An analysis of the effectiveness of the ECB's monetary policy in the light of the Eurozone's structural problems

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Abstract

As of 2016, the Eurozone has still not fully recovered from the devastating effects of the economic crisis, despite various measures implemented by the ECB. This paper will focus on the reasons why some of the ECB's monetary policy has been ineffective. The framework of the Eurozone and the instruments used by the ECB will be discussed, as well as the structural and institutional differences between countries in the Eurozone. An assessment will be made of the policy implemented by the ECB and their overall effectiveness. This paper shows that there are indeed positive short run effects of these policies, but the long run effects are not as positive, mainly because the huge underlying structural differences in the banking sector and sovereign balance sheets are not being resolved.

1. Introduction

Let’s go back to 2012, a year in which the economy in the Eurozone reached a new low. Investors and economists were worried that the Eurozone would collapse in this year if there were no sudden improvements (Cooper, 2012). The European Central Bank (ECB) was accused of doing too little in the early years of the crisis (La Monica, 2011). Then, in July 2012, the new president Mario Draghi claimed that the ECB would do ‘whatever it takes to preserve the euro’. Together with some newly introduced measures, these statements gradually reduced the spreads in the sovereign bond market and the economy was slowly growing. It should all be positive from here on, right? Fast forward to the 10th of March 2016, when Mario Draghi decided to fire another salvo from his ‘’bazooka’’, as The Economist called it (Economist, 2016). It shows the ECB is desperate to resolve the issues the Eurozone is currently facing, as, despite the newly introduced measures and the implementation of quantitative easing in early 2015, the economy has still not fully recovered from the devastating effects of the crisis.

The persistent problems in the Eurozone may be the result of bad implementation of monetary policy by the ECB, but could also be the result of the structural and institutional differences between countries in the Eurozone. There has been much debate surrounding the establishment of the Economic and Monetary Union whether it is maximizing economic efficiency or not. The fact is that the creation of a well working monetary union in a geographical area with different countries, languages, growth rates, employment rates and governmental structures is challenging to say the least.

Economists argue that the injection of unlimited amounts of money into the economy is useless as long as the root of the problem is not tackled first (Kruif, 2016). This is why the central question in this paper will be: has some of the ECB’s monetary policy been ineffective and why?

To answer this question the Eurozone and its monetary policies will be discussed, after which a quick overview of the crisis will be given. The following chapter will comment on the structural differences in the Eurozone. With the gathered information the central question will be discussed in the next chapter. Following this is a chapter on the way forward for the Eurozone and a conclusion.

2. The Eurozone and monetary policy

2.1 The Eurozone

Before an analysis can be made of what parts of the monetary policy implemented by the ECB, before and during the crisis, have been ineffective and why this is the case, it is important to give an overview of the different terms that will be used throughout this paper. Various terms can be subject to misinterpretation, so it is important to clarify how they will be defined in this paper.

Let's start at the basis: the Eurozone. The Eurozone is an economic and monetary union (EMU) which consists of 19 of the 28 EU member states and is officially operating since 1999. (EC, 2016)**.** The economic and monetary union is a common market in which the members have agreed to share a common currency and implement a single monetary and foreign exchange policy (Rosa, 2004). In a common market trade can be conducted duty free, although there may be some non-tariff barriers, and capital and labor is allowed to move freely (Copeland, 2014). Because of this, the factors of production can be allocated between member countries which enhances productivity. Furthermore, the benefit of reducing trade barriers is the increase in international trade amongst members.

The common market is seen as a first stage to the formation of a single market, which was the objective of the 1987 Single European Act. In a single market a geographical area, in this case the Eurozone, is treated as being part of one territory in which services, people, goods and money are able to move freely and trade barriers of any kind do not exist (EC, 2016). The European Commission argued that the creation of a single market would not be successful without an accompanying common currency, as this would introduce complete transparency and the law of one price for tradeable goods and services (Barnier, 2012). What a common currency essentially means is that countries within the monetary union have an one for one exchange rate, so, put differently, the euro has the same nominal value within the union.

In the Eurozone the nominal value of the euro is the same, but towards to the rest of the world the value of the euro is allowed to ''float'', meaning that the ECB will not intervene in the foreign exchange market with the intention to devalue or appreciate the euro. The value of the euro is set by the brilliant but simple factors of supply and demand, so it can take any value towards other currencies.

There has been much debate on the question if the Eurozone is maximizing economic efficiency by creating the EMU. Robert Mundell has created the theory of optimum currency area (OCA), in which a few criteria for a successful monetary union are stated. It is beneficial for a geographical area to join a monetary union if the benefits exceed the costs (Mundell, 1961). These criteria come down to having a highly integrated market where business cycles are similar, a fiscal union exists and where there is free mobility of capital, labor and services. The Maastricht treaty, signed in 1992, set a few convergence criteria that countries need to meet to be able to join the monetary union. These criteria are however not related to the criteria mentioned by Mundell. In the Eurozone there is no completely free movement of capital, labor and services, business cycles are different and there is no coordinated fiscal policy. Many economists doubted at the time if such a non-integrated monetary union would work.

2.2 The European Central Bank and their instruments

As already described, the European Commission argued that the common market should be accompanied by a single currency: the euro. The monetary policy of the euro is administered by the European Central Bank (ECB). The main objective of the ECB is to maintain price stability (ECB, 2016)**.** The ECB defines this as a yearly increase in the Harmonized Index of Consumer Prices of around 2% (ECB, 2016). The ECB tries to achieve this via various instruments of monetary policy.

Monetary policy includes setting the three key interest rates in the Eurozone. These three interest rates are: the main refinancing rate, the deposit rate and the marginal lending rate. It also includes open market operations (OMOs) like main refinancing operations (MROs) and longer- term refinancing operations (LTROs). Since a few years quantitative easing (QE) is also added to the selection of instruments the ECB uses, as well as outright monetary transactions (OMT) and the securities markets programme (SMP).

2.3. Importance of interest rates

An important instrument used by the ECB in order to reach their objective of price stability in the form of an inflation rate of about 2%, are the interest rates. The way this works, according to economic theory, is that lower interest rates should encourage the consumers to borrow more, thus leading to an increase in the money supplied by banks. This is due to the positive effects of lower interest rates on intertemporal consumption; when interest rates are low, the rewards of saving your money for the future are low, which encourages consumption now. Furthermore, lower rates will also have a positive effect on investment. So the lowering of the interest rate is an important tool in a process of expansionary monetary policy. The result of the rise in consumer spending and investment is an increase of economic growth and a higher rate of inflation.

As said, there are three kinds of interest rates the ECB determines: the main refinancing rate, the deposit rate and the marginal lending rate. As the refinancing rate relates to the open market operations, there will first be a comment on the OMOs, whereafter the deposit rate and the marginal lending rate will follow.

2.4. OMOs

The main refinancing rate is the rate that is set by the ECB for their main refinancing operations. MROs are an open-market operation that is conducted by the Eurosystem. It is one of the key instruments used by the ECB to provide money to the banking system and to influence the short-term interest rates (DNB, 2016). In order to minimize the risk of losses for the Eurosystem, the credit facilities are only given out if the bank is able to provide suitable assets as collateral (DNB, sd).

Other open market operations are the longer-term refinancing operations (LTROs) and the targeted longer-term refinancing operations (TLTROs). LTROs are conducted in the form of a reverse transaction, so collateral is again needed. The operations are conducted on a monthly basis and generally mature in three months (DNB, 2016). In the past years two single programs of LTROs were added to the regular operations to counteract the euro crisis. These LTROs had a maturity of three years (Micossi, 2015). The interest rates for LTRO are approximately 1% (LTRO, 2016). Later on, as of June 2014, the focus of the ECB shifted to the TLTROs. These were targeted at ailing banks who had too many liabilities. The goal was to restore their willingness to lend, as at that time funding for investors was slowing down as well as lending to the real economy (DNB, 2016), where the real economy is defined as the part of the economy that is concerned with the consumption and production of goods and services (FT Lexicon, sd). The maturity for these TLTROs could be up to 4 years and it was another resource for cheap borrowing since the interest rate was based on the main refinancing rate that was relevant at the time of allotment plus a spread of 10 basis points (Knopers, 2014).

2.5. Deposit rate and marginal lending facility

Besides the main refinancing rate, the ECB can set the deposit rate and the rate on the marginal lending facility**.** The deposit rate is the interest rate the banks face when depositing their money at the central bank. As of the 16th of March 2016 this rate is negative at 0.40% per year (ECB, 2016). This means the banks have to pay the central bank in order to park their surplus in liquidity. The goal is to punish banks that store too much liquidity at the central bank and are thus impeding money from getting to the real economy (Randow & Kennedy, 2016).

The last of the key interest rates is the rate on the marginal lending facility. Banks can use this facility to receive fast credit from their national bank against collateral. It is aimed at banks that need overnight credit to fit their liquidity needs. The interest rate is generally 100 basis points, or 0.01%, higher than the minimum bid rate, which is the lowest limit of the interest rate from which banks can bid in variable rate tenders like the main refinancing operation (DNB, sd).

2.6. Quantitative easing, SMP and OMT

Already implemented by the Bank of Japan and the Federal Reserve, the ECB eventually resorted to quantitative easing (QE) on the 9th of March 2015 (Jones, 2015). The €1.1 trillion programme led to a lot of controversy and criticism at the time of its announcement. QE is an important instrument for the ECB in their expansionary monetary policy. The aim of the policy was to target the long-term interest rate and to lower it, while also increasing the money supplied to the economy. Quantitative easing is regarded as an euphemism for injecting the economy with large amounts of ''free'' money. The term ''free'' money comes from the fact that the ECB is creating electronic money that didn't exist before. It is essentially enlarging the amount of credit in their bank account. In the media QE is often referred to as ''helicopter money'', an idea brought to attention by economist Milton Friedman (Friedman, 1969)**.** He describes it as dropping money out of the sky for the citizens to be distributed among each other. There is however a big difference between simply dropping money out of the sky and quantitative easing.

The way QE works is that the ''new'' money created by the central bank is printed for the purpose of buying assets from the commercial banks. Examples of assets the ECB buys are government bonds, corporate bonds and mortgage-backed securities (R.A., 2015). The assets targeted by QE typically have a longer maturity than those targeted by open market operations. Subsequently, the yield on the assets bought by the ECB will drop due to the rise in their price. Banks will then buy new assets, like shares and bonds, with the money they received, which again leads to a rise in price for these assets and a lower yield. Because of this, interest rates for consumers are also lower, which encourages consumer spending and investment.

Besides QE the ECB also introduced the securities markets programme and the outright monetary transactions. The SMP consisted of the ECB buying sovereign bonds, however not unlimitedly, in the secondary markets that were in need of liquidity and had debt-related issues (Eser & Schwaab, 2013). The SMP was later replaced by OMT. OMT is almost similar to the SMP, but the difference is that under OMT sovereign bonds of specific euro area countries are purchased. It set the ECB as a lender of last resort in times of a crisis. The countries would get help on the prerequisite that it agrees with the conditions on financial stability stated by the EFSF/ESM-programme. There is no increase in the money supply with OMT, as the ECB will withdraw the same amount of money out of the economy as it invests.

2.7. Expansionary monetary policy

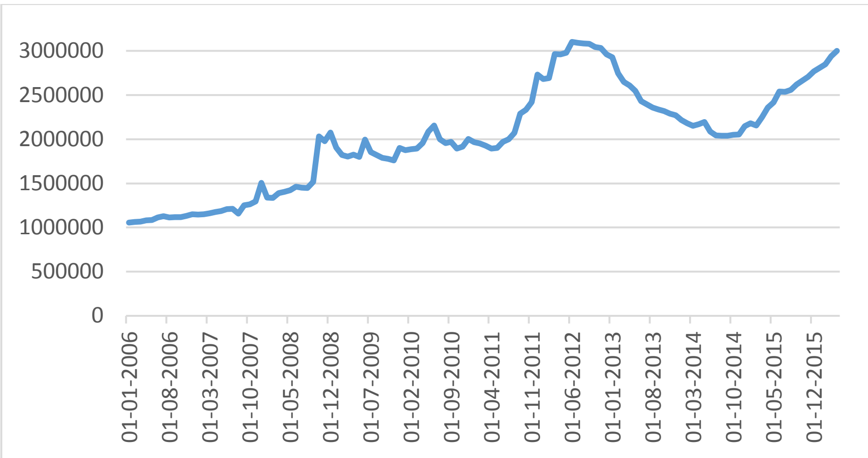
Since Mario Draghi became president of the ECB late 2011, coincidentally or not, it is engaging in a process referred to as expansionary monetary policy. This is a process in which money supply is growing more rapidly in the economy than usual to counteract unemployment, a low rate of inflation and low economic growth. An expansionary monetary policy also leads to a devaluation of the currency which is largely attributed to the effect of the interest rates. This improves the competitiveness of the Eurozone and thus to an increase in Europe’s export as a whole and a decrease in imports. It will mean a higher GDP for the Eurozone. The majority of the economic growth will be felt in countries in Europe with a high degree of openness, which is a measure of how much the country’s trade sector (imports + exports) contributes to the GDP.

Not only monetary policy is important for economic growth, but so is fiscal policy carried out by governments (Mountford & Uhlig, 2008). The main instruments with which the government can influence economic growth are changes in government spending and taxation. According to Keynesian theorists a downturn in economic activity, which is the case in the European crisis, should be met by tax cuts and an increase in government spending to soften the fall of the economy.

3. Quick overview of the crisis

The main triggers for the European debt crisis were the financial crisis of 2007-2008 and the Great Recession of 2008-2012 (European Commission, 2014). During the course of 2008 banks that heavily invested in the American market incurred vast capital losses as a result of the global financial crisis. Banks were no longer lending to each other and the amount of bad debt increased. At that time the predictions on the future of the Eurozone were pessimistic, which led to action taken by the ECB, cutting their main refinancing rate down from 4.25% to 1% (ECB, 2016). Furthermore, as of late 2008, the ECB granted the main refinancing operations and long-term refinancing operations on a full allotment basis and at fixed rates, giving banks the opportunity to request as much funds as they want for a steady cost. Also, the maximum maturity of the LTRO was increased from three to six months and as of May 2009 to 12 months (ECB, 2009). This all caused the rise in assets on the ECB's balance sheet that can be seen around late 2008 in Figure 1.

Figure 1: ECB balance sheet (€M)

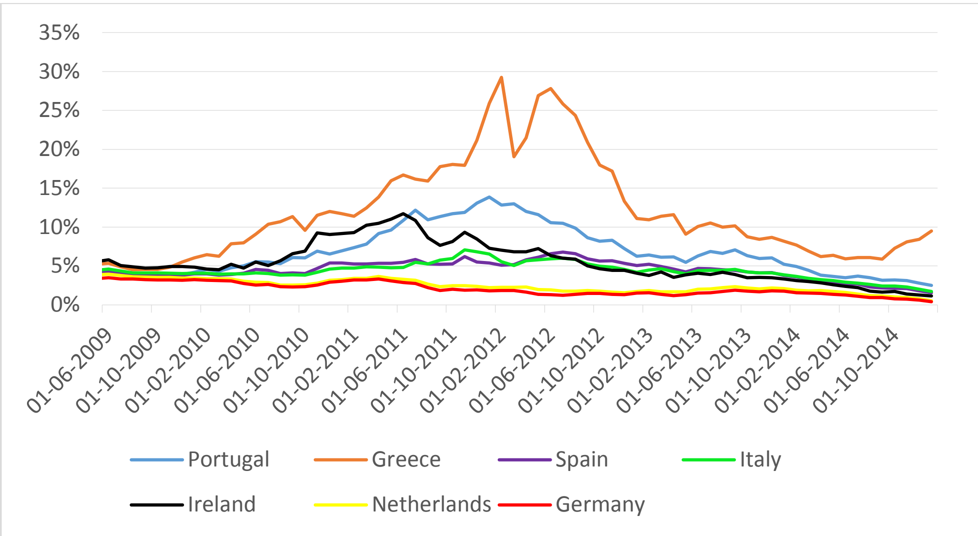


Source: fred.stlouisfed.org data

The objective of the ECB was to stabilize the financial market and provide the European banks with much needed liquidity. Despite these measures 10 major banks requested a bailout by the government (Wagstyl, 2009). The need for government rescue was high, as the financial markets worried that the banks would collapse on any given day. The general consensus in the market in 2008 and the majority of 2009 was that the governments could deal with the banking crisis, as pre-crisis debt/GDP ratios of most countries (except Italy and Greece) gave comfort to investors.

Until late 2009 the focus had been on stabilizing the financial markets and not on the sovereign debt market, where interest rates remained calm. However, this changed. Although countries like Ireland and Spain had already reported higher than expected government debt/GDP ratios, the real blow came when Greece revised their government debt/GDP ratio forecast of 2009. At 12.7% it was more than double the figure they published before (Telegraph, 2011). Furthermore, the figures of the previous years were also revised and showed larger deficits as well. Greece was in a worse state than already perceived. It shocked the markets and trust in the Eurozone plummeted. This showed in the divergence that followed early 2010 in the sovereign bonds market with a ten-year maturity, as a result of investors who worried that the governments could not pay back their debt after the shocking numbers published by countries like Spain and Greece.

Figure 2: Yield on 10-yr government bond

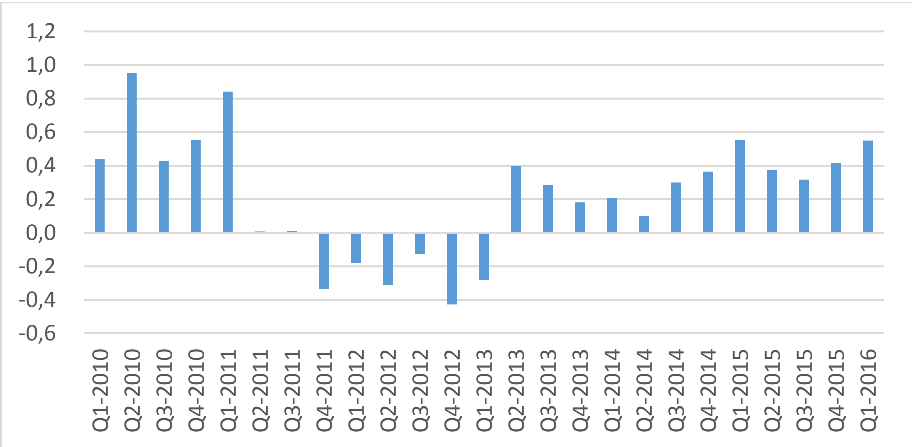


Source: fred.stlouisfed.org data

Markets were distressed, so the ECB decided to launch the Securities Market Programme in May 2010. From 2010 to early 2012, the ECB acquired up to €220 billion worth of bonds (Eser & Schwaab, 2013). Despite these measures, investors became increasingly worried that a sovereign default would lead to solvency-issues for banks that had a large exposure to sovereign risks, resulting in a banking crisis. These worries were partly instigated by the Greek private sector involvement. The banking crisis on the other hand caused the market assessment of sovereign solvency to be even more negative due to the high probability that governments would be forced to inject money into the banking system. Following this vicious circle, the top rating agencies downgraded the ratings of banks and countries in late 2011, which damaged the situation even more. This whole process is also known as the so called ''doom loop'' between the sovereign crisis and the banking crisis (Micossi, 2015).

The ECB had to do something to counteract these worsened conditions. It lowered the minimum reserve requirements from 2 to 1 percent and launched their three-year (very) LTRO's with rounds in December of 2011 and February of 2012. These LTRO's were mostly targeted at the Spanish and Italian banks. Even though the ECB injected more than 1 trillion euro into the economy (Fratzscher, 2014), as can be seen by the massive increase in Figure 1, the first months of 2012 saw the economic condition of the Eurozone reaching new lows. Bond yields in the Eurozone, especially Spain, Portugal and Greece, were reaching all-time highs (Figure 2). This increase in bond yields was the result of increasing risk premiums caused by the probability that some countries would leave the euro. Growth rates were low again (Figure 3).

Figure 3: GDP growth euro area (percent change)

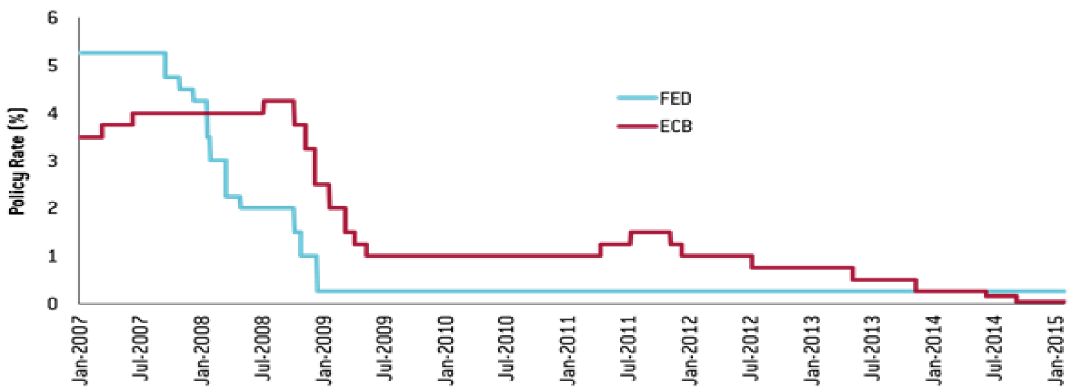


Source: stats.oecd.org

This uncertainty and pessimistic forecasts led the European council to create the banking union in June 2012. The banking union operates from a single rulebook that all member states should follow, which should solve the ''doom-loop''. This was followed by Mario Draghi's famous 'ready to do whatever it takes' speech in July, after which in September the ECB announced its OMT-programme that would provide the secondary markets with unlimited amounts of money. Mainly due to these three events, the ECB had momentum working in their favor.

As of late 2012 and the beginning of 2013, spreads on sovereign bonds were gradually going down. Interbank lending was also gradually recovering and the economy was slowly growing. The interest rate was however still not as low as the Fed had set it back in 2009. Real economic growth was hampered because of this and inflation falling. But early 2014, the ECB set the interest rate on par with the Fed's rate.

Figure 4: Eurozone interest rate



Source: bruegel.org

Despite this, the economy in the Eurozone somewhat stalled in the middle of 2014. Mario Draghi's speech in August of 2014 marked the beginning of a new type of policy the ECB would resort to. It was now implementing a more expansionary monetary policy. It cut interest rates by 20 basis points on the MRO and the deposit facility to 0.05% and -0.20% respectively. The marginal lending rate saw an even bigger cut of 45 basis points bringing it down to 0.30%. Furthermore, new rounds of TLTROs were made available from September to December of 2014, with another window from March 2015 to June 2016 (Reuters, 2014). It was however not as successful as the VLTROs issued in 2011. These measures didn't work exactly as the ECB had planned, or hoped for. The inflation expectations were still showing downward trends and the economy was not recovering.

Something drastic had to be introduced, and the ECB did just that. On the 22nd of January 2015, Mario Draghi announced that the ECB would start with a new programme: quantitative easing (ECB, 2015). With this programme it would purchase €60 billion worth of assets each month. It started with the programme in March 2015 and it will last until September 2016.

The result of the event on the ECB's balance sheet can be seen in Figure 1. The programme would continue for as long there were no consistent positive deviations to the 2% inflation rate. In December of 2015 the ECB extended the programme to March 2017, due to the fact that the economy was still not growing quick enough and inflation was still low. A negative inflation rate in February 2016 and the pessimistic forecast of the inflation rate caused the ECB to expand on its QE-programme. On the 10th of March 2016 it increased the total amount of assets bought per month from €60 billion to €80 billion. Furthermore, it lowered the deposit rate to -0.3% and the marginal refinancing rate to zero.

4. Structural differences in the EMU.

The ECB has since the beginning of the European crisis tried to counteract the disastrous effects of the crisis. The root of the problem may lie deep within the structure of the euro area. To assess whether the structure of the Eurozone has contributed to the ineffectiveness of the ECB's measures, the structural differences need to be discussed first.

4.1. Institutional-structural problems of the Eurozone

The major problem within the Eurozone is that, although the euro area has a common currency, institutionally speaking there does not exist an optimal currency area, because of massive structural differences between the northern and southern European countries.

The northern European countries, like Germany, Belgium and The Netherlands are designed on maintaining good international competitiveness. The export/GDP-ratio is above 50% for Germany in 2013, with Belgium at 84% in 2014 and The Netherlands not much lower than that. Compare this with southern European countries like Greece, Portugal and Spain, which sit between 30% and 40% in 2014 (Worldbank, 2014). This is, amongst others, the result of a well-organized collective bargaining system in the northern European countries as opposed to an unregulated system in the southern countries (Iversen & Soskice, 2013). This reflects in the relatively low and competitive wages in the traded sector and relatively high wages in the non-traded sector in the northern European countries. This means that they can maintain a high price level, but are still very competitive. However, in the south European countries, wages in the trade sector are high, thus uncompetitive, and wages in the non-traded sector are low. These countries are not competitive, but the low price level encourages tourism.

These differences are arguably a matter of differences in culture, with southern European countries having society based on traditions and the northern part being more progressive (Iversen & Soskice, 2013).

4.2. Structural differences in debt accumulation

One of the benefits of creating the EMU was to tackle the problem of the weak southern currencies and the subsequent high risk premiums, making their interest rates higher than the EU-average. This resulted in their banks being undercapitalized and a low supply of foreign capital. Because of the introduction of the EMU, the southern countries saw that the introduction of one common currency and the single interest rate meant their access to foreign capital increased. Long term interest rates went down significantly as a result. The result was a substantial increase in borrowing concerning private consumption and investment in real estate (Fagan & Gaspar, 2007), while the northern European countries like Germany were not increasing their debt. This is shown in table 2. Ireland is added because its borrowing-pattern is similar to that of the southern European countries.

Table 1: Domestic credit to private sector (% of GDP)

	1995	*1998*	*2002*	*2007*
Germany	97.76	113.28	110.86	96.60
Greece	28.87	32.20	53.34	84.54
Ireland	67.41	85.39	75.43	158.11
Italy	54.00	55.66	62.24	82.03
Portugal	62.60	88.43	118.98	142.25
Spain	70.37	82.91	99.35	167.13

Source: World Bank data

The increase in credit resulted in higher prices for real estate and an expansion of consumption (Tilford, 2010), which led to higher employment levels and a rise in economic growth.

The credit boom in the southern countries observed in the years leading up to the crisis, mainly due to the unusually low interest rates, should have been seen as an important risk factor for the banking crisis a few years later (Gourinchas & Obstfeld, 2012). This was however not recognized soon enough, as up to the beginning of the global crisis in 2007, the EMU was perceived to be a success for the southern European countries; long-term interest rates were normal, more employment, better growth and more consumption. This view changed when the crisis hit, leading to a sharp decrease in the supply of credit. House prices went down, which was a huge blow due to the massive investing in real estate over the last years. Consumption decreased and the unemployment rate increased. Investors, who before the crisis hit didn't worry about the increase in debt year by year, now started to doubt if the countries would grow quick enough to repay their debts.

4.3. Current account imbalances

The structural imbalances may best be seen in the area of trade. One of the perceived benefits at the time of creation of the EMU was a convergence in competitiveness between northern and southern Europe. The difference between export/GDP-ratio between the northern (Germany, Netherlands, Belgium) and the southern (Italy, Greece, Spain) European countries was 20-25% in 1992, but after the implementation of the EMU it rose to 40% in 2008 (Iversen & Soskice, 2013). There was thus no such thing as a convergence. This can be attributed to the institutional differences in the labor markets between north and south. Because of the badly organized labor unions in the south, they were not able to control costs of labor. In addition to this, the countries could not devalue the currency under the EMU. These two factors caused the real labor costs of southern exports to rise, making them uncompetitive.

Subsequently, current account imbalances in the southern European countries started to deteriorate when the euro was introduced. The current account deficits were not significant before the introduction of the euro. However, in the period from 2003 to 2007, countries like Greece, Spain and Portugal had large deficits. Germany and the Netherlands on the other hand were running healthy surpluses, as can be seen in table 2.

Table 2: Current account average (% of GDP)

	1992-1998	*1999-2002*	*2003-2007*	*2008-2012*
Germany	-0.98	-0.41	4.58	6.01
Greece	-2.12	-5.28	-8.83	-10.40
Ireland	2.22	-0.43	-2.63	-1.79
Italy	1.39	0.34	-1.00	-2.36
Netherlands	4.29	2.49	6.39	7.44
Portugal	-2.09	-9.64	-9.16	-8.12
Spain	-1.39	-3.96	-7.12	-4.17

Source: IMF data

This imbalance between north and south is however not bad by definition (Giavazzi & Blanchard, 2002). If the resources were allocated efficiently from capital-rich to capitalscarce countries, this current account imbalance would be justified and positive for the structural differences in the Eurozone, but only if the capital inflow was invested in capital that would grow productivity in the long run. This would improve their competitiveness.

However, this is not what happened. A lot of investments were made in unproductive areas, like real estate (Lane, 2012). Furthermore, the money that flowed into the country was used to fuel excessive consumption (Tilford, 2010). This caused an accumulation of the external debt without the prospect of future productivity growth, which is risky (Blanchard, 2007). The decline in competitiveness in conjunction with the accumulation of debt, discussed in the previous section, made investors worry if the countries would be able to repay their debt. Investors saw that the causes of the trade deficits were tough to resolve without a devaluation (Iversen & Soskice, 2013). After this assessment, interest rates on 10-year sovereign bonds skyrocketed.

5. Has some of the ECB's policy been ineffective and why?

Based on the information provided in the theoretical framework, the overview of the crisis and the section on the structural differences, an assessment can be made of the reasons why some of the monetary policy exerted by the ECB, before the crisis and during the crisis, has been ineffective.

5.1. Policy before the financial crisis

The root of the problem why some of the ECB's policies, before and during the crisis, have failed, is the creation of the EMU. Sovereigns are free to implement their own economic and fiscal policies. Good as this sovereignty may seem, this is where the problems start. The Eurozone is too diversified, as discussed in the previous section, for one single monetary policy to work. The Eurozone is not an optimum currency area in that regard.

For an optimal currency area to work, there needs to be a high level of political and economic integration. Movement of capital and labor needs to be free, thereby minimalizing the risk of stagnation in one country and excessive growth in the other. It would furthermore reduce the risk of inflation and deflation in these countries (Tilford, 2010). Another criteria for integration is the flexibility of labor markets to restore competitiveness of an economy, as devaluations are ruled out. Finally, policy coordination is key in an optimal currency area. Because of the single currency, the policy of one country can significantly affect other countries. It is disastrous for an optimal currency area that countries implement policies that will help them, but harm other countries, i.e. beggar-thy-neighbor policies.

These criteria are not met by the Eurozone. The structural differences discussed previously indicate how heterogeneous the economies in the Eurozone are. With the introduction of one common monetary policy came one interest rate. It was the major monetary policy the ECB used in the years leading up to the crisis, but because of the heterogeneity of the economies, this created a complicating situation. Most southern European countries and Ireland had high growth rates in the beginning of this century, accompanied by high inflation. The interest rate that was set by the ECB was too low for these countries, initiating a credit boom. This created the problems discussed in the previous section; high consumption, high level of unproductive investments, large amounts of imports and the resulting trade deficits. On the other hand, the interest rate was too high for countries like Germany who had relatively stable growth, but were experiencing weak domestic demand. This hindered an increase in growth of domestic demand.

This caused an unsustainable situation that was deemed to be sustainable by the ECB and the European Commission. Because the Eurozone as a whole experienced good inflation rates, steady economic growth and good competitiveness in trade, the underlying problems in the countries were ignored (Tilford, 2010). The credit boom and subsequent growth in the southern countries mitigated the fact that these countries had huge structural problems which needed to be resolved. Subsequently, northern countries like the Netherlands and Germany did not hesitate to provide the southern European countries with their demand for imports, despite their massively increasing trade deficits. This in turn reduced pressure on the northern European countries to address their weak domestic demand.

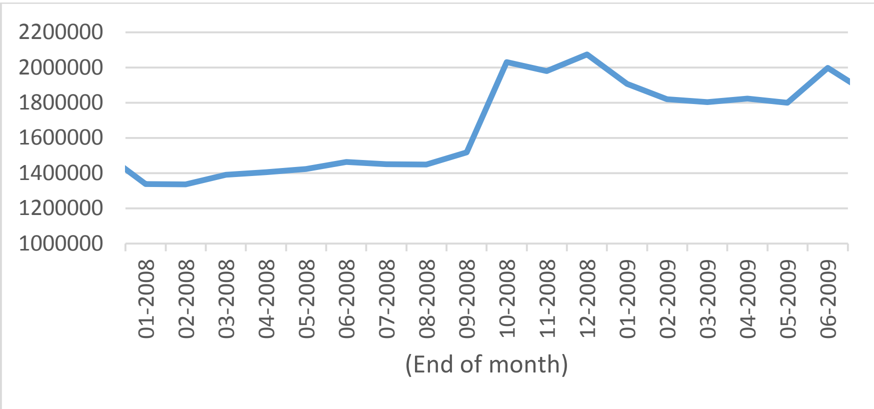
This could have been resolved by coordinating policies. However, this is one of the criteria for integration that is not met by the Eurozone. Because of the failure of governments of the southern countries to tighten fiscal policy, their economies were getting more instable by the day, enlarging the differences between northern and southern Europe. This should have been recognized by the ECB, as this was a ticking bomb. Instead the ECB focused their attention on the wrong areas. It focused on the output gap between the northern and southern countries to assess the cyclically adjusted budget balance. It ignored major macroeconomic risks that would develop due to the increase in external imbalances, debt levels, the credit boom and investment in real estate.

5.2. The euro crisis

5.2.1. 2007-2009

Since its creation the ECB has followed the relatively orthodox view of the Bundesbank and during the beginning of the crisis it followed this passive approach to monetary policy. When the financial crisis hit in 2007 and the fall of Lehman Brothers in September 2008, which dried up any liquidity in the markets, the ECB had to react. As discussed in chapter 4, it increased their MROs and LTROs starting October 2008 to the level that liquidity among banks would be flowing again. Its effect for the economy can be seen in the zoomed-in version of Figure 1. The ECB's balance sheet increased with 34% in one month.

Figure 5: ECB balance sheet (€M)



Source: fred.stlouisfed.org

The figure shows the ECB successfully established their role as lender of last resort and showed that the Eurosystem was able to deal with liquidity problems (Reichlin, 2014). However, it could not prevent the economic deterioration that can be seen in the decline in GDP growth (Figure 3), but so couldn't other major central banks in the world.

This policy shows the orthodox thinking of the ECB. It was solely addressing the problems concerning liquidity. It was intervening in the money market with its non-standard instruments like the MRO and the LTRO, while focusing the interest rate on the price stability. This falls under the separation principle the ECB follows (Trichet, 2008). This shows that the ECB did not recognize the slowdown in the global economy and the risks associated with the structural differences in the Eurozone. Otherwise the interest rate should have been reduced like the FED did. But the orthodox view of the ECB impeded this, due to the fact that it was against an active expansion. Accordingly, the rate set by the ECB was reduced at a slower pace than the FED's rate, with it still being 4.25% as of October 2008, as can be seen in Figure 4. This impact of the high interest rate was not recognized by the ECB (Micossi, 2015), increasing the effect of the economic downturn even more.

Furthermore, as discussed in the previous section, structural differences caused massive problems in the balance sheet of governments and banks. The non-standard measures would solve problems for the short run, but these structural differences were a treat to solvency in the long run. The ECB relied on authorities to address these problems, but these authorities betrayed the ECB's trust. The measures undertaken by the ECB lowered the incentive for national authorities to act on these problems and the ECB itself is not able to do so (Giannone, Lenza, Pill, & Reighlin, 2011). It showed the flaws again of the Maastricht treaty. Political and economic integration in the Eurozone impedes the Eurozone from tackling its most urgent problems.

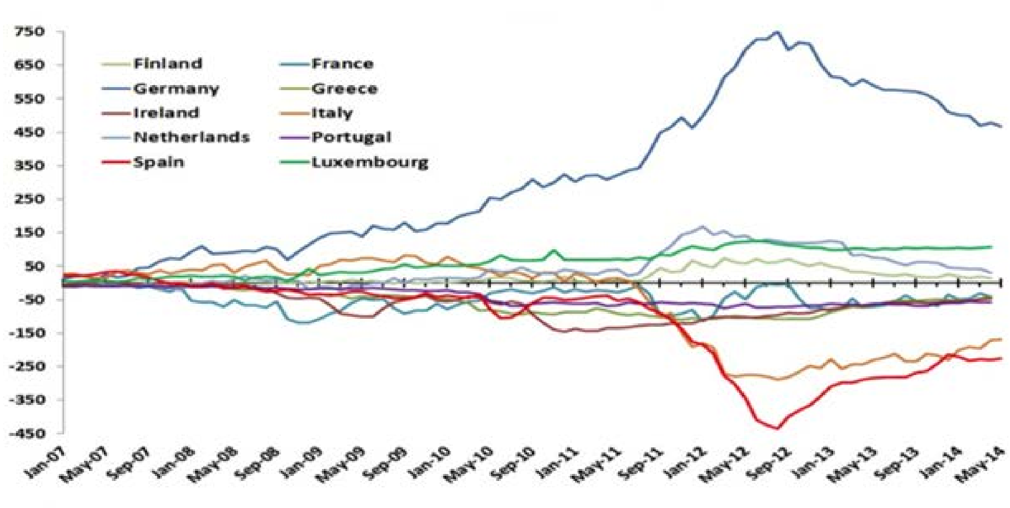
5.2.2. 2010- May 2012

Following the revised government budget forecast of Ireland, Spain and most importantly Greece, uncertainty arose on the future of the Eurozone and it shocked the financial markets. Bond yields of these countries started to diverge and were reaching new heights (Figure 2). Greece for example was not able to borrow enough to meet their payments. The ECB had to react to resolve this threatening issue. It could choose between strict measures, like a default, or purchasing unlimited amounts of the sovereign debt. But the ECB chose to do neither of these options that would address the solvency issues directly, but be somewhere in the middle. This is where the SMP was announced. Together with the ''troika-progamme'' and reduced lending constraints it kept Greece running, however this period was devastating for Greece's economy.

However, the actions by the ECB were not credible. The actions of the ECB were still very much influenced by the orthodox view laid down in the Maastricht Treaty, when in fact the problems needed a more rigorous approach. The ECB thought that an injection of liquidity and reforms on the supply side would stabilize economies like Greece and Spain. This is shown by the consecutive increases in the interest rate in April and June 2011 to 1.5% 2011 (Figure 2).

Because of this lack in credibility, sovereign bond markets and the banking system was under continuous pressure. This resulted in Mario Draghi announcing the (Very)LTROs Late 2011. This finally was a rigorous measure which the financial markets welcomed. Because of this, the banks had capital to invest in the more profitable sovereign bond market. This resulted in an increase in the ''Target2''-balance, as can be seen in Figure 6. This balance shows the amount of cross-border capital transfers between national central banks.

Figure 6: Target 2-balance (€billion)



Source: moneyandbanking.com

The structural problems in the Eurozone were however still not being resolved during this part of the crisis. Because of the cheap credit that came available due to the measures by the ECB, banks were not incentivized to deal with their underlying structural problems. Because of this, lending to households and non-financial institutions was low during this period (Figure 7). Furthermore, although the VLTROs funded banks with much needed liquidity which they used to buy sovereign debt, it didn't tackle the structural problems. It even increased them, as sovereigns were now borrowing even more from banks, which was, quite ironically, one of the major problems in the Eurozone.

Figure 7: Annual change in loans to non-financial corporations in Eurozone

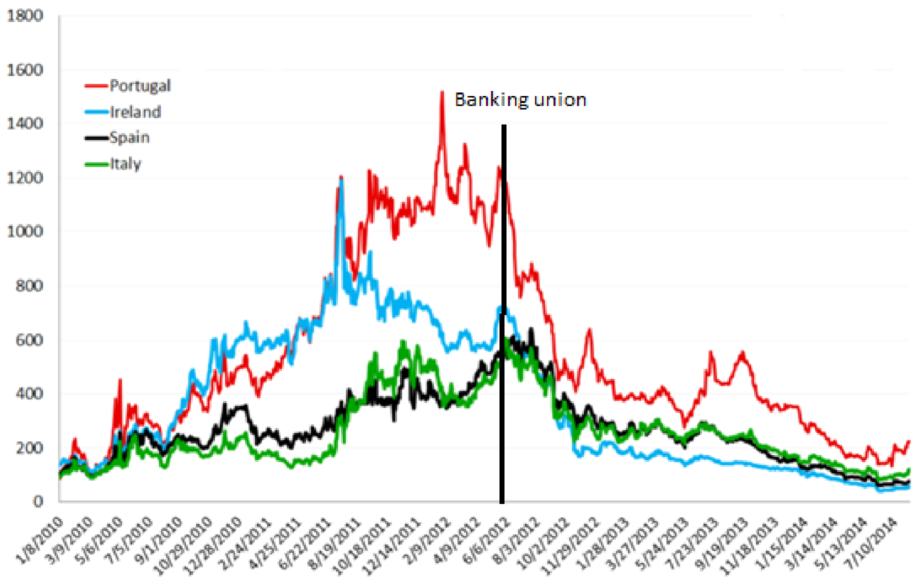
Source: qz.com

5.2.3. June 2012-now

Capital was provided to the Eurozone at a slow pace, because of the interactions between the instable sovereign bond markets with the equally instable banking system. Problems regarding solvency and liquidity began to increase. It led to Mario Draghi's speech in which he said to do 'whatever it takes' regarding the Eurozone, which was later followed with the introduction of the OMT-programme. The announcement of unlimited liquidity, under certain circumstances, for countries in need, was greeted positively by the financial markets. Spreads on government bonds went down after the announcement (Figure 2). The financial markets were getting more stable because of this, laying the foundation for further economic recovery. A remarkable effect given that not one euro is spend under the OMT-programme. Its effects have been achieved purely via the credibility of Mr. Draghi's statements. The drawback is that countries like Italy and Spain did not have to go through the ESM-programme and its conditions on financial stability to benefit from the stabilizing of the financial markets.

The structural problems in the banking sector were still present. This led the European council to create the banking union in June 2012, which would determine a single set of rules for all member states to follow regarding the banking system. Now the restructuring of the banking system could commence. Bank risk decreased as can be seen in Figure 8.

Figure 8: Sovereign CDS

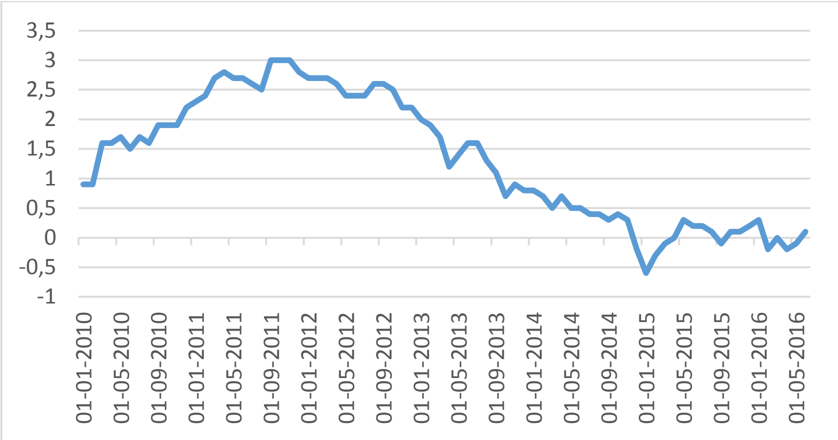


Source: hedgeye.com

Despite the strong foundation that was laid down for economic recovery, economic growth in 2013 was still slow and inflation was creeping downwards. To instigate a recovery of the economy, the ECB introduced new measures. During the course of 2014, it lowered the deposit facility to a negative value of -0.2 in September for the first time in history and it lowered the MRO rate to 0.05. It also introduced programmes of targeted LTROs. Furthermore, in August 2014 Mario Draghi stressed the importance of developing a fitting mix of monetary and fiscal policy for the Eurozone and more commitment by sovereigns to implement structural changes. This was a first step to tackle the huge underlying structural problems in the Eurozone.

The rate cuts and the announcements did not achieve its objectives. Moreover, demand for the TLTROs was in total €212 billion, comparing it to the €1 trillion of the VLTROs (ECB, 2016), it showed that there still was not enough demand for credit in the market and, possibly, that interbank lending was returning to a normal level. The economy was still weak and inflation declining, with the annual rate at -0.2% in the last month of 2014 and -0.6% in January 2015 as can be seen in Figure 9 (Eurostat, 2015).

Figure 9: Inflation rate (%)



Source: ECB data

It led to the ECB announcing their most drastic measure to date: quantitative easing. Under this programme, the ECB would buy €60 billion worth of assets each month from March 2015, until September 2016. The ECB's balance sheet increased significantly starting in March 2015 as can be seen in Figure 1.

The programme raised the annual inflation rate back to positive levels, but it didn't move too much towards the target rate of around 2% in 2015. GDP growth rose significantly in the first quarter of 2015, following the announcement of the QE-programme. However, growth rates started to decline again as 2015 went on (Figure 3). Furthermore, average unemployment rates in the Eurozone were still above 10%, with Greece as outlier at 24.4% (Thomas, 2016). In this regard, quantitative easing didn't have the desired effects of boosting economic growth and raising the inflation rate.

Because of the negative results, the ECB decided in December 2015 to extend the programme to March 2017, and later on in March 2016 it decided to expand the programme from €60 to €80 billion per month and introduce new rate cuts on the deposit rate and MRO rate. Many economists have argued that injecting vast amounts of liquidity into the market does not have any effect as long as there is no major restructuring in the banking system and sovereign balance sheets (Gallo, 2015; Khan, 2016). Time will tell if these measures will have the desired effects.

During the assessment of the ECB's policies before and during the crisis, one major factor has been the need for restructuring at different levels in the Eurozone. There has not been enough emphasis on the importance of restructuring for the banking system and the balance sheets and institutional framework of sovereigns. The ECB is the only authority able to conduct monetary policy, but does not have the competence to coordinate monetary and fiscal policies. So the root of the problem is the framework in which the euro area operates. Many economists believe that if these problems were tackled sooner, the euro crisis may not have been so severe and resolved sooner.

6. The way forward for the Eurozone

6.1. Post-crisis problems

In the aftermath of the sovereign debt crisis in the Eurozone, public debt ratios have increased to unhealthy levels. This needs to be addressed in order assure investors that the Eurozone as a whole is moving forward. However, some serious fundamental problems arise in facing these problems.

GDP growth rates are low as of now and the future does not look promising in this regard. Growth in output can be harmed for a long time in the years after a banking crisis, as can be seen from historical data (Reinhart & Rogoff, 2010). Furthermore, human capital will be negatively affected by the high unemployment rates during the crisis (DeLong & Summers, 2012). Because of low GDP growth, the public debt ratios will not decrease in this regard.

If GDP does not grow, debt must be targeted. The problem is however that in countries with high debt levels, fiscal policy should be strict, thus implementing an increased tax rate and reducing spending. This is however not a popular strategy under the population and thus difficult to sell by an elected government. But sometimes hard choices need to be made. Another option to reduce the debt level is to use a method called ''financial repression'', under which, through various regulations, governments can finance their debts. This is however difficult to implement due to the openness of the capital market in the Eurozone (Sbrancia & Reinhart, 2011).

A last significant problem are the significant risk premiums that the countries with high debt levels still see. These risk premiums show that investors are still hesitant with investing their money in these type of countries, as they may not see their money back.

6.2. Reforms needed to resolve the Eurozone's issues

As argued, the Eurozone struggles because of deep underlying structural problems that need to be resolved. So far, few real initiatives have been made to tackle these problems. Reforms in different areas are needed for the Eurozone to move on and enhance its overall performance.

The first area that needs to be reformed is the level of integration regarding movement of capital, services and people inside the Eurozone. Despite claiming to be a single market, the Eurozone still has some barriers in areas that impede the area from being highly integrated. In the services area for example some large barriers still exist (Tilford, 2010). Labor markets need to be fully flexible to deal with a loss in competitiveness, as devaluations are nog longer possible for the member countries. This way real wages can decrease and restore competitiveness. Of course problems like language barriers are big obstacles to overcome, but so far Eurozone institutions haven't even tried, mainly because Eurozone countries are not fond of the idea.

Furthermore there needs to be a higher level of policy coordination. This is essential in an area with one monetary policy, as some countries implement policies that may hurt other member countries or create massive imbalances within Eurozone, as happened before the crisis. Policies need to be coordinated in order to achieve the best maximum result for the Eurozone as a whole and not for a specific country. Some efforts have been made to implement this, but it has encountered opposition by a few countries led by Germany. As a result the proposals were rejected.

Also, the banking system needs to be reformed. In the Eurozone especially, banks are vital for economic growth. The creation of the banking union in 2012 was a good first step in restructuring the banking system. Some big problems still exist however. The dependency of countries on banks and vice versa is still a major issue. In 2012, the bank assets/GDP ratio for the Eurozone was 360%, as opposed to 80% in the US (Gibson, Palivos, & Tavlas, 2014).

Sovereign bonds and their spread have had a devastating impact on the economy of some countries during the crisis. This problem could be resolved by introducing ''Eurobonds''. This way the devastating effect of speculative attacks on the markets for sovereign debt could be reduced. The rate would be the average rate in the Eurozone.

A final solution may be the establishment of a fiscal union in the Eurozone, or at least to some extent. The ability to exert fiscal policies of different states would be given to an authority like the ECB. This authority would then be able to decide on tax rates and spending behavior. A central budget would also mean that the authority would be able to help countries in need in order to stabilize the Eurozone. The Eurosystem would then be able to coordinate fiscal and monetary policy in such a way that the Eurozone as a whole may benefit.

7. Conclusion

To answer the central question whether some of the ECB's policy has been ineffective and why, information was needed in some vital areas. In this paper information was provided on the instruments used by the ECB in their monetary policy and the Eurozone. Furthermore, an overview of the crisis has been given and the structural differences in the Eurozone as a result of the monetary union were discussed. With this information an assessment could be made of the effectiveness of the monetary policy.

The years leading up to the crisis showed that the countries in the Eurozone have major structural differences. The level of political and economic integration in the Eurozone is low. Because of this, the structural differences between the countries became more problematic by the day. The southern European countries were experiencing a credit boom due to low interest rates, having large trade deficits and high levels of unproductive investment. Coordination of policies could have been the answer to the problems, but no real steps have been made to achieve this. The ECB and the EC, who focused their attention on the wrong areas, should have recognized these problems and should have resolved them much sooner.

These structural differences led to the crisis hitting the Eurozone as hard as it did. In the first years of the crisis, the ECB has had a too passive approach to tackling the problems, deepening the economic downturn. It also failed to tackle the structural problems that would cause problems in the long run. In the following years the ECB took a more rigorous approach to resolve the crisis. However, it showed that although the measures implemented by the more ECB did indeed have some positive short run effects, like the VLTROs and the OMT-announcement, the medium and long run effects have not been too positive. The economy is still weak as of now. An important reason for this are the underlying structural differences in the banking system and sovereign balance sheets.

So the root of the problem why some of the ECB's policy is ineffective, are the structural problems in the Eurozone. Perceiving the EMU as an optimal currency area is a mistake, as there is no high level of economic and political integration. The economies are too diversified for a single monetary policy to work. The instruments that are available to the ECB have not been fully able to solve the problems that were developing in the crisis, at least in the long run. The structural differences are the main reason for the devastating effects of the euro crisis and why the ECB had trouble to tackle the problems during the crisis.

Some further research could be done on the effect of the quantitative easing programme and other measures announced on the 10th of march 2016, as it is, as of now, too early to tell if it is going to have a positive effect in the long run. This is important to know, as this shows if the ECB should continue with injecting vast amounts of money into the current economy or if it is useless to do so. Also, some further research needs to be done on the possible effects of the proposed solutions for the future of the Eurozone.

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