

If consumers shift their preferences from Italy to Germany, it is called an asymmetric shock because it shifts in a different direction in each country. In Italy, the demand curve shifts downward, as in Germany it shifts upward. Assuming that these shifts are permanent due, for example, to a change in consumer's preferences, the result is that output and therefore employment will decrease in Italy, and the opposite happens in Germany.

Since in a Monetary Union countries are deprived from using the exchange rate to adjust prices and make the economy more competitive, the demand shock cannot be reversed. So, both countries face an adjustment problem – Italy faces lower output and higher unemployment, while Germany is faced with a boost in growth, and so incurs in inflationary pressures.

In a monetary union, according to Mundell, two labor market conditions are necessary to promote the adjustment and that should reinstate equilibrium to the economies: wage flexibility and labor mobility. It means that without the foreign exchange rate policy, only migratory movements between countries and wage flexibility can restore equilibrium.

So, if wages are flexible in both countries, wages will decrease in Italy, and move upward in Germany, therefore moving the supply curve downwards in Italy, and upwards in Germany. These shifts will lead to a new equilibrium, where the price of output in Italy declines making its products more competitive, while the opposite happens in Germany.

Also, if there is labor mobility between countries the unemployed Italian workers will move to Germany, solving the unemployment problem in Italy and the inflationary pressure problem in Germany.
The obvious obstacles to a monetary union emerge if none or scarce wage flexibility and labor mobility are observed. Therefore, countries in a monetary Union will face more difficulties adjusting to asymmetric demand shifts than the ones that are not constrained by the common currency constraints.
The theory of optimum currency areas assumes that a monetary union is optimal if one of the following conditions is satisfied: there is sufficient wage flexibility or there is sufficient mobility of labor (De Grauwe (2009)).

In sum, labor mobility and wage flexibility are central to the success of a monetary union. However there are a lot more variables to take into account while addressing the viability of a monetary union.

Major differences between countries, namely the choice between inflation and unemployment and different labor markets characteristics, increase the costs of joining a monetary union.

Also, the European Commission produced the report "One market, One Money"[2] stating that asymmetric shocks in demand tend to occur less frequently in a monetary union. To the European Commission, since trade between industrial European countries is based on economies of scale and product differentiation, this tends to lead to a trade structure where countries buy and sell to each other the same categories of products. Therefore, the European Commission argued that demand shocks tend to be mostly symmetric and will affect countries in similar ways.

Paul Krugman too, addressed the optimum currency areas subject, and argued that Mundell's ideas cannot be ignored. Krugman (1991) states that trade integration that results of economies of scale also leads to regional concentration of industrial activities, because when constraints to trade diminish it becomes possible to produce closer to the final markets and to concentrate production that makes economies of scale more profitable. This argument claims that trade integration may actually lead to more

[2] European Commission (1990), "One Market, One Money: An evaluation of the potential benefits and cost of forming and economic and monetary union", European Economy, No. 44

concentration of industrial activities. Krugman (1991) argues this by comparing the regional distribution of car production in Europe and the USA, showing that, in fact, US car industries are much more concentrated in the USA. So Krugman's arguments point out that more integration may mean more industry concentration and therefore lead to more asymmetric shocks, the opposite deduction of the European Commissions' view.

The European Commission's assessment claims that more integration leads to the decrease of asymmetric shocks, therefore to an intensification of symmetry among countries in the monetary union. De Grauwe (2009) argues in favor of the European Commission view. And although acknowledging that integration might lead to concentration, he argues that it also leads to the growing irrelevance of national borders as a factor to determine the location of economic activities. Concentration is an underlying effect, but what the European Commission argues, and undertook as argument to undermine the potential effects of integration on asymmetry among countries, was the fact that industries will go beyond borders.

Hans Tietmeyer (1990)[3] stressed, 24 years ago, while addressing the challenges of central banking in a Monetary Union, that great imbalances coexisted in the countries that were to be part of the European Monetary Union. Without the exchange policy as an instrument to adjust regional imbalances, the risks were great. The author mentioned the great disparities, particularly in Portugal and Greece, related to institutional structures, economic policies, inflationary cost and price trends, excessive deficits and external imbalances.

In sum, there are great risks involving a monetary union, and labor mobility and wage flexibility are determinant issues to its success.

[3] In Downes, P(Ed.). e Vaez-Zadeh, R. (1991), The Evolving Role of Central Banks, International Monetary Fund, Washington

1.2 Constraints to a Monetary Union

Inflation vs. Unemployment

Countries diverge in their preferences towards price stability or level of unemployment. Prior to the beginning of the EMU, the member states demonstrated that they kept inflation at a low level, like Germany. One of the Maastricht Treaty convergence criteria was precisely that inflation rates are "no more than 1.5 percentage points higher than the average of the three best performing (lowest inflation) member states of the EU"[4]. Some countries had a long history of targeting low inflation as a means of safe and steady growth, which was the case of Germany, while other countries, such as Portugal or Italy had pursued the objectives of growth and full employment, undermining the effects of inflation on their economies. But if countries are in a monetary union the exchange rate is fixed, and so rates of inflation must be equal. So if two countries with different preferences towards inflation and unemployment engage in a monetary union, the preferences will have to change in order for the inflation rates to be the same.

Different labor market institutions

Some countries have highly centralized labor unions, like Germany, while other countries have decentralized unions, like the UK. These differences lead to different wage and price developments following similar disturbances. Economists Bruno and Sachs (1985) studied these differences in 1985, concluding that in countries where unions are centralized, they know that excessive wage claims will produce more inflation, so that real wages will not increase. Thereby centralized unions have no incentive to make excessive wage claims. But in countries where less centralized unions persist, these are aware of the small effect of wage increases on the aggregate price level, because they only represent a small part of the work force. So, we are dealing with a free-riding problem, because they have incentives to push for wage raises.

There will be higher costs for countries with deeply different labor market institutions to participate in a monetary union, since shocks will affect them differently, making it more difficult to correct without using the exchange rate.

[4] Maastricht Treaty, article 109J

Different Legal Frameworks

Since different countries have diverse legal systems this may create obstacles to the healthy functioning of markets. For example an increase in the interest rate by the ECB has different effects in the member countries, because the way companies obtain credit are different. Various empirical studies have demonstrated that there are significant differences in the transmission of the same shocks (Dornbusch, Favero and Giavazzi (1998); Mojon (2000); Peersman and Smets (2001)).

A variation in the interest rate by the monetary authorities will affect countries with different legal structures in a monetary union differently, and thus the monetary union will have higher costs.

2. The ECB's framework

2.1 The ECB and the Bundesbank

The common currency and the European Central Bank are the central elements of the European Monetary Union (EMU).

The monetary and exchange rate policies of the member states, which belonged to the national central banks prior to the existence of the Euro, is in the hands of the ECB since its creation in 1999.

The ECB was designed based on the *bundesbank*[5] framework. After the Second World War, there were two main models of central banking: the Anglo-French model and the German model. The major differences between these two countries are related to the objectives and the institutional design of central banking.

Regarding the institutional design of a central bank, the Anglo-French model is based on political dependence of the governments, while the German model was built around political independence. Variations in interest rates in the Anglo-French model are dependent on the government options on economic policy, while in the German model the central bank has the power to exclusively make its own decisions.

Therefore, concerning the objectives of central banking, the German model has price stability as its primary objective, while the Anglo-French model has various objectives:

[5] The Bundesbank is the German central bank

namely price stability, economic growth, high employment, and financial stability. Price stability is not the German model only objective but it is its major objective, and it cannot be undermined by the others, i.e., in the German model, other goals may be pursued, but only if they do not endanger the pursuit of price stability.

The principle of independence and the objective of price stability were specifically addressed in the statutes of the ECB in the Maastricht Treaty, and transposed to the Treaty of the European Union[6].

But the question is why the German model was chosen and the Anglo- French model abandoned. De Grauwe (2009) identifies two main reasons - one related to the intellectual and theoretical economic framework, expressed by the prevalence of monetarist ideas at the time, and another related to the role of Germany in the European integration process.

While Keynesianism was very popular in the times that followed the II World War, Keynes economic theories took a downfall with the 1970's oil crisis.
The monetarist economic framework regards inflation as a problem that must be addressed by independent central banks. When governments act on their expansionary impulses to reduce unemployment and to win elections, inflationary tensions are expectable, so monetarist argue that central banks must be independent to prevent these irresponsible actions from politicians. These ideas were also backed by econometric studies (Hayo (1998)) that empirically showed that in countries where central banks where independent from their governments, there was less inflation and, therefore more price stability and more robust economies.

During the eighties, monetarist theories were very popular, especially among European central bankers. The speeches and annual reports of central banks highlight the monetarist ideas, and they were openly expressed in the document that established the framework of the monetary Union – The Delors Report (1989)[7].

[6] See the Treaties in Annex 1
[7] The Delors Report was the basis for the construction of the Monetary Union, on which it was stressed that the Bundesbank was the model for the European Central Bank.

The second reason has to do with the important role of Germany[8] in the integration process and in the European Union. According to De Grauwe (2009), the German government clearly expressed that the ECB should be even more independent than the Bundesbank as a condition to join the EMU. By joining the EMU, Germany faced the risk of higher inflation, so this risk had to be diluted by a strongly independent central that would give priority to price stability. The Delors Report (1989) clearly defines that "the European System of Central Banks would be based on the following principles: the System would be committed to the objective of price stability"[9].

The German model prevailed, and the ECB was designed to be even more independent than the Bundesbank, concentrated on the primary objective of maintaining price stability, and demeaning the focus on employment and growth.

2.2 Independence, Accountability and Transparency

The ECB was designed to be independent (article 130 of the Treaty on the Functioning of the European Union[10]) from the European institutions and the national governments. The ECB's clear mandate to pursue price stability is based on the bank's independency. Given its great power to follow that objective, its accountability and transparency must be regarded.

Bini Smaghi and Gros (2000) analyzed empirical evidence regarding three Central Banks – the ECB, the American Federal Reserve (Fed) and the Bundesbank – taking into account indicators of independence, such as the durability of central banker's mandates, limitations on lending to governments, who sets the targets and decides on policies. They concluded that the ECB is the most independent central bank among the three central banks.

[8] Germany is also the largest economy in the euro zone

[9] Report on economic and monetary union in the European Community (1989), Committee for the study of Economic and Monetary Union (1989), Jacques Delors Chairman

[10] "When exercising the powers and carrying out the tasks and duties conferred upon them by the Treaties and the Statute of the ESCB and of the ECB, neither the European Central Bank, nor a national central bank, nor any member of their decision-making bodies shall seek or take instructions from Union institutions, bodies, offices or agencies, from any government of a Member State or from any other body. The Union institutions, bodies, offices or agencies and the governments of the Member States undertake to respect this principle and not to seek to influence the members of the decision-making bodies of the European Central Bank or of the national central banks in the performance of their tasks."

Regarding accountability they argue that is not strongly consolidated, particularly when compared with the Fed. The case is that the chairman of the Fed responds to the American Congress, and the American Congress can change the statutes of the Fed by a simple majority. On the other hand, the President of the ECB responds to the European Parliament, which has absolutely no power to change the ECB's statutes, for that is only possible by changing the Treaties.

De Grauwe (2009) argues that the ECB's accountability is not consistent because there are no strong political institutions in Europe, that can exercise control over the ECB's actions, and also because the Treaties are imprecise when defining the ECB's objectives. Beyond controlling inflation the other objectives are relatively vague, even though they have been posteriorly included in the ECB's statutes.

De Grauwe (2009) finds that ECB's lack of accountability could be compensated with more transparency, and in fact, the ECB has made some efforts – namely, it started publishing a Monthly Bulletin and after each first monthly meeting of the governing council, the president makes a public statement to the press, where the decisions are explained, and questions from the media are allowed.

2.3 The ECB's Objectives

The ECB's main objective continues to be price stability, and although growth and employment have been added to its goals, these latter objectives remain secondary.

In the ECB as in the European Union, Germany has a key role – as seen before, the ECB was built based on the Bundesbank framework. The German central bank was the model on which the ECB was designed, and Germany has always undermined growth and employment in favor of low inflation.

The ECB followed the monetarist approach to central banking. That is quite evident in the objectives established in the treaties:

Article 127 of the Treaty on the Functioning of the European Union

"*1. The primary objective of the European System of Central Banks (hereinafter referred to as "the ESCB") shall be to maintain price stability. Without prejudice to the objective of price stability, the ESCB shall support the general economic policies in the Union with a view to contributing to the achievement of the objectives of the Union as*

*laid down in **Article 3 of the Treaty on European Union**. The ESCB shall act in accordance with the principle of an open market economy with free competition, favoring an efficient allocation of resources, and in compliance with the principles set out in Article 119.*"

Article 3 of the Treaty on European Union

"(…)
*3. The Union shall establish an internal market. It shall work for the sustainable development of Europe based on **balanced economic growth** and **price stability**, a highly competitive social market economy, aiming at **full employment and social progress**, and a high level of protection and improvement of the quality of the environment. It shall promote scientific and technological advance.*
It shall combat social exclusion and discrimination, and shall promote social justice and protection, equality between women and men, solidarity between generations and protection of the rights of the child.
It shall promote economic, social and territorial cohesion, and solidarity among Member States.
It shall respect its rich cultural and linguistic diversity, and shall ensure that Europe's cultural heritage is safeguarded and enhanced."

It is very clear that maintaining price stability is the ECB's core mission, and although "balanced economic growth", "full employment and social progress" are mentioned as aims in the Treaties, these cannot "prejudice" the principal objective.
The ECB is considered (De Grauwe 2009) to be more conservative that the US Federal Reserve precisely because it gives more importance to controlling inflation and neglects output and employment stabilization. De Grauwe (2009) analyses the 2001/2003 recession and observes that the ECB lowered the interest rate less and more slowly than the Federal Reserve, and that happened again with the 2008 recession.

Charles Wyplosz (2010) also argues, that compared with the American Federal Reserve, the ECB's response the financial crisis is slow. It took 14 months for the ECB to start lowering the interest rate, doing it for the first time in October 2008, while the American monetary authorities started lowering the interest rates in September 2007.

The ECB kept the interest rate at 4%, and even increased it in 0.25 in July 2008. At the time, the ECB argued that was more preoccupied with inflation that was rising since 2006. Additionally, the ECB didn't predict that financial crisis would cause a recession.

2.4 The ECB's decision process

The European System of Central Banks (ESCB) is formed by the ECB and the National Central Banks of the Economic and Monetary Union.
The ECB has an executive board and a governing council. Currently, the executive board is formed by the president, Mario Draghi, the vice-president, Vítor Constâncio, and by four more members - Sabine Lautenschläge, Benoit Coeuré, Yves Mersch and Peter Praet[11]. The Executive Board implements the monetary policy decisions taken by the governing council, which comprises giving instructions to the National central Banks and also setting the agenda for the meetings of the Governing Council.

The Governing Council is formed by the 18 Governors of National Central Banks of the EMU and the six members of the executive board. The Governing Council is the main decision making body of the Euro system, and defines the Monetary Policy (interest rates, reserves requirements, provision of liquidity). The central bankers meet every two weeks in Frankfurt, and each one of the members of the governing council has one vote (24 votes in total). Each vote has the same weight. The treaties state that the members of the Governing Council, when deciding, must aim to achieve the Eurozone's best interest and not the national interests. De Grauwe (2009) questions if the euro system is too decentralized, given that the national central bankers have a clear majority in the Governing Council and points out the risks of the Euro system enlargement, that meanwhile has happened, may lead to the reform of the voting system, which has not yet happened. For De Grauwe (2009) the euro zone enlargement, and the consequent adding of new national central bankers to the Governing Council, could lead to problems, if national bankers attempt to join votes.

[11] Information available at the ECB official site (www.ecb.com)

Most of the decisions of the governing Council are taken by simple majority (Quaglia 2008), but unanimity is necessary to recommend amendments of the Statutes of the ESCB.

The statutes of the ECB (Protocol on the Statute of the European System of Central Banks and of the European Central Bank) state in article 10, point 2 (10.2) that "as from the date on which the number of governors exceeds 15, until it reaches 22, the governors shall be allocated to two groups, according to a ranking of the size of the share of their national central bank's Member State in the aggregate gross domestic product at market prices and in the total aggregated balance sheet of the monetary financial institutions of the Member States which have adopted the euro". And the same article defines that "as from the date on which the number of governors reaches 22, the governors shall be allocated to three groups according to a ranking based on the above criteria". The member states that have joined the EMU are now 18. But, the ECB has decided in 2008 to postpone the alteration in the voting system: "the Governing Council of the European Central Bank (ECB) decided to continue its current voting regime and to introduce the rotation system only when the number of Governors and Presidents of the euro area national central banks (Governors) exceeds 18"[12]. On January 1st 2014 Latvia joined the EMU, and the number of governors of national central banks reached 18. Meanwhile no alteration of the statutes took place.

Regarding the other European institutions, the President of the Council and a member of the European Commission can participate in the ECB's Governing Council meetings, although they cannot vote.

Quaglia (2008) argues that the institutional characteristics of the European Union favors ECB's autonomy and lack of accountability, particularly because there is no federal or national government to respond to.

[12] ECB Press Release 18 December 2008 - **ECB Governing Council decides to continue its current voting regime** (http://www.ecb.europa.eu/press/pr/date/2008/html/pr081218.en.html)

3. The ECB's Policies

3.1 Monetary Policy and instruments

To conduct its monetary policy the ECB needs to quantify its primary objective. The ECB's Governing Council initially defined price stability as "a year-on-year increase in the Harmonized Index of Consumer Prices (HICP)[13] for the euro area of below 2%"[14]. But this definition generated controversy because it only had a higher limit, leading to concerns with risks of deflation (negative inflation rate) and the ECB's lack of concern with it. This target was considered unrealistic because the target in the U.K is 2.5 per cent and Germany had a medium inflation of 2.9 per cent between 1949 and 1998 (Padoa Schioppa (2004)).

Therefore, in 2003 the ECB [15]specified the original definition of price stability by declaring "it aims to maintain inflation rates below, but close to, 2% over the medium term"[16], but not defining "medium term".

The ECB developed a two-pillar strategy to achieve his target. Since 2003 the first pillar is economic analysis (Quaglia 2008), which involves a wide analysis of the outlook for price variations using indicators such as the exchange rate, the balance of payments, price indices, demand and labor market conditions, overall output, fiscal policy, and financial markets. Economic analysis provides information on the economic dynamics and shocks. The second pillar of monetary policy strategy is the monetary analysis, based on the assumption that monetary growth and inflation are connected in the medium to long run. The quantitative "reference value" (ECB (2006)) is the growth of the broad monetary aggregate M3. Thus, if M3 stock of money grows rapidly, there is a great risk of high inflation, and the ECB may react to detain it. The Bundesbank (Howarth and Loedel (2003)) had already used M3 to analyze monetary growth. Monetary analysis provides information related to monetary trends.
The ECB has successfully achieved its goal of maintaining price stability (De Grauwe 2009), although the recent crisis has raised doubts if financial stability should not also be a central objective of the ECB. This issue will be addressed further ahead.

[13] The HICP is a price index for the euro area.
[14] ECB Monthly Bulletin, January 1999, p.46
[15] The Monetary Policy of the ECB 2011
[16] ECB official website - http://www.ecb.europa.eu/mopo/html/index.en.html

The ECB's monetary policy involves three types of instruments: open market operations, standing facilities and minimum reserve requirements for credit institutions.

Open market operations are the key instrument (De Grauwe (2009)), and it involves buying and selling securities to expand or contract market liquidity (amount of money in the banking system), purchases inject money into the banking system and stimulate growth while sales of securities do the opposite; the ECB can do outright buying and selling in the open market, which are the ordinary open market operations, but the principal practice used by the ECB is transactions using tenders, that have been its main refinancing operations. Open market operations using tenders begin with the definition, by the Governing Council, of the interest rate that will be applied to the refinancing operations. The tender procedure can be with a flexible rate or fixed rate (the latter was the most used since the crisis (De Grauwe (2009)). When tenders take place at a fixed rate the Governing Council defines the fixed rate at which financial institutions can make their offers. The banks make their offers to obtain certain amounts of liquidity giving eligible assets as collateral. The offers are gathered by the National Central Banks and then centralized by the ECB that selects the total amounts to be given and distributes to the banks proportionally to the size of the offers.
As to the variable rate, which is the most used procedure, the banks bid the amounts of liquidity they wish at successive interest rates, and the rate defined by the Governing Council works as a minimum bid rate.

As seen before, the ECB provides liquidity but demands collateral from the financial institutions, in form of eligible assets. For the ECB, the eligibility of marketable assets is defined by credit ratings, and the eligibility of non-marketable assets is defined by the Euro system risk assessment classification (ECB (2008)).

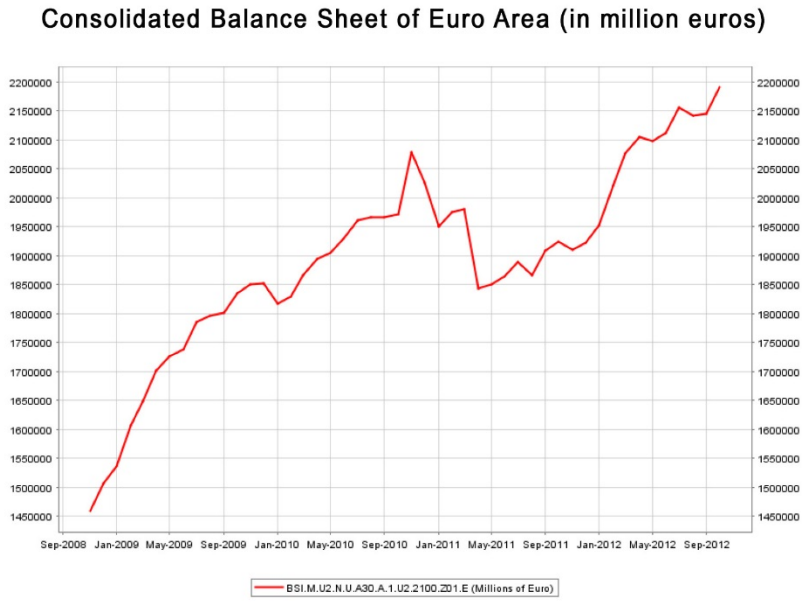
Standing Facilities aim to provide or absorb overnight liquidity and are managed by the National Central Banks. Financial institutions can use the *marginal lending facility* to get overnight liquidity from the National Central Banks; the Governing Council defines the marginal lending interest rate, which is usually 1% above the interest rate used in the main financing facility (De Grauwe (2009)); the banks must present suitable collateral. In the same way, banks can use the *deposit facility* to make overnight deposits; the interest rate, set by the Governing Council is normally 1% below the

interest rate used in the main financial facility. This mechanism is crucial to the functioning of a developed monetary union, since it sets boundaries for the market interest rates and guarantees the ultimate function of a Central Bank: to be a lender of last resort.

Requiring minimal reserves to banks is the third instrument. Minimal reserves influence money markets because an increase in the minimal reserves diminishes liquidity. De Grauwe (2009) sates that the ECB uses minimal reserves to smooth short-term interest rates, by determining the reserve requirement on the basis of the banks monthly average of daily reserve holdings over a month.

Following the Lehman Brother collapse in September 2008 the Eurozone's banks faced a grave liquidity shortage. The ECB advanced with huge liquidity injections using standing facilities and open market operations. To facilitate the open market operations the ECB practiced fixed rate tenders with full allotment.
The ECB managed to successfully inject great amounts of liquidity deterring a collapse of the banking crisis (see below the Balance sheet of the euro system from September 2008 to September 2012)[17].

[17] ECB official website, http://sdw.ecb.europa.eu/browseChart.do?node=bbn139&SERIES_KEY=117.BSI.M.U2.N.U.A30.A.1.U2.2100.Z01.E&start=15-09-2008&end=15-09-2012&submitOptions.x=64&submitOptions.y=2&trans=N&q=



Source : European Central Bank

Figure 2: Consolidated Balance Sheet of Euro Area

3.2 Exchange rate Policy

The creation of the euro implied that all countries of the EMU have a single currency and a single exchange rate. Before the establishment of the EMU the exchange rate policy of each country had a very important role in their economies. Losing the national exchange rate policy to devaluate the currencies and to therefore gain competitiveness was one of the costs of joining the euro.

In the beginning of 1999, the national exchange rates of the member states of the future euro zone were fixed. To avoid financial risks related to speculation, the European authorities, at the time, decided to announce the fixed conversion rated of each national currency in May 1998. This decision guaranteed the European exchange markets' stability. The actual monetary union only took place on January 1st 2002, after the euro was put into circulation and the national currencies were taken out.

After these procedures, the euro zone countries adopted a flexible exchange rate regime[18], which means that the financial markets now set the external value of the currency.

Generally, the ECB doesn't practice an active exchange rate policy (Quaglia (2008)). From the ECB's point of view, Eurozone's internal stability is the main concern, but it should pay attention to unordinary exchange rate variations as a risk affecting inflation. Recently, Mario Draghi responded to criticisms about the ECB not taking action regarding the exchange rate affirming that "as regards the exchange rate, let me be clear that the exchange rate is not a policy target, but it is important for growth and price stability"[19].

3.3 Bank Supervision and financial regulation

Bank supervision was left in the hands of national banks, and only because of the financial and banking crisis has the idea of a banking union involving a central supervisory mechanism began to be debated.

In fact, from the start of the EMU bank supervision remained one the national central banks' responsibilities. Bank Supervision and regulation had been decided in the Second Banking Directive of the European Commission in 1989[20]. This document defined the two banking principles: Bank supervision is due to the national authorities where the banks have their head offices (principle of home country control); Financial Stability of the banks is the responsibility of the country where the operations occur (host country responsibility). This all seems very simple, but banks do not operate only in their home countries, the banking system has evolved in a globalized economy. De

[18] System in which a currency's value is determined solely by the interplay of the market forces of demand and supply (which, in turn, is determined by the soundness of a country's basic economic position), instead of by government definition.

[19] Speech by Mario Draghi, President of the ECB, Brussels, 18 February 2013 (http://www.ecb.europa.eu/press/key/date/2013/html/sp130218.en.html)

[20] Second Council Directive 89/646/EEC of 15 December 1989 on the coordination of laws, regulations and administrative provisions relating to the taking up and pursuit of the business of credit institutions and amending Directive 77/780/EEC (http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31989L0646:EN:HTML)

Grauwe and Westerman (2009) analyzed the fraction of the banking system's assets in banks that are 50 per cent or more foreign owned, and concluded that the dimension of the figures, from 95% in Luxembourg and 57% in Finland, to 6.5% in Germany and 10.2% in Spain, demonstrate that bank supervision and regulation should be modified, given the risks of banks' internationalization and the lack of supervision. Since banks are dispersed over the world, the supervisory national authorities should exchange information. But in fact, institutions usually don't reveal that kind of information about specific banks, fearing the occurrence of bank runs. Thus, supervisory authorities are insufficiently informed about banks functioning in their counties. De Grauwe (2009) states that "the supervisory system in the Eurozone has failed and that it has contributed to the banking crisis that erupted in 2007-08"[21].

In the past banks regulation was insufficient to guarantee the financial solvability of financial institutions, therefore they grew more and more exposed to liquidity risks. Also, the financial institutions had always presumed that if a crisis occurred national and European authorities would provide the necessary funding. In fact, only recently has Basel III[22] been updated to settle stricter rules to bank capital requirements, in order to respond to the financial and banking crisis, and reduce future risks of financial collapse. The prior international banking agreements, BASEL I and BASEL II were not sufficient to prevent the crisis.

As Bank Supervision was not considered in the ECB initial framework and left in the hands of the national central banks, the increasing innovation and internationalization of the banking activities materialized in a context where supervision and regulation were largely insufficient to deter the financial crisis.

[21] De Grauwe (2009), p. 186

[22] The Basel Accords are voluntary agreements on bank's capital adequacy, market liquidity risking and stress testing. Basel III was established to respond to the insufficiencies in financial regulation made clear by the 2008 Financial Crisis, in order to strengthen bank capital requirements.

3.4 The European Monetary Union and the financial markets integration

The creation of the euro has positively affected financial market integration since the national exchange rate risks disappeared during the time that preceded the financial crisis. Still, there are significant disparities in the euro zone countries' legal systems that prevent full integration of the euro zone's financial markets.

The integration of money markets was easily achieved because before the EMU the interbank lending rates were very diverse among member states. After the monetary union took place the lending rates became identical (ECB, Monthly Bulletin (2008)) until the financial crisis erupted in 2008.

The government bond markets also became quite integrated until the financial crisis. Before 1999 the sovereign government bonds had diverged several hundreds of basis points (De Grauwe (2009)), and gradually the differences diminished to the order of 50 basis points. Of course, this all changed with the 2008 financial crisis – the sovereign government bonds in countries in distress started to increase, and the disparity between member states grew again.

The equity investors are prone to a national preference, tending to favor buying national equities. The so called 'home country bias' (Fidora, Fratzscher and Thiman (2006)) diminished with the introduction of the new currency in the euro zone, particularly regarding institutional investors. On the companies' side, the integration is not noticeable since they kept listing their stocks on the national stock markets.
The reason for the national preference is that different accounting systems, regulatory rules, and corporate governance practices, constitute obstacles to the evaluation of companies.

The importance of financial markets integration in a monetary union lays in the impact it has in mitigating asymmetric shocks. Integrated financial markets act as an insurance to asymmetric shocks, since a negative shock in one country will affect the prices of the stocks and bonds in that country but also in the other countries that own stocks or bonds from that country, therefore diluting the shock. As De Grauwe (2009) stresses, "the risk of a negative shock in one country is shared by all countries" in the monetary union.

However, a study by Marinheiro (2002) comparing the EU and the USA, concluded that the US capital markets dilute 48% of asymmetric shocks in output, whereas in the EU only 15% are redistributed. Thus, the financial markets integration in the EU seems still far from having a significant effect attenuating asymmetric shocks.

3.5 Financial stability and the ECB's design

Financial stability is far more ambiguous to define or to quantify than price stability. Ferguson (2002), Borio and Lowe (2002) and Kindleberger (2005) define financial instability based on asset prices and credit growth.

Ferguson (2002) defines financial instability based in three criteria "(1) some important set of financial asset prices seem to have diverged sharply from fundamentals; and/or (2) market functioning and credit availability, domestically and perhaps internationally, have been significantly distorted; with the result that (3) aggregate spending deviates (or is likely to deviate) significantly, either above or below, from the economy's ability to produce"[23]. According to Borio and Lowe (2002), financial instability has an identical definition, "sustained rapid credit growth combined with large increases in asset prices appears to increase the probability of an episode of financial instability[24].

Hence, the analysis of asset prices and credit growth provide the necessary information for the monetary authorities to evaluate the risks of financial instability.
De Grauwe (2009) states that the period 2003-8 evidenced the combination the growth of asset prices powered by massive bank credit, which ended up in a financial crisis. Therefore, it is possible for a central bank to infer the risk of financial instability from the analysis of asset prices and credit growth. But these indicators did not get the proper attention from the ECB and other central banks, given the surprise and the dimension of the financial crisis.

[23] In Ferguson, R. W. (2002) *Should Financial Stability be an explicit Central Bank objective?*, IMF Conference on challenges to Central Banking from Globalized Financial Systems, September 2002, Washington D.C, pp. 2

[24] In Borio, C., and Lowe, P. (2002),"Asset Prices, Financial and Monetary Stability: Exploring the nexus", BIS, Working Paper no. 114, July

In fact, all the models used by central banks focused on price stability, with the assumption that that attention would be enough to provide stability in general. But as De Grauwe (2009) argues there are no macroeconomic models that prove that maintaining price stability decreases financial stability, and that there may exist trade-offs between price stability and financial stability. The author defends that since the ECB (and other major central banks) were focused on controlling inflation, and were successful in their endeavor, they ignored the increases in assets prices that were menacing financial stability and that they involuntarily encouraged by allowing large amounts of credit creation. De Grauwe (2009) argues that in these situations, the price stability objective ought to be abandoned and the financial stability must be pursued. Borio and Lowe (2002) also claim that a low inflation environment may accommodate financial imbalances, and that if monetary authorities do not tackle them, they may intensify.

While the ECB had a stern focus on price stability, it underestimated the effects of asset's inflation in the markets. There was an identical problem with national public debts and deficits, for which the Stability and Growth Pact (SGP) was created.
Still, these two major EMU policies, price stability and the SPG criteria, did not prevent the Eurozone crisis. The growing national public debts were seen as threats, while escalating the 60% of GDP limit, but the latent danger that laid in the expansion of private debt facilitated by unrestricted credit growth was utterly neglected.

4. The ECB's role in the Eurozone crisis

4.1 The ECB's measures facing the crisis

To analyze the role of the ECB in the Eurozone crisis, it is important to look at the key events and measures taken by the ECB and the other European Institutions.

In 1992 the Maastricht Treaty was signed and the European Union was created with the objective of accomplishing a Monetary Union. The common currency was introduced in 1999, and the guidelines were set - countries kept control of the fiscal policy under the rules of the Stability and Growth Pact (SPG), whereas the monetary policy was transferred to the ECB.

While complying with the SPG's rule was quite a difficult challenge, and violations frequently occurred, the ECB's objective, maintaining price stability, was an unmistakable success.

In fact, although the crisis had started in 2007 with the subprime crisis, and deteriorated to a global dimension in September 2008 when the Lehman Brothers collapsed, the Eurozone crisis began when the Greek economy collapsed.

As seen before, the ECB is an independent central bank responsible for the monetary policy of the EMU. Its primary objective is maintaining price stability (accurately, keeping inflation close to but below 2%).
The ECB is responsible for foreign exchange operations, euro issuance and foreign reserves of the member states. Hence, the Eurozone's financial stability depends on the financial integrity of the ECB.

While the ECB has been seen buying sovereign bonds from countries in difficulties since the beginning of the crisis it only started to assume its function as lender of last resort in August 2012, when it finally declared that it would buy sovereign bonds in the secondary market of the euro area's troubled economies (De Grauwe (2013)), and subsequently launched, in September of 2012, its 'Outright Monetary Transactions' (OMT) programme. This bond-buying programme enables the unlimited purchase of

Eurozone countries' short-term bonds in the secondary market, in order to reduce the market interest rates faced by countries facing deep financial instability.[25]

De Grauwe (2013) argues that government bond markets are by nature weak in a monetary union. The member states issue debt in euros, a currency that they do not issue or control. Hence, there is doubt, unlike in countries like other countries that are not in a monetary union, that the central bank of the monetary union will provide the necessary liquidity, if necessary, acting as a lender of last resort. And in fact, only in 2012 the financial markets were provided with that guarantee. On July 26th 2012, Mario Draghi assumed that "we think the euro is irreversible (…), the ECB is ready to do whatever it takes to preserve the euro"[26]

4.2 Analysis of the effects of ECB's measures on sovereign debts

The chronology of the Eurozone crisis major events and the ECB's measures to tackle the crisis presented below aim to demonstrate the effects of the ECB's policies.

In order to analyze the impact of the measures, the focus goes to the decreases in the interest rates and to the political announcements, such as the 'Outright Monetary Transactions' program, basically the key measures of the ECB to address the crisis. Therefore the analysis takes into consideration the most important events of the chronology below and the variations verified in the Government Benchmark Yields and Credit Default Swaps in the countries most affected by the Eurozone crisis – Greece, Ireland, Portugal, Spain and Italy – from September 2008 to May 2013.

[25] http://www.ecb.europa.eu/press/pr/date/2012/html/pr120906_1.en.html
[26] https://www.ecb.europa.eu/press/key/date/2012/html/sp120726.en.html

Eurozone's crisis key events and ECB's Measures

15 Sept. 2008	Lehman Brothers went bankrupt
29 Sept. 2008	The ECB decided to implement a special term refinancing operation to improve the liquidity position of the euro area banking system.
8 Oct. 2008	**The ECB decreased its interest rates by 50 basis points, to 3.75 %; The ECB decided to apply extraordinary liquidity measures and to implement weekly refinancing operations providing as much liquidity as the banks request, it they guarantee collateral of satisfactory quality.**
15 Oct. 2008	The European Commission proposed to improve protection to bank deposits to €100,000 to preserve the confidence of depositors in the financial system. The ECB eased access to refinancing, enlarging the list of assets authorized as collateral and improves the provision of liquidity.
6 Nov. 2008	**The ECB decreased its interest rates by 50 basis points to 3.25%.**
4 Dec. 2008	**The ECB decreased its interest rates by 75 basis points to 2.50%.**
15 Jan. 2009	**The ECB decreased its interest rates by 50 basis points to 2%.**
5 March 2009	**The ECB decreased its interest rates by 50 basis points to 1.50%.**
2 April 2009	**The ECB decreased its interest rates by 25 basis points to 1.25%.**
7 May 2009	**The ECB decreased its interest rates by 25 basis points to 1%; the ECB launched one-year maturity refinancing operations.**
2 Dec 2009	**EU finance ministers agree to create three new European authorities to supervise banking, insurance and securities markets**
23 April 2010	Greece officially requested financial support.
3 May 2010	ECB's supports Greek fiscal consolidation by alterations in collateral eligibility of debt instruments issued or guaranteed by the Greek government.
10 May 2010	**EU finance ministers decided to adopt a package of measures to support financial stability in Europe, creating the European Financial Stabilization Mechanism (EFSM) and a European Financial Stability Facility (EFSF) with a total of €750 billion.**
28 July 2010	The ECB announced stricter rules in bank's collateral, reviewing the risk control measures.
28 Oct. 2010	**EU leaders decided to strengthen the Stability and Growth Pact and to create a permanent crisis mechanism.**
21 Nov. 2010	Ireland officially requested financial support.
28 Nov. 2010	Euro area finance ministers decided that the future European Stability Mechanism (ESM) would replace the EFSF as of mid-2013.The ESM was designed to guarantee the financial stability of the euro area trough financial assistance to countries in difficulty under strict conditions.
17 Dec 2010	EU leaders approve the creation of the European Stability Mechanism as of mid-2013 to safeguard the financial stability of the euro area as a whole
1 Jan. 2011	Due to the financial crisis, three new European authorities were created in order to control financial activities – the European Banking Authority, he European Securities and Markets Authority European Insurance and Occupational Pensions Authority.
11 Mar. 2011	**Euro area leaders agree on "Pact for the Euro"; the pact established stronger economic policy coordination for competitiveness and convergence.**
6 April 2011	Portugal officially requested financial support.
7 April 2011	The ECB increased interest rates in 25 basis points to 1.25%.
23 June 2011	Euro area and EU finance ministers agree to increase the effective capacity of the European Financial Stability Facility.
7 July 2011	The ECB increased interest rates in 25 basis points to 1.50%.
21 July 2011	**Euro area leaders met in Brussels to discuss the sovereign debt crisis, and decided to do whatever is needed to ensure the financial stability of, and to strengthen convergence, competitiveness and governance in, the euro area. Jean-Claude Trichet, President of the ECB, welcomed the reaffirmed commitment of euro area heads of state and government to ensure the financial stability of the euro area.**

4 Aug. 2011	Due to tensions in financial markets, the ECB initiated a six-month supplementary long-term refinancing operation.
14 Oct. 2011	**G20 finance ministers and central bank governors reiterated their commitment to take all necessary actions to preserve the stability of banking systems and financial markets.**
26 Oct. 2011	**Euro area leaders agreed on a set of additional measures reflecting their strong determination to do whatever is required to overcome difficulties and to take the necessary steps for the completion of Economic and Monetary Union.**
1 Nov. 2011	Mario Draghi, former Governor of the Banca d'Italia, becomes the new President of the ECB.
3 Nov. 2011	**The ECB reduced interest rates in 25 basis points to 1.25%.**
8 Nov. 2011	**The EU Council decided to adopt a set of six legislative proposals to reinforce economic governance in the EU in order to respond to the tensions on sovereign debt markets.**
8 Dec. 2011	**The ECB reduced interest rates in 25 basis points to 1%, and announced measures to support bank lending and money market activities, namely managed two longer-term refinancing operations with a maturity of 36 months.**
9 Feb. 2012	**ECB approves eligibility criteria for the temporary acceptance of additional credit claims as collateral in Eurosystem credit operations**
21 Feb. 2012	The Eurogroup approved the second financial aid package for Greece.
1 Mar. 2012	**The European leaders signed the Fiscal Compact, agreed on 9 December 2011, in order to fortify fiscal discipline and to introduce stricter surveillance within the euro area; the Eurogroup authorises the EFSF to implement the Eurosystem collateral enhancement facility.**
27 June 2012	Cyprus officially request financial aid and Spain requested financial assistance to recapitalize its financial institutions.
29 June 2012	**The European Council decided to create the European Banking Supervision Mechanism, in order to control the tensions in the financial markets and to stop the vicious circles between banks and sovereign debts. Also, it was decided that the European Stability Mechanism may directly finance banks using ESM funds.**
5 July 2012	**The ECB decreased interest rates by 25 basis points to an historic low of 0.75%.**
20 July 2012	ECB suspends Greek bonds as collateral
26 July 2012	**Mario Draghi stated that the ECB would do "whatever it takes to preserve the euro"**
2 Aug. 2012	**The ECB decided to implement Outright Monetary Transactions (OMTs), which is an unlimited bond-buying procedure in secondary sovereign bond markets.**
12 Sept. 2012	The European Commission presented a proposal of new powers to the ECB as part of a future banking union, specifically the creation of a single supervisory mechanism for all the Eurozone's banks.
19 Dec. 2012	**ECB reinstates Greek bonds as collateral**
2 May 2013	**The ECB decreased interest rates by 25 basis points, again to an historic low of 0.50%.**

Figure 3: Eurozone's crisis key events and ECB's Measures

Source: European Central Bank[27]

[27] ECB's official website on key dates of the financial crisis (http://www.ecb.europa.eu/ecb/html/crisis.en.html)

The ECB's highlighted measures affected the Benchmark Government Yields. The reduction of the interest rate in 6 November 2008 lowered the benchmark government yields in the five countries observed. Also, the announcement of the 'Outright Monetary Transactions" in August 2012 produced results in all the analyzed countries. Not all the measures taken by the ECB affected the five countries in the same way: Spain and Italy were less affected by the measures.

Subsequently, these measures had an impact on the Sovereign Credit Default Swaps. Given the volatile characteristics of these assets, the effects are more noticeable

ECB's Measures effects on Sovereign Credit Default Swaps

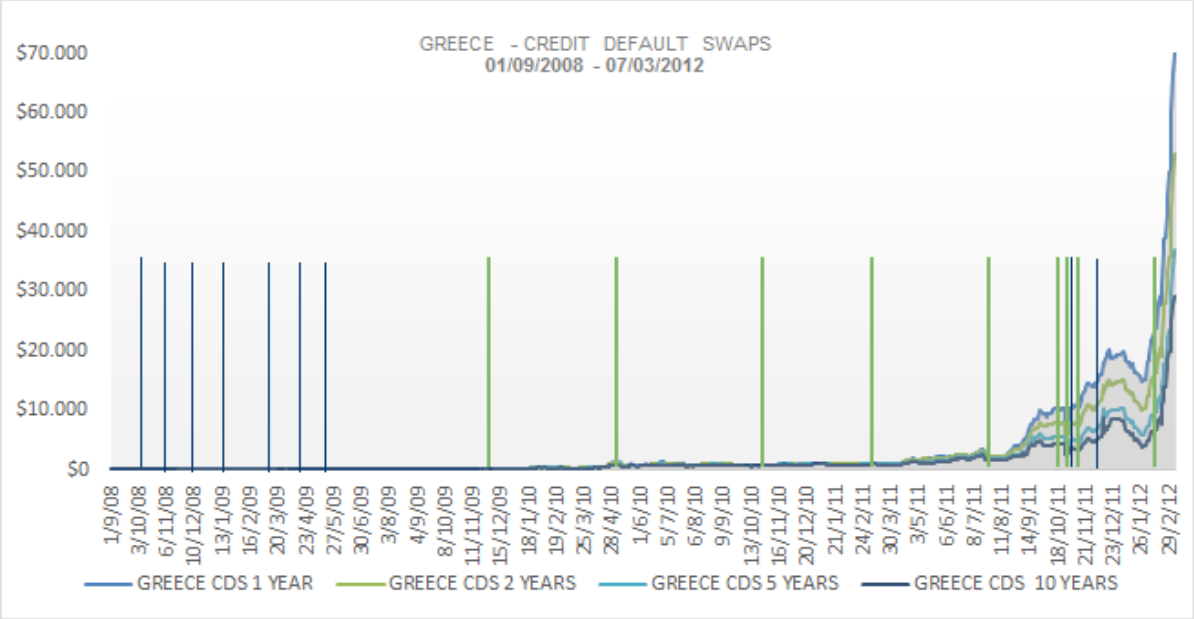


Figure 4: Greece – Credit Default Swaps (01/09/2008 – 07/03/2012) [28]

Source: Thomson Reuters

[28] Since 08/03/2012 Greece no longer has data on Credit Default Swaps

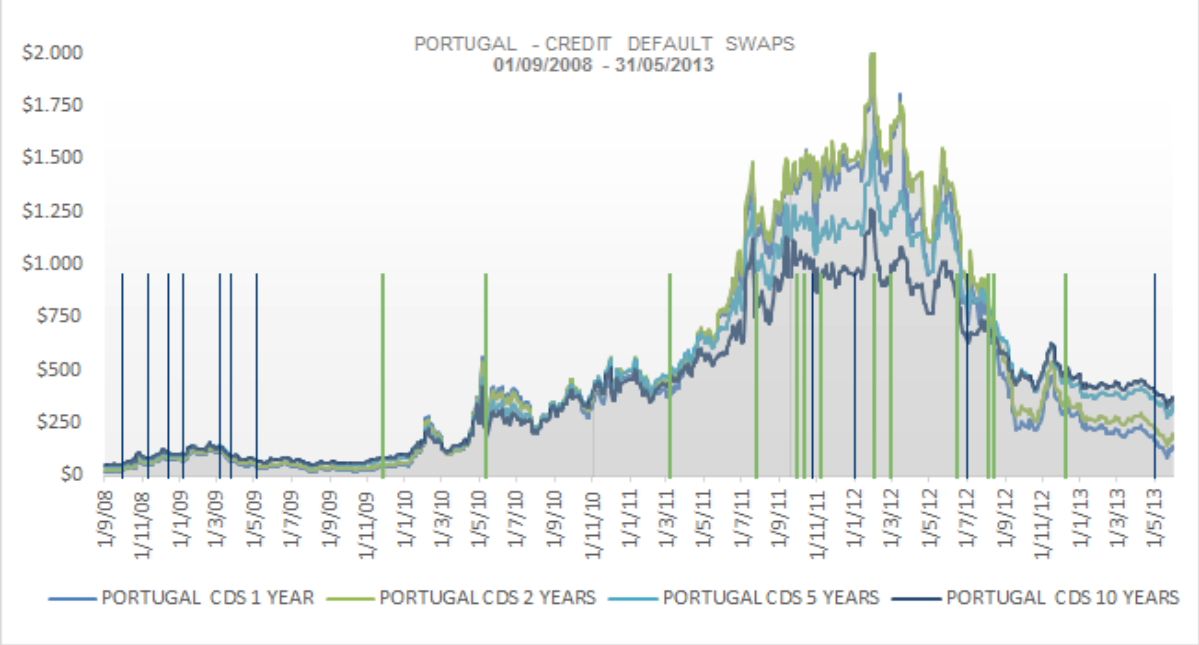


Figure 5: Portugal – Credit Default Swaps (01/09/2008 – 31/05/2013)

Source: Thomson Reuters

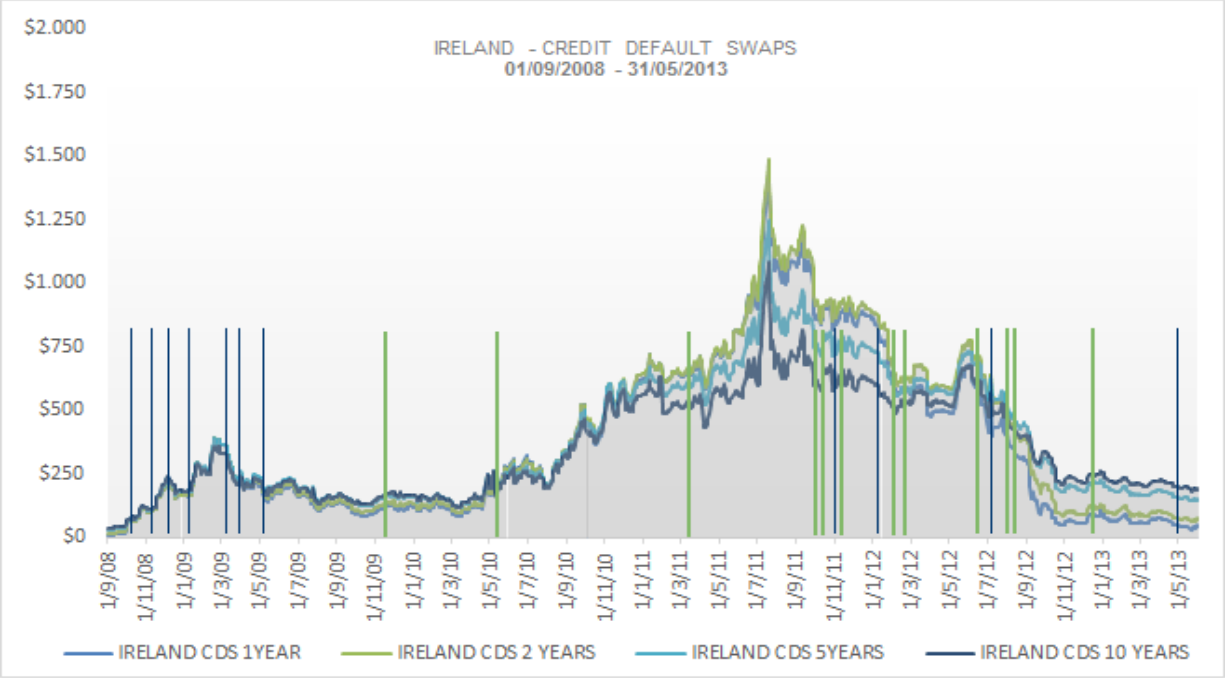


Figure 6: Ireland – Credit Default Swaps (01/09/2008 – 31/05/2013)

Source: Thomson Reuters

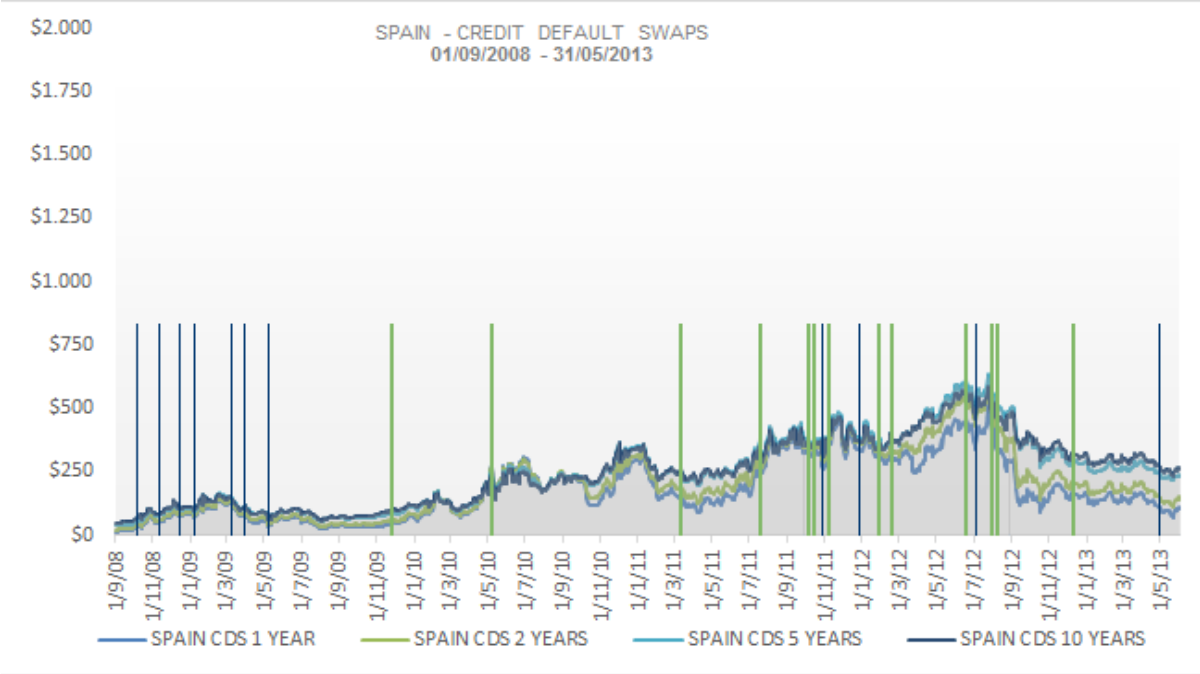


Figure 7: Spain – Credit Default Swaps (01/09/2008 – 31/05/2013)

Source: Thomson Reuters

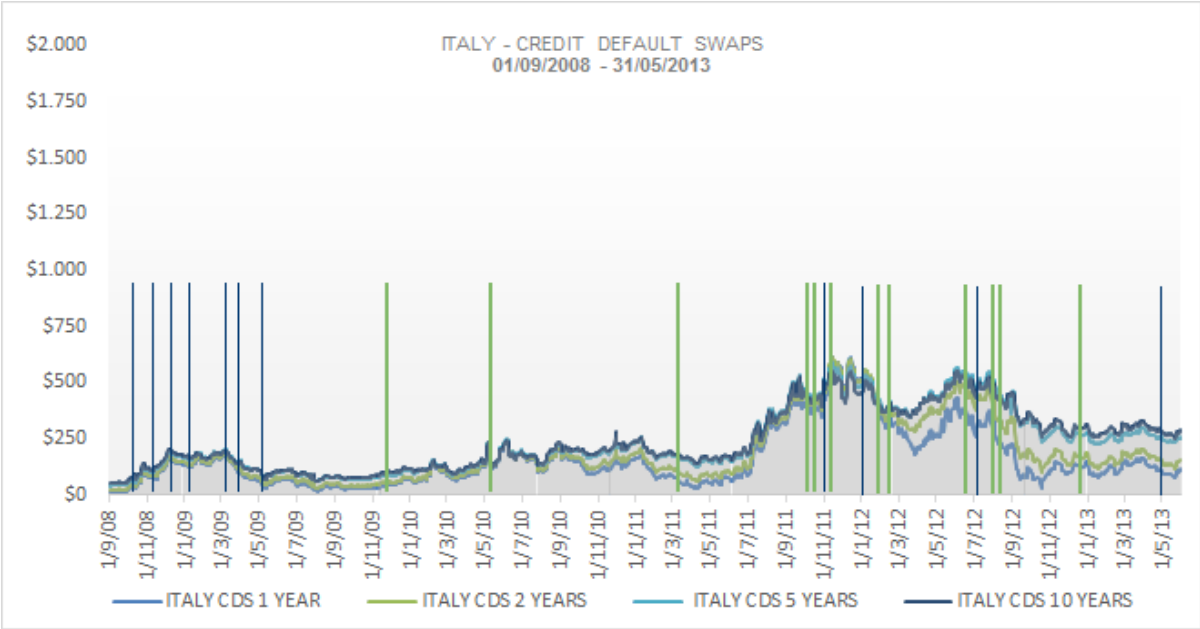


Figure 8: Italy – Credit Default Swaps (01/09/2008 – 31/05/2013)

Source: Thomson Reuters

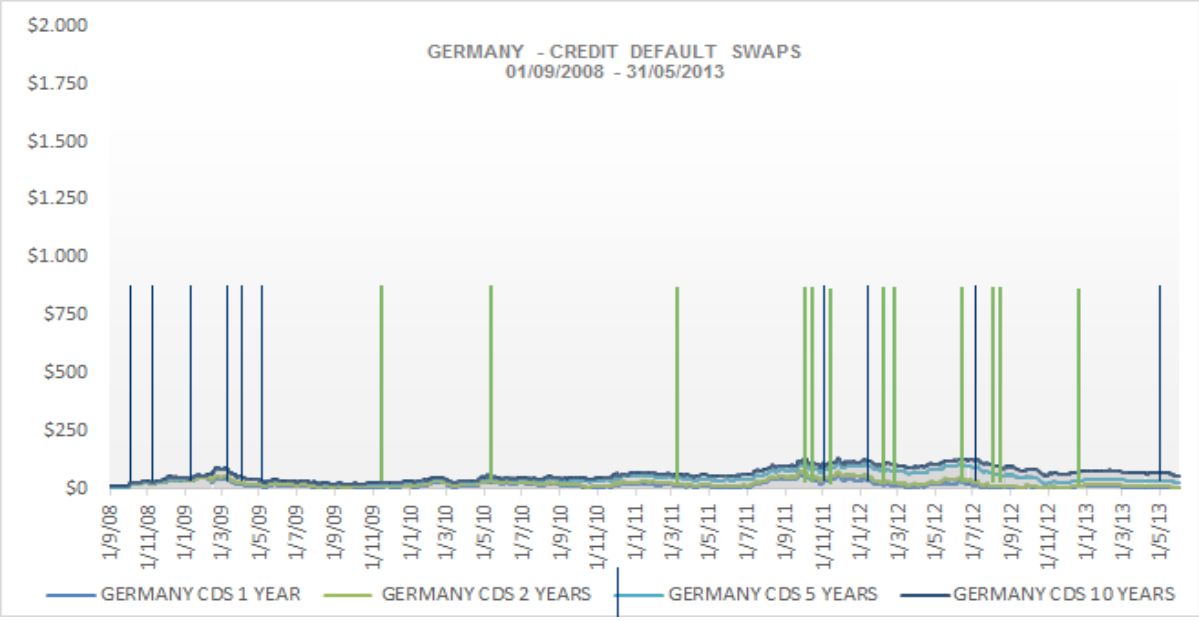


Figure 9: Germany – Credit Default Swaps (01/09/2008 – 31/05/2013)

Source: Thomson Reuters

The Sovereign Credit Default Swaps were affected by most of the analyzed measures of the ECB. It can be seen in the figures above the measures taken by the ECB highlighted in blue (alterations in the interest rates) and in green (political decisions) in the specific dates. The decreases in interest rates that occurred in November 2008, April 2009, May 2009, November 2011 and May 2013 lowered the credit default swaps in these countries. Between May 2010 and July 2012 the variations were more significant, clearly indicating the most problematical period of the crisis.

Similarly, analyzing two moments where the ECB took measures to address the crisis, namely November 3rd 2011 when the ECB reduced interest rates in 25 basis points to 1.25%, and August 2nd 2012, when the ECB decided to implement Outright Monetary Transactions (OMT), we can see the difference in the CDS' Yield curves in different various maturities (1, 2, 5 and 10 years), between the two dates.

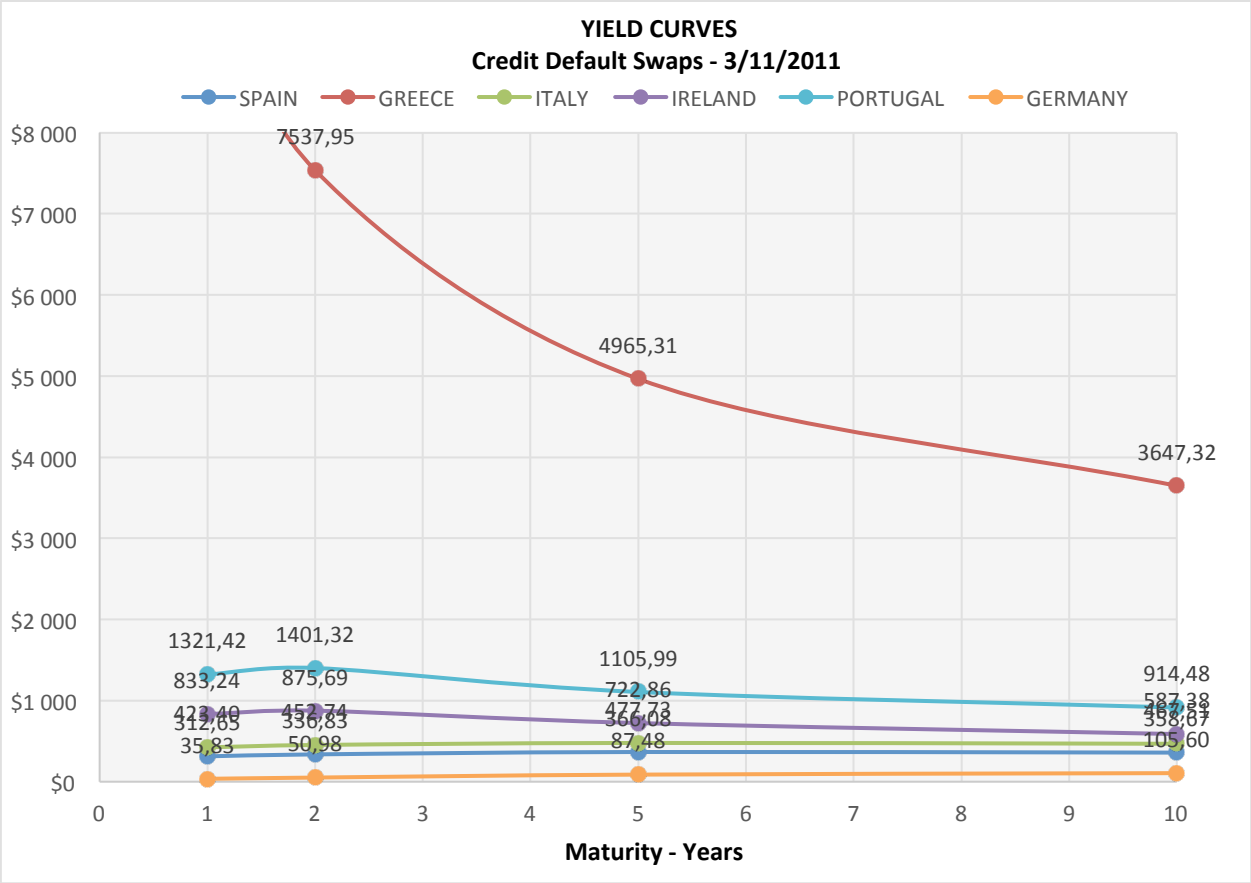


Figure 10: Yield Curves - Credit Default Swaps – 03/11/2011

Source: Thomson Reuters

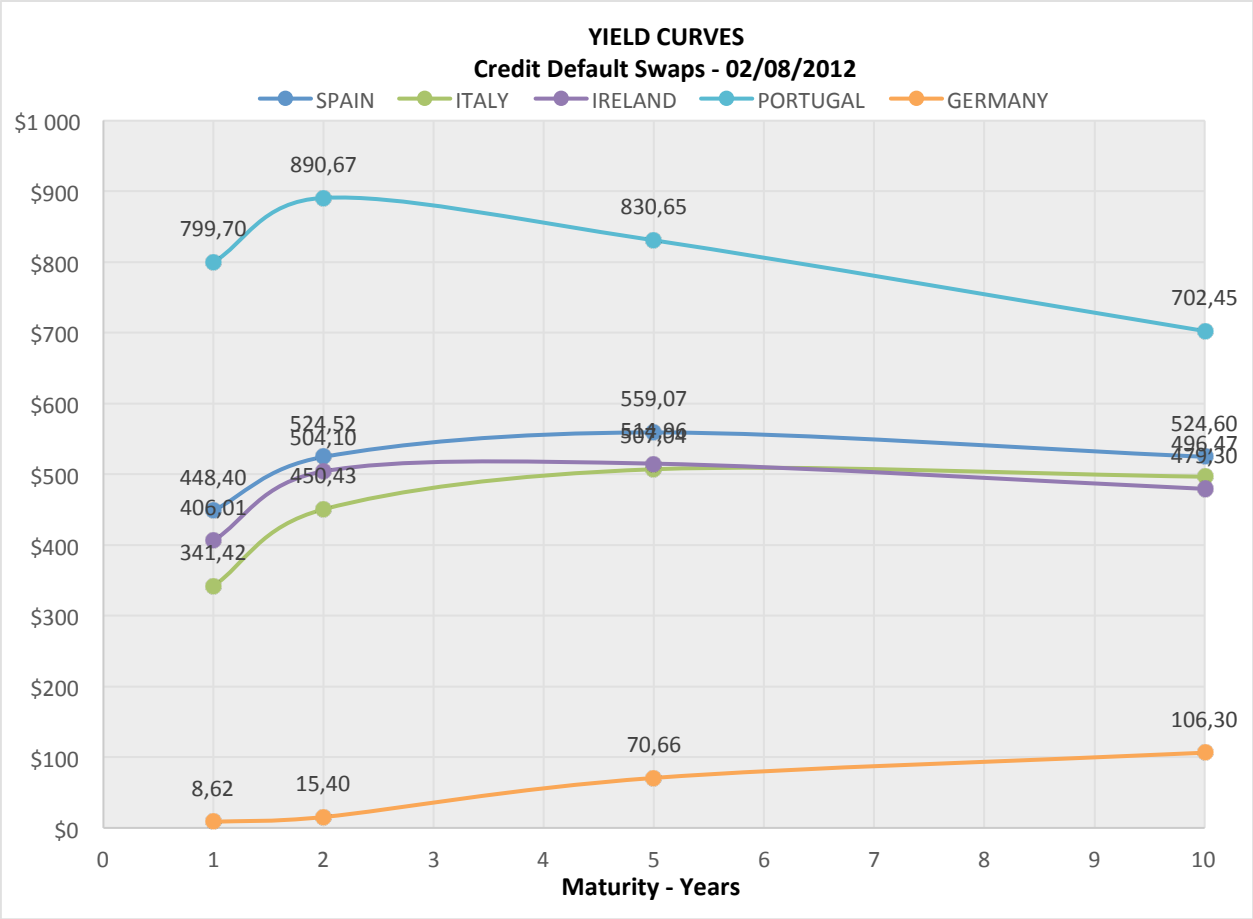


Figure 11: Yield Curves - Credit Default Swaps – 02/08/2012

Source: Thomson Reuters[29]

Analyzing these two figures, in these two moments of the euro zone crisis, we can observe the downwards tendency of the Credit Default Swaps in all maturities and a clear discrepancy of Spain, Portugal, Italy, Greece and Ireland with Germany. The latter moment of the crisis shows clear evidence of improvement, demonstrated by the inversion of the tendency, strengthened by the announcements in the summer of 2012.

In 2012, the inversion of the tendency was already noticeable, it's an inverted curve with a peak in the two years maturity, where Portugal displays the higher risk. There can be seen three clearly distinct levels of risk. Portugal displays the higher risk, Spain Ireland and Italy have similar performances and Germany shows the lower risk.

[29] There is no data on Greece since 08/03/2013

Portugal shows the higher risk in 02/08/2012, which anticipates a risk increase in the next year and a decrease in the following years.

In sum, the ECB's took strong actions to address the crisis, the interest is at an historic low of 0.25% (since 07/11/2013) and the ECB finally started to assume its role of lender of last resort in the government bond markets (De Grauwe (2013)).

In the figures below, we can observe the volatility of the Government Bond Yields for Greece, Ireland, Italy, Portugal and Spain during the period already analyzed above, for 3 year maturity. We can observe the highlighted measures in blue (alterations in the interest rates) and in green (political decisions).

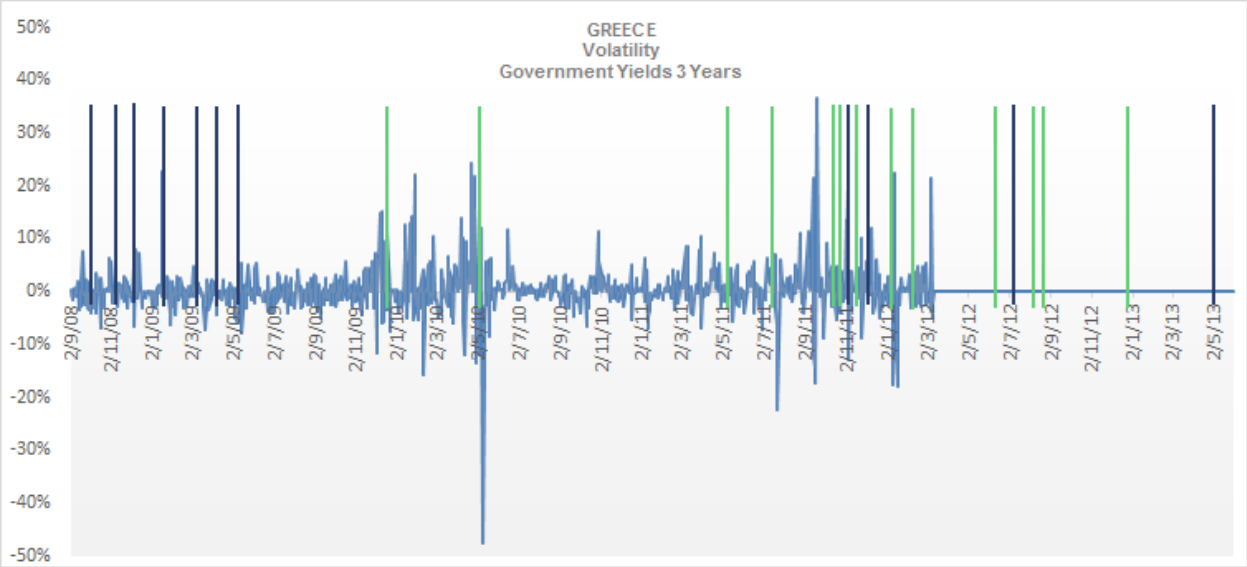


Figure 12: Greece – 3 Years Government Benchmark Yields – Volatility

Source: Thomson Reuters

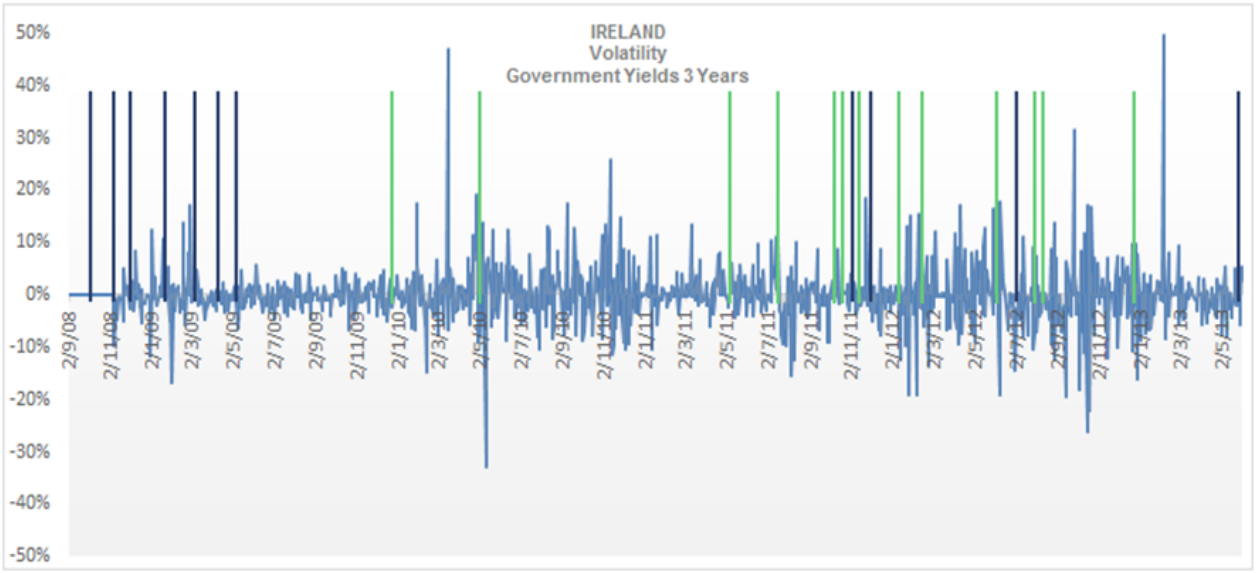


Figure 13: Ireland – 3 Years Government Benchmark Yields – Volatility

Source: Thomson Reuters

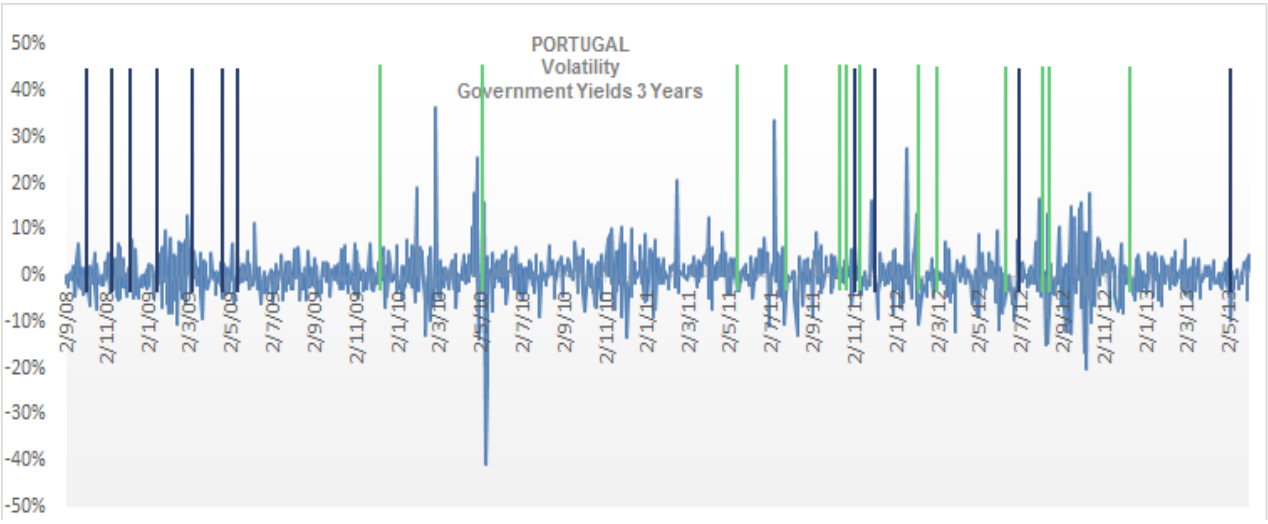


Figure 14: Portugal – 3 Years Government Benchmark Yields – Volatility

Source: Thomson Reuters

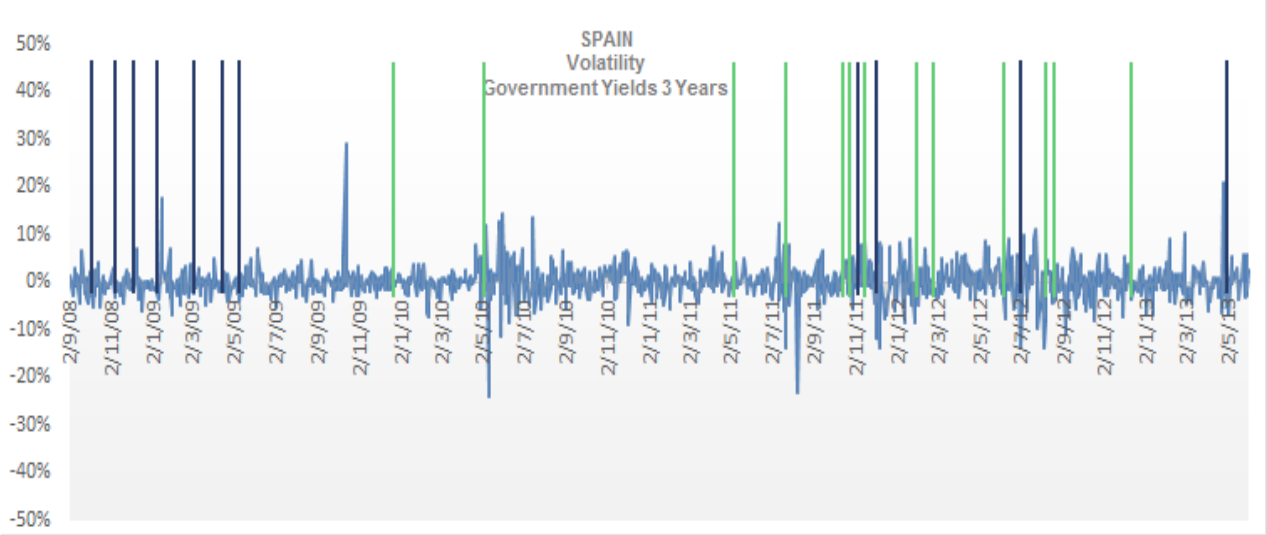


Figure 15: Spain– 3 Years Government Benchmark Yields – Volatility

Source: Thomson Reuters

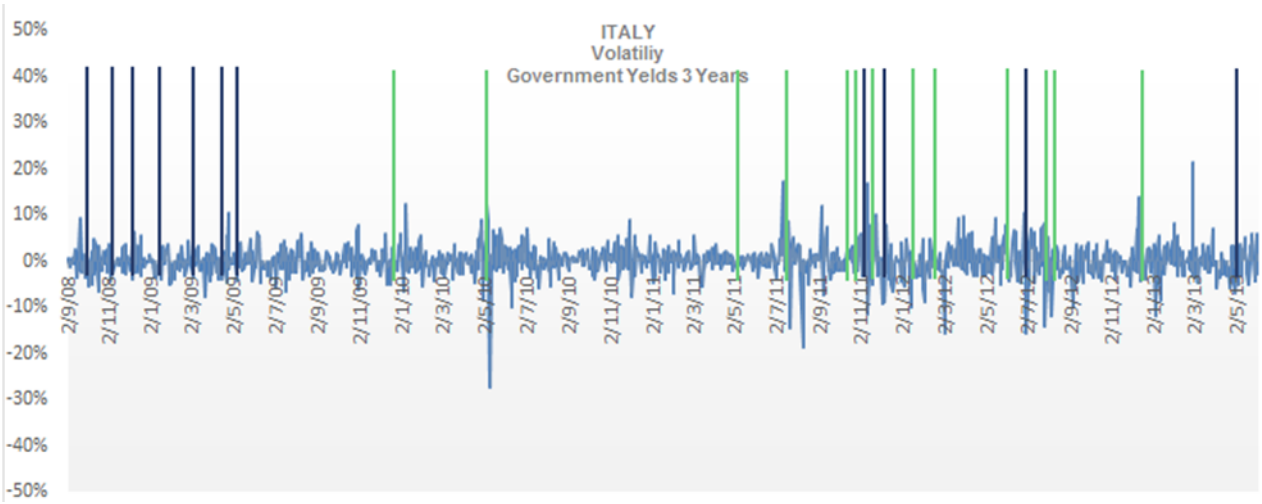


Figure 16: Italy– 3 Years Government Benchmark Yields – Volatility

Source: Thomson Reuters

From 2011 till the summer of 2012, the Government Bond Yields of Greece, Portugal and Ireland presented quite unstable behaviors. Italy and Spain didn't demonstrate such intense volatility. In general, the government benchmark yields responded to the highlighted decisions of the ECB. After months of increasing risk on Spanish and Italian sovereign bonds, endangering the Eurozone economy, the great turmoil calmed down soon after Mario Draghi assured to do "whatever it takes" to preserve the euro and launched he OMT program during the summer of 2012.

There have been strong critiques to these bold actions taken by the ECB, especially by the German authorities. Jens Weidman, the president of the Bundesbank, promptly alleged that the OMT program implied a violation or article 123 of the Treaty of Lisbon[30] that prevents the ECB from monetary financing distressed states, clearly going beyond the ECB's mandate. Weidman took this issue to the German Constitutional Court. So, while the President of the ECB called the OMT programme as "probably the most successful monetary policy measure undertaken in recent time", Ashoka Mody (2014) argues that the program was not well designed because it is supposed to rescue a particular government depending on the austerity plan applied. Like the IMF, the OMT program depends on strict fiscal measures assumed by the sates. Mody (2014) claims that the program is misleading and could harm the ECB's credibility and independence.

At the present time the signs of recovery, even though still shy, are noticeable.
Under strong criticism from Germany authorities, the ECB has acted as never before to tackle the crisis, and apparently the Germans are beginning to accept bolder actions. In March 2014 Jens Weidman, president of the Bundesbank, surprisingly admitted that quantitative easing "is not out of the question"[31]. Abundantly used by the central banks of the United States and Japan, quantitative easing is a monetary policy in which a central bank buys government securities or other securities from the market in order to decrease interest rates and increase the money supply. Therefore, this process increases the money supply by providing financial institutions with capital in an effort to stimulate more lending and liquidity. The key instruments used by the ECB to address the financial crisis are the Securities Market Programme and, since September 2013, the Outright Monetary Transactions. Lorenz Bini Smaghi, a former member of the executive board of the European Central Bank, wrote in the Financial Times (27/03/2014) that the ECB is drifting apart from its primary objective of price stability,

[30] **Article 123 Treaty of Lisbon** "1. Overdraft facilities or any other type of credit facility with the European Central Bank or with the central banks of the Member States (hereinafter referred to as 'national central banks') in favor of Union institutions, bodies, offices or agencies, central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of Member States shall be prohibited, as shall the purchase directly from them by the European Central Bank or national central banks of debt instruments. 2. Paragraph 1 shall not apply to publicly owned credit institutions which, in the context of the supply of reserves by central banks, shall be given the same treatment by national central banks and the European Central Bank as private credit institutions."

[31] http://blogs.ft.com/the-a-list/2014/03/27/reasons-to-favour-eurozone-quantitative-easing/#axzz2xAlqspbV

since inflation, which has been set to be below but close to 2 per cent, is currently closer to 1 per cent. Acknowledging that fact, and observing the main refinancing rate at an historic 0.25 per cent, Bini Smaghi points out that the longer the ECB waits, the higher the chance that it will have to resort to quantitative easing.
In fact, the sovereign debt markets have grew calmer since the ECB suggested that it would consider quantitative easing if necessary to tackle deflation in the Eurozone. [32]

4.3 The ECB's future

The arrival of Mario Draghi to the presidency of the ECB in November of 2011 manifested a change in the central bank's policy. The former president of the Banca d'Italia assumed a proactive and unambiguous attitude. The previous President, Jean-Claude Trichet had increased the interest rate twice right after Ireland requested financial aid, ironically the second increase was on the day after Portugal requested financial aid. The fear of inflation was the argument, but now the ECB faces deflation. Mario Draghi's has lowered the reference interest rate from 1.50% to 0.25%, which is the lowest ever.

In September 2012 the European Commission presented a proposal of new powers to the ECB as part of a future banking union, specifically the creation of a single supervisory mechanism for all the Eurozone's banks, in order to prevent future banking crisis. Later, in July 2013, the European Commission proposed a Single Resolution Mechanism for the Banking Union, to function with the already created the Single Supervisory Mechanism. The ECB will be responsible for the supervision of banks in the Eurozone and other member states that choose to join the Banking Union. Mainly, the banking union involves a single set of rules for banking system combined with a single supervisory and resolution mechanism, supported by an emergency fund. The idea involves preventing banking crisis, and finally addressing the regulatory supervisory function, that was left in the hands of the national central banks since the beginning of the EMU.

[32] http://www.ft.com/intl/cms/s/0/e91c6172-b658-11e3-905b-00144feabdc0.html?siteedition=intl#axzz2xkOfPdS0~

Daniel Gros (2014) is critical of the framework of the European banking union, arguing that it cannot be called a single mechanism, if national authorities will remain responsible for their bank's difficulties. Furthermore, Gros (2014) points out that the Single Resolution Fund will constitute a common fund that will mutualize much of the risk that arises from bank failures, and that €55 billion will be sufficient to deal with eventual problems.

The EMU and the ECB have successfully stopped a collapse of the banking system, and have for now prevented the sovereign debt crisis from evolving into a collapse of the EMU. Ireland has concluded the financial support programme, and Portugal is close to conclude its own programme.

The ECB now faces the exit challenge. Due to extraordinary times, extraordinary monetary policy measures have been taken, and there is a challenge on how will central banks begin to increase the interest rates and to reduce their balance sheets, as well as on what objectives should now be pursued. Benoit Coeuré recently argued (Blinder et al (2013)) that the ECB showed great flexibility addressing the crisis, with effective results. But he points out that the exit may bring risks to the financial stability that has only recently been achieved. Coeuré notes that a well-functioning financial system and the rapid enactment of the banking union are fundamental for an effective exit. Bini Smaghi (Blinder et al (2013)) argues that regarding the exit, the ECB faces a more difficult problem, since the countries of the Eurozone were differently affected by the crisis. Bini Smaghi remarks the Central Banks should engage in a international joint exit. Blinder et al (2013) argue that the Eurozone has experienced a financial crisis and a debt crisis, and that the latter has put at risk the existence of the monetary union. Due to the crisis, the ECB has assumed a stronger role in the Eurozone.

But in general, there are no clear steps towards the developing of the European Union, fiscal or political. The European Union keeps solving one problem at a time, but avoiding the big issues.

Final Remarks

The ECB played a key role in the Eurozone crisis. Within the limits of the treaties, it can be said that the ECB has successfully faced the financial crisis, the banking crisis, the sovereign debt crisis, thereby comprehensively the Eurozone crisis. Unfortunately, this was only possible through the efforts of the people of the countries in distress, who endured the austerity imposed by the ECB, the European Commission and the International Monetary Fund.

But it is also necessary to realize that the contrasts between countries that form the European Monetary Union played a significant role in the crisis. This, of course leads to the issue of the costs and gains of joining a monetary union. Seen in this light, it is clear that the member states of the monetary union were differently affected by the crisis. Countries who favor employment over inflation, with less competitive economies, with inflexible labor markets, have much more difficulties to take part in a Monetary Union.

However, the EMU is a unique project in the world, and the only monetary union to resist without a political union. In order to guarantee the future of the European project, many say that a political union is necessary. So far we continue to have a union of sovereign states that a share a currency, and that will share banking regulatory supervision. The crisis enhanced the role of the ECB, and in turn the ECB became more active and now has more powers. In the future, let us see if these powers are enough and if a monetary union can survive without a political one.
The president of the ECB recently stated that "the architecture of the EMU has been strengthened in ways that many would have considered inconceivable two years ago"[33]

In sum, through this work, which is an attempt to explain the effects of the ECB's measures in the Eurozone crisis, it may be concluded that the measures taken, especially after the summer of 2012 were effective to tackle the crisis.

[33] Mario Draghi Speech: The Path t recovery and the ECB's role, 28 Feb. 2014

The ECB is now a stronger European institution with more instruments and power. The European Union has faced its biggest challenge and has, for now, survived united by the euro. However, the ECB that saw price stability has its primary objective now faces the danger of deflation. Financial stability is now of major importance and the regulation of financial and banking institutions must be undertaken by the ECB in order to prevent further crisis. An efficacious Banking Union, capable to regulate financial integration and to supervise banking institutions is fundamental to the Eurozone. In this presumably final stage of the Eurozone crisis, the ECB has evolved into a much more active central bank, due to the exceptional circumstances.

In the interesting times that lie ahead for the Eurozone, as we approach the exit of the extraordinary measures applied by the ECB and other central banks around the world, we will be able to perceive if the output of the crisis will result in more effective financial regulation, and in the case of the European Union if it will result in effective steps towards the developing of the monetary union.

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