

Unconventional Monetary Policies in the Eurozone: Considering Theoretical Backgrounds and Policy Outcomes

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Abstract: *Global Financial Crisis erupted as a sub-prime mortgage market crisis in US and became a full-fledged global crisis after the fall of Lehman Brothers. Thus, the effects of financial crisis spread to all over the world. In the Eurozone, the financial crisis became more challenging as it provoked the sovereign debt problems of some countries and triggered a sovereign debt crisis. Sovereign Debt Crisis was the first crisis in the Eurozone after forming a monetary union and put the viability of the union under risk. In this tranquil environment, European Central Bank (ECB) responded the crisis with set of monetary policy tools- conventional and unconventional. ECB pursued unconventional monetary policy parallel to its conventional monetary policy tool- policy rate. It provided liquidity support to markets, purchase public and private assets and guide markets about future short-term interest rates in the context of unconventional monetary policy. The aims of using these policies are similar for all central banks: alleviating the financial market tensions and stimulating aggregate demand. This study evaluated the effectiveness of these policies on the basis of these aims. The study finds out that ECB has been effective on depressing the financial market stress but ECB has not been effective on stimulating the aggregate demand.*

Keywords: Unconventional monetary policy, Policy effectiveness, ECB, global financial crisis, sovereign debt crisis.

JEL Classification: E44, E52, E58

1. Introduction

The evolution of central banks rested upon restoring financial stability. In particular, the foundation of the Federal Reserve aimed to address escalating interest rates and prevent banking failures. Following 1930s' banking collapses central banks implicitly or explicitly intervened in the markets. However, with the monetarist critiques –especially Friedman's- the role of central banks began to change and focus on price stability. This view was verified with the time inconsistency problems of discretionary policies. Then it was widely accepted that central banks should only focus on price stability. European Central Bank (ECB) was designed in accordance with these views and focused on price stability (Art. 2 of Treaty of EU). ECB shall also support economic activities but without prejudice to the objective of price stability (Art.105.1).

However; after the Global Financial Crisis, financial stability function of the central banks began to appear again. From the beginning of the first shock, all central banks considered financial stability and tried to avert the slump. In this regard, they reacted initially

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by reducing the policy rate. But this was not enough.¹ Then central banks enabled to unconventional monetary policies such as liquidity support, asset purchases or forward guidance.

ECB has also been using unconventional monetary policies since the beginning of the financial crisis. Moreover; the crisis provoked sovereign debt problems of some Eurozone countries and triggered the sovereign debt crisis therein. Sovereign Debt Crisis, especially after spreading to Italy and Spain, put the viability of EU under risk. So; ECB have also used these policies to depress financial pressures that occurred after the Sovereign Debt Crisis. However, ECB is bounded by its mandate-price stability. In these premises, ECB have used these polices within price stability mandate- to repair the transmission mechanisms distorted after the financial crisis. ECB utilized these policies in order to use monetary policy tools effectively to fulfill price stability mandate. This is a parallel and supportive approach but differed from the other central banks. Others- namely FED and BOE- used unconventional monetary policies sequential to the conventional policy. Once the nominal interest rate hits the zero-lower bound, Central Banks expand balance sheets and provide more policy accommodation. But ECB started to use unconventional monetary policies even it had a room for further interest rate cut (See Trichet, 2013 and IMF,2013).

The aim of this study is to analyze the policy performances of the unconventional monetary policies used by the ECB. With this aim, the following section will put forth the theoretical background of these policies. Then in the third section, the policies that are used during Global Financial Crisis and Sovereign Debt Crisis would be analyzed with their reflections on balance sheets and monetary aggregates. The fourth section is devoted to policy performance of these policies on the basis of two dimensions: calming the financial market stress and reviving the real economy. Finally, the fifth section will cover the concluding remarks.

2. Unconventional Monetary Policies: Theoretical Background

During financial crisis, implementing monetary policy is a more complex process. First, the demand for reserves of credit institutions in financial markets rises due to the increase in counterparty risk. This would pose difficulty to the Central Banks in controlling the money market rates in return. Second, the transmission channels are disrupted as a consequence of soaring financial tensions. Therefore; monetary policy impulse could not be transmitted to the financial assets. Third, especially proportional to the size of the shock and its effects on the real economy, curtailing policy rate to stimulate demand could not be sufficient as the policy rate hits the zero-lower bound (Ceccionni et.al, 2011:5). Under these circumstances, central banks pursue an unconventional monetary policy to address the distortions in transmission mechanisms and to revive the real economy.

Central banks use various measures in order to lessen financial market tensions and to stimulate real economic activity. Following Peersmann (2014), we could classify those measures into two broad categories. The first one is forward guidance policies that rest upon using communication tools. The second category compromises the policies that alter the magnitude of the balance sheets of Central Banks, famously named as balance sheet policies by Borio & Disyatat (2010).

2.1. Forward Guidance Policies

Central banks steer short-term interest rates but monetary policy stance is more related with long-term interest rates (Eggertson & Woodford, 2003:7). Private sector reckons

long-term interest rates in borrowing and investment decisions. However, long-term interest rates- that have a pivotal role in monetary transmission mechanisms- are determined according to the expectations of financial market participants on short-term interest rates as expectations theory predicts. Thus, Central Banks could be able to affect long-term rates by announcing their intentions about future policy rate and altering expectations about short-term rates accordingly. This means Central Banks provide guidance to markets about the future short term rates and for this reason these policies are named as forward guidance policies.²

The significant point in forward guidance is the commitment by central bank that the accommodative monetary policy to remains intact even if the recovery strengthens. This is pursued to encourage market participants to shift their portfolios into long-term maturities (Issing, 2014: 4). Furthermore, the Central Bank aims to lessen the volatility by expressing intentions. In order to function properly, market participants should believe in that commitment and form their expectations accordingly. Woodford (2012) and Bernanke & Reinhart (2004) underlined the credibility of the Central Bank at this point. Market participants should believe that the Central Bank would not renege on its commitment. Otherwise, a time-inconsistency problem would emerge and the announcements would not be reflected in expectations.

2.2. Balance Sheet Policies

In order to relieve financial market stress and revive the real economy central banks use other tools such as providing liquidity to financial institutions /markets and purchasing assets (public or private). These policies are reflected in balance sheets, so they are called “balance sheet policies” as we have mentioned above.

Providing liquidity to financial institutions/ markets is not a new function for Central Banks. Since their establishments, they act as a lender of last resort in providing liquidity to financial institutions or acting as a leader in rescue operations (Goodhart & Schoenmaker, 1995: 514). However, the scope of this lender of last resort function is a highly debated issue between liberals and interventionists. According to liberal economists, central banks should provide liquidity to markets rather than providing direct assistance to financial institutions. The logic behind this view is that the markets are better informed that way about the solvency of financial institutions (Goodhart & Huang, 1999: 5). Liberal economists also put forward moral hazard issues and claim that providing direct assistance to financial institutions would lessen the risk management incentives (IMF, 1998: 28).

On the other hand, more interventionist economists oppose the view of perfectly functioning financial markets that lies behind the view of the liberals. This approach underlines the financial stability function of central banks and rests upon three arguments. First of all, financial markets are not functioning perfectly. Especially in the time of crisis, market failures such as asymmetric information become prevalent (See Mishkin, 1991). Secondly, widespread failures of financial institutions would lessen the confidence in the markets. Therefore, central banks should avoid failures. Finally, central banks could prevent moral hazard by creating “constructive ambiguity”³ (Prati & Schinasi, 1999: 23). So according to the interventionist economists, central banks should provide liquidity to financial institutions to prevent defaults and failures, and to avoid systemic effects.

In this regard, even if the scope of providing liquidity to financial institutions/markets is controversial, the need of liquidity assistance is undisputable. Thus, all the Central Banks provided liquidity assistance after Global Financial Crisis.

The second type of balance sheet policy is asset purchases. By purchasing assets, central banks' aim is increasing the bank reserves. In normal times, an increase in bank reserves is a by-product. The focus of the policy is the price of reserves that clears the market. But in times of crisis, the focus turns to the quantity of reserves. In this respect, this policy is often referred to as "quantitative easing". With rising reserves, banks would expand credits to entire economy and this would stimulate aggregate demand accordingly (Joyce et.al., 2012: 274).

Purchasing assets also enhanced the credibility of central banks policies and reduced the probability of time-inconsistency. By purchasing assets, especially the ones with a long maturity, the Central Bank would become exposed to interest rate changes. If it raises interest rates, this would cause the decline in yields and a loss on assets. So, this diminishes the probability of raising interest rates and supports the forward guidance policies pursued (Krishnamurthy & Vising- Jorgensen, 2011: 218).

Balance sheet policies affect the broader economy via two channels. In the first channel, central banks use communication tools to inform the public about their intentions regarding the future evolution of monetary policy stance, often referred to as the signaling channel. In the literature signaling channel has been used by authorities in order to escape zero lower bound (Ceccioni et. al. 2011: 16). By announcing that Central Bank would loose monetary policy further, it gives a signal to the financial markets that they are not alone (Bowdler & Radia, 2012: 611). The proper functioning of this channel, rested upon central bank credibility. Only a credible central bank could affect the expectations and lower long-term yields. This would in turn stimulate aggregate demand.⁴

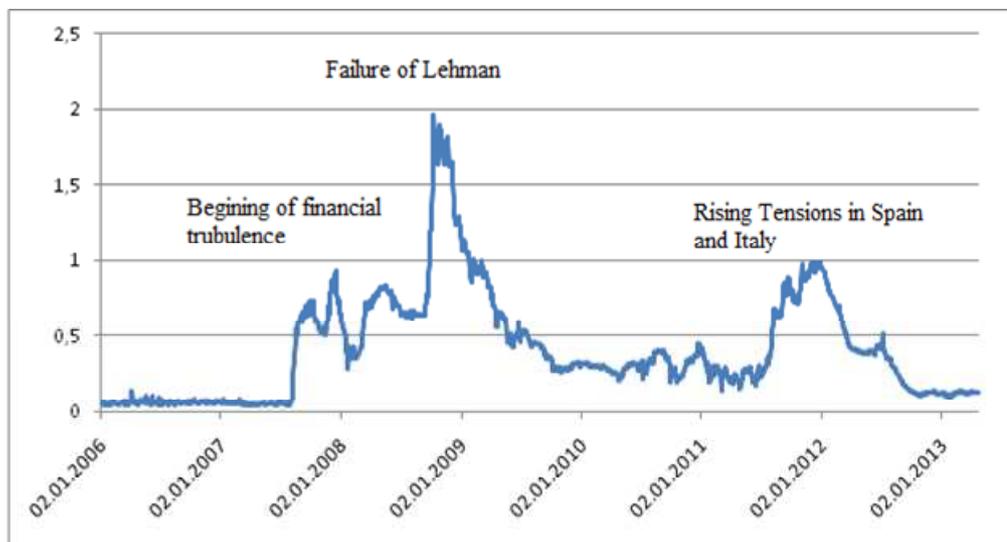
The second one is the portfolio rebalancing channel. Functioning of this channel depends on the imperfect substitution in private sector balance sheet items.⁵ For example, some investors –such as pension and insurance funds- prefer to hold long-term assets in order to match them with their long-term liabilities. When the central bank purchases long-term assets, these investors would gain revenue. With these revenues they would purchase long-term assets again as well. On the other hand, by purchasing long-term assets, central bank would reduce the stock of privately held assets. The aggregate reduction in the stock of long-term assets would cause a decline in term premium. This would in turn reduce the long-term yields and increase the long-term asset prices. This increase in asset prices would raise household wealth and stimulate aggregate demand (Joyce et. al., 2012: 279).

Injecting liquidity to financial institutions would stimulate the aggregate demand via portfolio rebalancing channel in the case of imperfect substitution in private sectors liabilities. This imperfect substitution is driven by asymmetric information. In the case of asymmetric information, external funds are more expensive than the internal funds. In times of crisis asymmetric information is exaggerated. This may leads to a rationing in external funds. At that point in time; providing liquidity to financial institutions by the Central Bank, especially with a long maturity, would reduce the long-term spreads (Ceccioni et. al., 2011: 18). This would in turn stimulate the aggregate demand.

3. Unconventional Monetary Policies Used by ECB after the Global Financial Crisis

When the crisis erupted as a sub-prime mortgage crisis in the US, Eurozone was regarded as a “safe heaven”. The demands of euro-denominated instruments rose accordingly (Wyplosz, 2009: 22). However, after the collapse of Lehman Brothers, liquidity dried up in the markets because the confidence eroded and counterparty risk emerged. The cross-border financial flows also came to a halt as well. Eurozone economies which were more dependent on international money markets -such as Ireland- faced with serious banking problems (Lane, 2012: 55). The tensions rose in all markets. In Figure.1, Euribor-OIS⁶ spread could be followed. This spread simply measures the confidence in the interbank money market. It began its rising trend after the first shock on August 2007, skyrocketed after the collapse of Lehman and soared again with the Sovereign Debt Crisis was spread to two giants: Spain and Italy. In the beginning of 2006, the spread was 6 basis points; in October 2008 it approached to 200 basis points.

Figure 1. Euribor-OIS Spread



Source: Thomson's Reuters and Own Calculations

Furthermore, in Ireland, Spain and Greece housing bubbles were evident before the financial crisis. These countries using the credibility gained with entering the Eurozone were able to obtain cheap credits. These credits were channeled especially to construction sectors of respective economies and inflated the housing bubbles therein. But collapse of Lehman Brothers and the financial stress evolved afterwards, hampered the credit flows. The balance sheets of the banks were impaired as a result. Sovereigns provided generous liquidity assistance to ailing banks and this put a strain on government finances. Additionally, financial crisis had repercussions on real economic activity. Real GDP growth dropped dramatically to very low levels in all Eurozone economies. On one hand, public revenues were dropped as a consequence of a slump in the economic activity; on the other hand, public expenditures rose by injecting funds to troubled financial institutions. Finally, budget deficits and general government debt mounted in all Eurozone countries.

The sovereign debt problems came out when the newly elected Greek government revised the budget deficit/GDP ratio from 6.7% to 12.7% in October 2009. Downgrading of

Greece's sovereign bonds came afterwards. Then the yields of 10-year Greek bonds and the CDS spreads of these bonds hiked as expected. Greek government was not able to find funds from markets to pay its debt that came due on May 2010. Greece was bailed out by the troika –IMF, EC and ECB. In the aftermath of this bail-out, rating agencies downgraded the other indebted countries- Ireland and Portugal- accordingly. The yields of Ireland and Portugal sovereign bonds began rising and they were shut out from markets. They also got bailout packages designed by the troika.

In the summer of 2011, Italy was thought to lose access to financial markets as it had a high public debt level. The yields of 10-year bonds climbed as well. One year later, in the summer of 2012, Spain was also thought to be risky due to problems in its banking sector. It is the time that the debt crisis was intensified. In this tranquil period, ECB pursued unconventional monetary policies parallel to conventional monetary policy. In this section these policies would be indicated briefly.

3.1. Forward Guidance Policies

ECB began using forward guidance policies as of July 4, 2013. Introductory statement of the Press Conference on that meeting involves this expression:

“Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time. This expectation is based on the overall subdued outlook for inflation extending into the medium term, given the broad-based weakness in the real economy and subdued monetary dynamics.”

In the Introductory Statement of the press conference on March 2014, The Governing Council of the ECB reiterated its forward guidance again by explaining the reasons behind this low interest rate policy.⁷

Central banks use forward guidance policies for two reasons. First, when interest rate hits the zero-lower bound, central banks use this policy for greater monetary policy accommodation. Second, Central Banks may use these policies to prevent market volatility, especially interest rate volatility. Volatility hampers the transmission of existing amount of monetary policy accommodation and causes monetary policy tightening (ECB, 2014: 68).

As it has been already mentioned, ECB pursued unconventional monetary policies with the aim of restoring the transmission mechanisms distorted during the financial crisis. Thus, it uses forward guidance with similar reasons. ECB's Executive Board member Peter Praet (2014) simply expressed that ECB's primary objective is to maintain inflation rates below but close to 2%. He also admitted that -with the help of forward guidance- ECB tried to enhance the effectiveness of monetary policy in the environment of volatile money market rates. Rising and volatile money market rates cause an unintended tightening of monetary policy stance that is not compatible with ECB's inflation objective.

3.2. Balance Sheet Policies

3.2.1. Liquidity Provisions

As a consequence of Global Financial Crisis, confidence was eroded and the liquidity dried up in interbank markets. As this market is highly important for Eurozone economies

because of the bank-financed nature of non-financial corporations, ECB took several measures to overcome the liquidity problems in this market. Thus, it expanded central bank intermediation and became a substitute for interbank transactions. For this reason, ECB was regarded as the “intermediation-of-last-resort” (Giannoe et al., 2011:8).

Since the beginning of the financial crisis and with rising tensions in interbank money markets, ECB had conducted additional long-term refinancing operations with maturities up to 6 months- that were normally conducted with 3 months maturities. Additionally, temporary swap lines were established with other central banks to lower the pressures on foreign currency funding markets (Cour-Thimann & Winkler, 2013: 10).

The most important measure implemented by ECB was changing the tender procedure in open market operations. In normal times, ECB provides a preannounced liquidity with which banks bid the volume and interest rates accordingly. Highest rates were satisfied initially and this continued up to the pre-determined amount of liquidity was disposed. In order to lower the interest rate, the amount of liquidity was simply increased. But at the time of a financial crisis, this regular system could not work properly due to the fluctuations in liquidity demand of the banks. As a consequence of counterparty risk, liquidity dried up in interbank markets, banks refused to lend to each other and they hold excess liquidity. All this made the liquidity demand in open market operations volatile and caused a substantial rise in interest rates (Peersman, 2014: 11).

To address these distortions, ECB changed its tender procedure from variable-tender to fix rate full allotment (FRFA). In this new procedure, ECB aimed to fulfill all liquidity needs of the banks using predetermined interest rates. This would eventually prevent interest rate hikes in money markets. But the demand for reserves and the amount of base money were determined by the banks as a result (Cuikermann, 2014: 9).

Furthermore on May 2009, ECB decided to extend the maturity of LTROs to 1 year. On December 2011, with the intensification of Sovereign Debt Crisis and the rising probability of spreading to Italy and Spain, ECB took an unprecedented measure and decided to conduct 3 years LTROs. The first one was offered on December 2011 and the second one was offered on February 2012. Banks borrowed €1 trillion in these operations, which prevented them to sell their assets and cut lending to the real economy (Sczerbowicz, 2012: 11).

It is important to note that ECB released its collateral rules after the collapse of Lehman, which referred to accepting risky assets and was exposed to a higher risk. After Sovereign Debt Crisis, ECB resumed to accept risky government bonds. However in December 2011, ECB reduced rating thresholds for some asset-backed securities.

Finally; due to stagnant growth prospects and to avoid deflationary forces, ECB decided to conduct further long-term operations in June 2014. These operations aimed at improving bank lending to the non-financial private sector and for this reason they were called Targeted Long-term Refinancing Operations (TLTROs). Until June 2016, ECB is planning to conduct 8 operations.⁸

3.2.2. Asset Purchases

ECB started purchasing assets to address the distortions in banking sector and announced a covered-bond purchase program (CBPP), as covered bonds are the primary

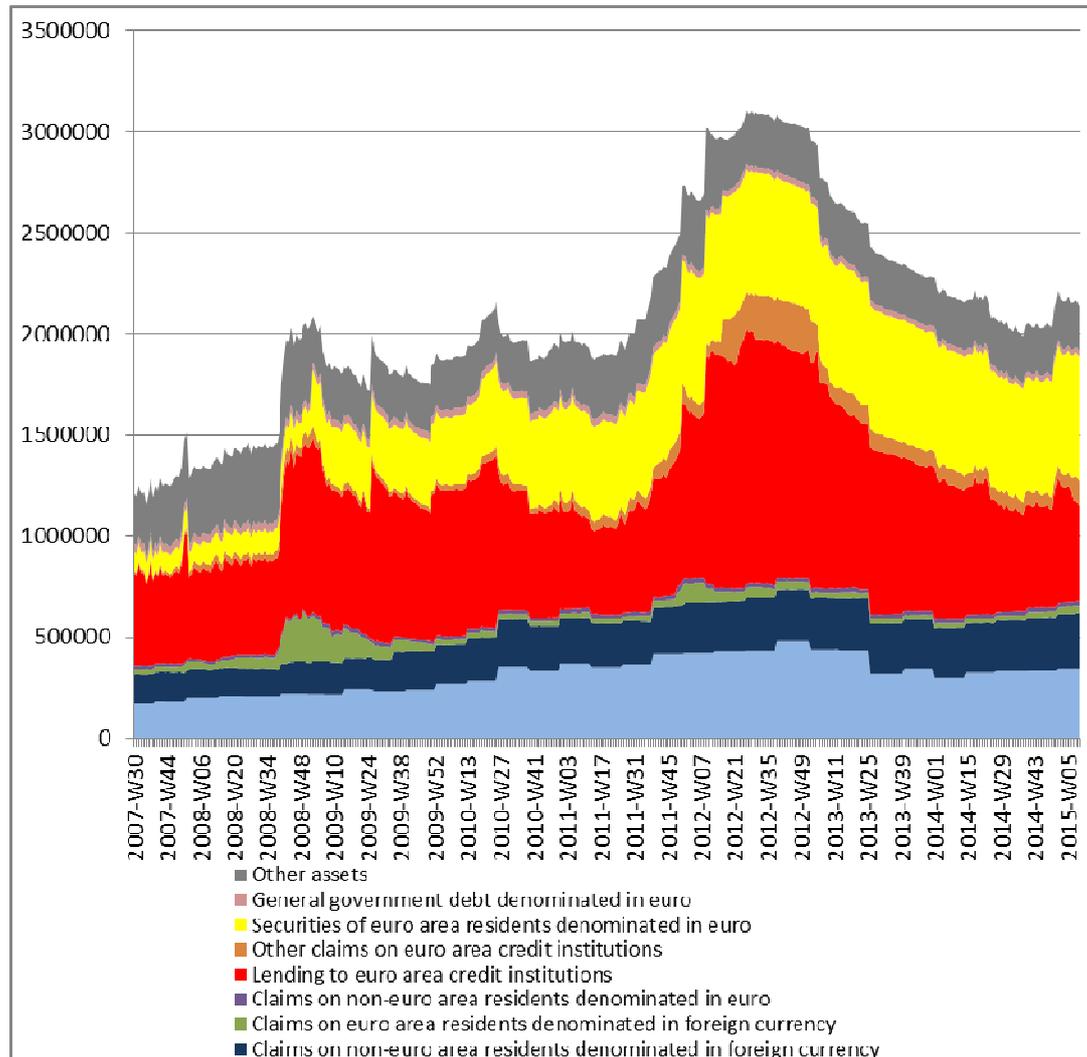
source of funding of Eurozone's banks. ECB implemented three CBPPs after the crisis. The first one started in June 2009 and ended in June 2010. ECB bought €60 billion covered bonds in this time span. Second CBPP was implemented after the intensification of the Sovereign Debt Crisis, between October 2011 and October 2012. ECB bought €40 billion covered bonds in the scope of CBPP2. In September 2014, due to low credit environment and stagnant growth projections, ECB has initiated the third CBPP. The aim of this program was to enhance monetary policy transmission and to provide more monetary policy accommodation.

After the Sovereign Debt Crisis, sovereign bond yields spiked. Sovereign bonds play a crucial role in monetary transmission mechanisms. First, these bonds are a benchmark for pricing private sector bonds. Second, they are used as collateral in interbank markets. As they were regarded risky, banks were reluctant to accept these bonds and cut their lending accordingly. Thus, ECB established the Securities Market Program (SMP) and started to purchase public and private securities in secondary markets. With this program, ECB aimed to avoid a tremendous rise in sovereign bond yields and provide time for governments to find durable solutions (Cour-Thimann & Winkler, 2013: 14). In the beginning of 2012, the solvency problems began to emerge in Spanish banking system and discussions about the survival of the Euro mounted as well. Then Draghi, the president of the ECB, pointed out that ECB would do anything to save the Euro. After this statement, in September 2012, ECB announced a new bond-buying program under the name of Outright Monetary Transactions (OMT). This new program was different from its predecessor in its conditioning on participating EFSF or EFSM. It meant that, in order to be sheltered by ECB, participants should deal with their debt problems. ECB aimed to avoid moral hazard by conditioning bond-buying to attending these programs.⁹

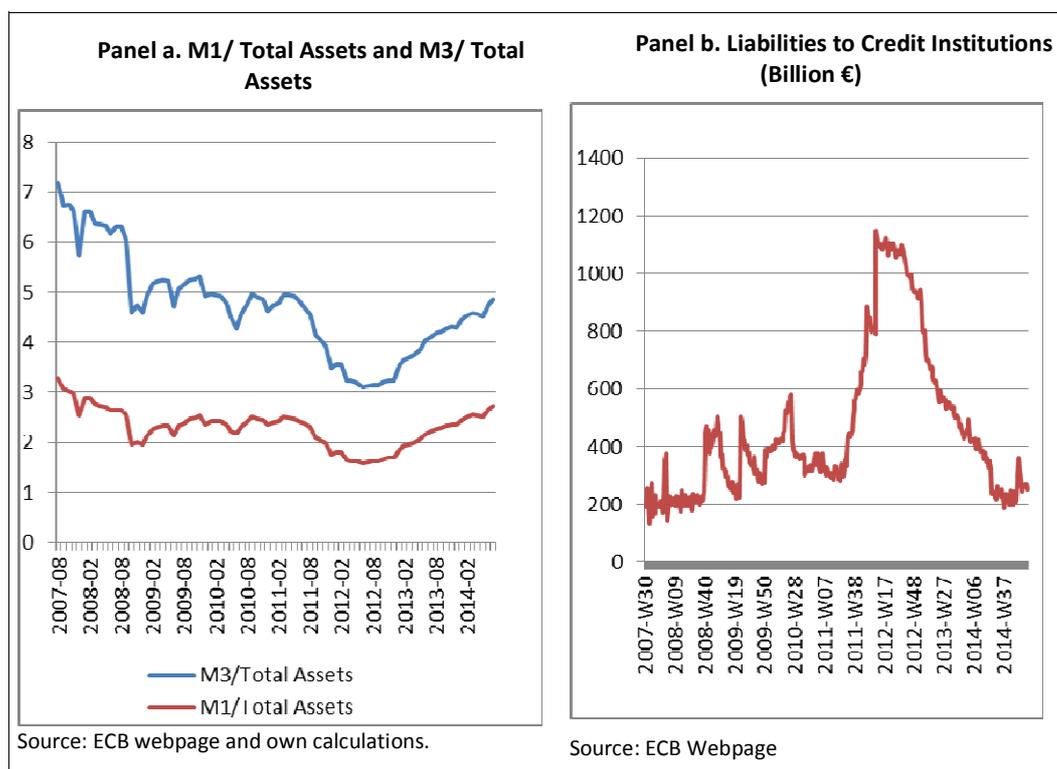
In September 2014, ECB started the Asset Backed Securities Purchase Program (ABSPP) along with the CBPP3. This program also aimed to support the credit flow to the Eurozone economies and to provide more monetary policy accommodation accordingly. However the medium to long-term inflation expectations has remained subdued in 2014. So the ECB decided to expand its toolkit. On January 2015, ECB announced an expanded asset purchase program. This program is an extension of the one announced in September 2014. ECB decided to add sovereign bonds and private sector assets to its asset purchases under the name of Public Sector Purchase Program (PSPP). This program have started on 9 March 2015 with a monthly purchase volume of €60 billion and intended to be carried out until September 2016.

3.2.3. Reflections on the ECB Balance Sheet and Monetary Aggregates

As it was mentioned earlier, these measures have expanded the balance sheet of ECB. In Figure 2, the evolution of total assets of ECB could be followed. It began rising especially after the fall of Lehman Brothers. The cumulative increase in the balance sheet of ECB reached 265 percent in the last quarter of 2012. Lending to credit institutions was the major determinant of the total assets. But it began to decrease from the beginning of 2013, as the past LTROs became due. On the other hand, the tremendous rise was evident in the securities. The securities of the Eurozone residents were 7% of the total assets at the beginning of the financial turmoil, but it rose to 20% afterwards. And surely it would rise further with the new extended asset purchase program.

Figure 2. Composition of the Total Assets of ECB

However; on the monetary side, things were quite different. In Panel a. of Figure.3, one could observe the M1/total ECB's assets and the M3/total ECB's assets ratios. These ratios simply reflect how much money created by ECB has diffused into the economy. In both ratios a sharp decline could be observed after the fall of Lehman. But declining trend continued afterwards as well. Before the crisis, M3/ total assets ratio was above 7, it fell to nearly 3 in the summer of 2012. M1/total assets ratio was also above 3 before the crisis, but it falls 1.62 in the summer of 2012. These ratios have picked up in the beginning of 2013 due to a decline in total assets. As a result, we could say that the money has not been diffused into the economy as much as the expansion in balance sheet. Due to the rises in uncertainty and the counterparty risk, credit institutions were reluctant to provide credit to the entire economy. They preferred to hold liquidity buffers instead. This could be verified by examining the liabilities in the ECB balance sheet. Liabilities to credit institutions have risen tremendously between August 2007 and September 2012. The liabilities to credit institutions have risen 484% in the same period of time (see Panel b. of Figure.3). After the statement of Draghi in September 2012, that ECB would do anything to save the Euro, it entered into a declining trend and dropped to the pre-crisis level in the beginning of 2014.

Figure 3. Monetary Reflections


4. Policy Performances

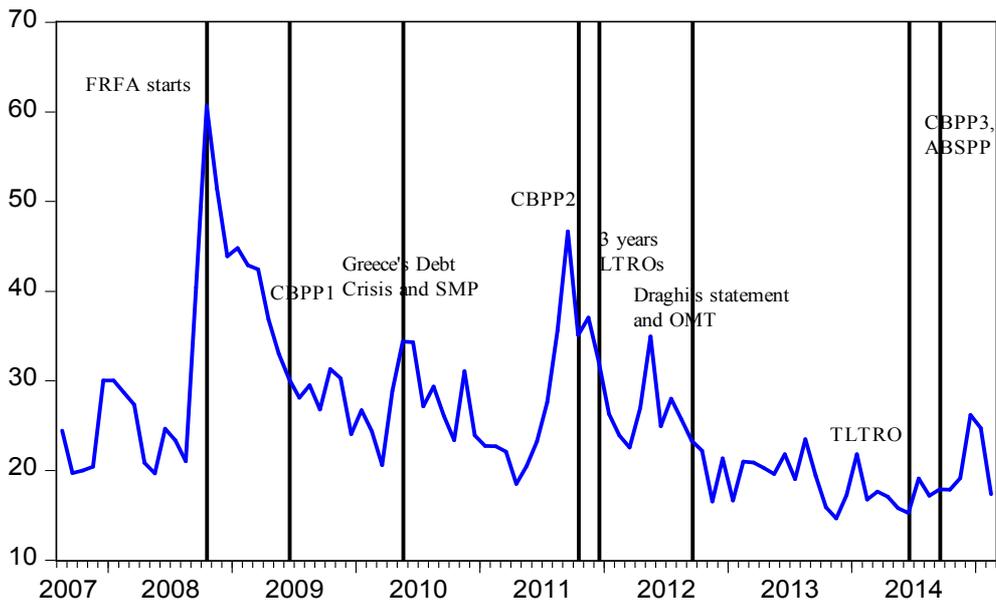
Balance Sheet Policies

By utilizing balance sheet policies; central banks aim to relieve financial market stress and revive the real economy. Although, the approach of ECB is different from its counterparts, as it has been focused on repairing transmission mechanisms, the ultimate aim is the same. ECB pursues these policies to transmit monetary policy accommodation in order to support the recovery. Thus, in this section the outcomes of the balance sheet policies would be assessed in two dimensions: whether these policies were able to lower the financial market stress and were able to support the recovery.

As a measure for financial market stress, implied stock market volatility index (VSTOXX)¹⁰ could be used. This index has been regarded as the “financial fear index”.¹¹ A rise in this index simply reflects a rise in fear and uncertainty in stock markets.

By analyzing Figure.4, we could assess whether the balance sheet policies pursued by ECB, were able to decrease the financial market stress. The stress in financial markets skyrocketed after the collapse of Lehman on September 15, 2008. The liquidity demands of financial institutions mounted due to the uncertainty. ECB changed its tender procedure to FRFA and demonstrated that it was ready to provide all liquidity needs of the financial institutions. This seemed to calm the markets, thus the VSTOXX dropped afterwards. Then ECB initiated the CBPP1 in May 2009, but as the scope of this program was limited, the effect was also with limitations.

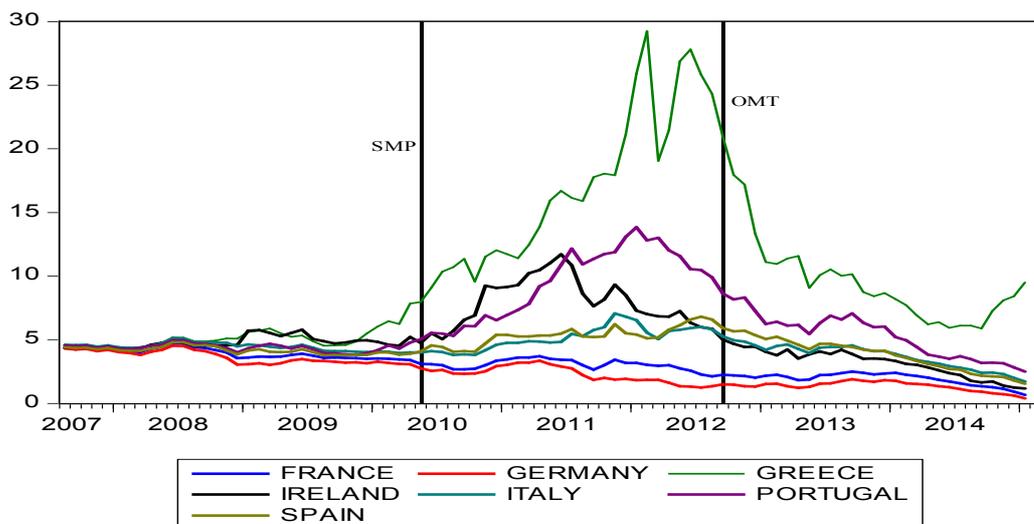
Figure 4. VSTOXX Index



Source: Thomson's Reuters Datastream.

The tensions rose again with Greece's debt crisis in May 2010. ECB started the SMP program and started to buy sovereign bonds. It was barely effective as could be observed in Figure.4. Financial market stress rose with Ireland and Portugal's debt crisis, but the tremendous upswing occurred when the debt crisis spread to Italy and Spain. The possibility of their default, brought up discussions related to the break-up of the Eurozone. ECB initiated the CBPP2 and offered 3-years LTROs. Financial stress declined for a period of time. As a consequence of Spanish banking problems in the beginning of 2012, the stress rose once more. Then Draghi announced that they would do anything to save the Euro and started the OMT. This was effective in alleviating financial market stress.

Figure 5. Sovereign Bond Yields (10-year maturity)

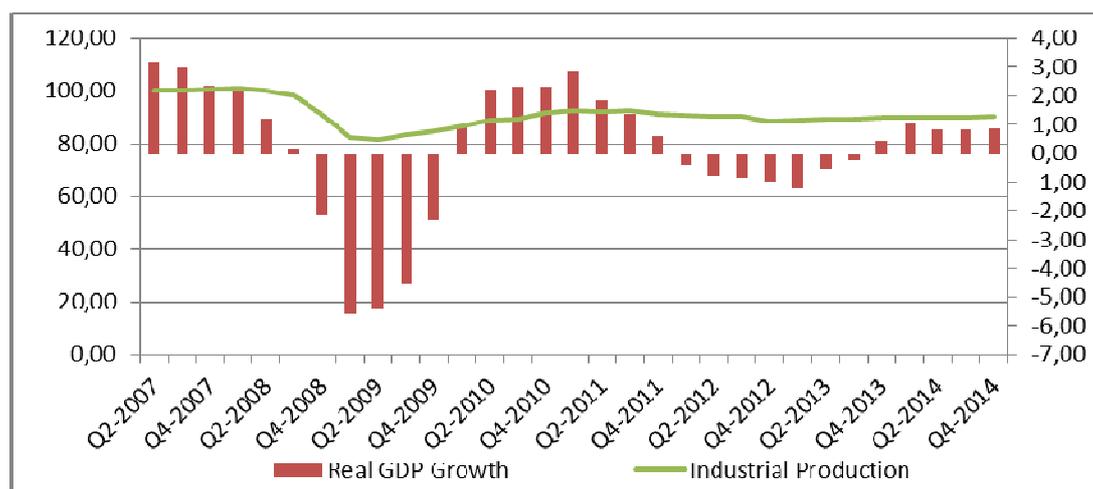


Source: OECD Data

Sovereign bond purchasing programs –SMP and OMT- aimed to decrease sovereign bond yields. The performance of these programs could be evaluated by looking at Figure.5. Prior to financial crisis, Eurozone countries were borrowing with similar rates. The spread between Greek bonds and German bunds were 32 basis points before the crisis, but it jumped to nearly 3000 basis points in the beginning of 2012. Ireland was also a striking example. Before the crisis, the spread between Irish bonds and German bunds had been only 8 basis points, but it jumped to 941 basis points in the summer of 2011.

In order to abate pressures on sovereign bonds ECB started sovereign bond purchase programs since these bonds play a crucial role on monetary transmission. The first one was initiated on May 2010 but as could be observed in the figure, spreads have widened afterwards. When the debt crisis intensified, the sovereign debt yields escalated tremendously. Thus, ECB started the second asset purchase program, OMT. The figure shows that the spreads become narrower afterwards. Nevertheless, it is important to note that, the announcement of Draghi also contributed to this. This announcement meant that the ECB stood behind the indebted countries and sovereign bond yields moderated as well. Finally, ECB have announced a third asset purchase program on January 2015. But it is too early to conclude on the performance of this program.¹²

Figure 6. Output Performance of Euro Area*



*2007/Q2=100 in industrial production index.

Source: OECD Data

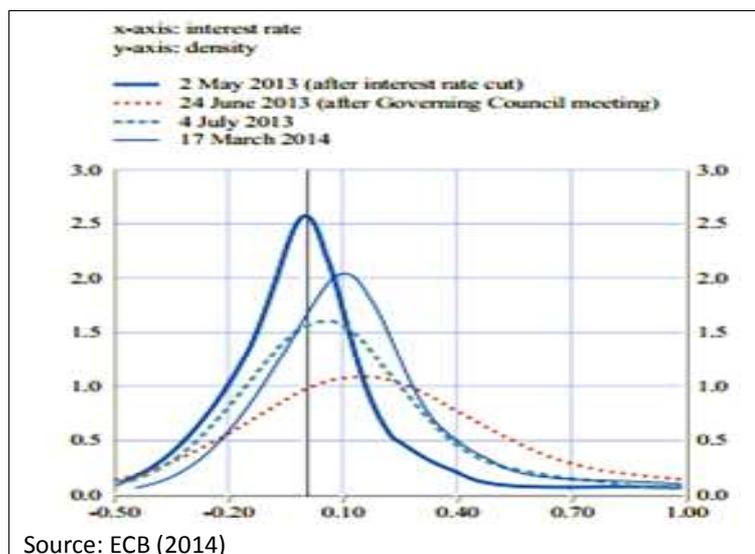
In order to evaluate the effectiveness of balance sheet policies on reviving the real economy, one could assess output performance of the Eurozone. Thus, Figure.6 displays the evolution of industrial production and real GDP growth. Industrial production dramatically dropped after the fall of Lehman. This index declined nearly 16% in the two quarters between 2008/Q2 and 2009/Q1. The drop in industrial production stemmed from the freezing credits, a consequence of reigning uncertainty in financial markets. In order to address this uncertainty problem ECB started the FRFA. This helped to calm markets (also see Figure.4) and it could be observed in Figure.6, industrial production began to rise in Q2/2009. But it was still approximately 10% lower than its pre-crisis level. Real GDP growth rates have also declined dramatically after Lehman's collapse (see Figure.6). By the beginning of 2010, Eurozone began to record positive growth rates. But this performance was also hampered by Sovereign Debt Crisis, especially when it spread to two giants- Spain and Italy. Then a

prolonged recession has prevailed during 2012 and 2013. Despite a downfall in financial market stress, Eurozone were not able to recover properly due to weak credit growth (see Draghi, 2015). Thus, ECB has started more comprehensive programs such as TLTROs and extended asset purchases to revive the credit dynamics. But as mentioned above, it is too early to conclude on the performance of these measures.

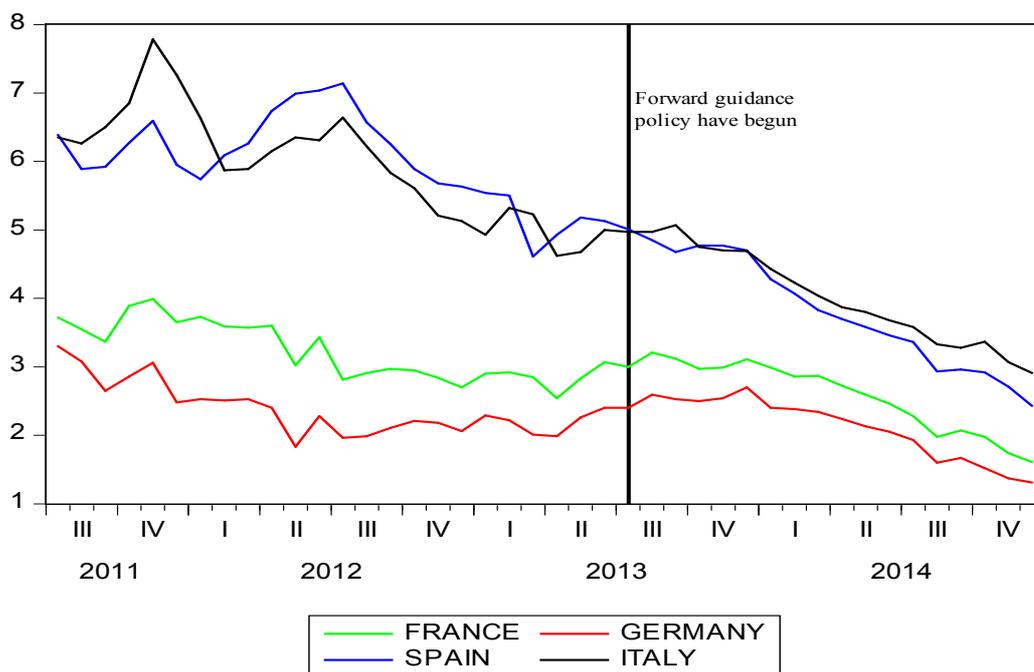
Forward Guidance Policies

ECB intended to lessen market volatility and to provide greater monetary policy accommodation via decreasing long-term rates using forward guidance policies. In this framework, the effectiveness of these policies could be assessed in these dimensions. Figure.7 reflects the market uncertainty about short-term money market rates by using option-implied density of 3-months OIS rate in 12 months' time on selected dates. Implied densities were extracted from EURIBOR options and are used to gauge expectations of the forward OIS rate. On May 2, 2013, the Governing Council reduced the policy rate. Market expectations of future interest rates were concentrated around low levels immediately after this reduction. The width of the distribution reflects the uncertainty about future money market rates. After the forward guidance policy used in July 2013, the dispersion began to decline (ECB, 2014:72). It meant that the forward guidance resulted in narrowing the market expectations, simply reducing the uncertainty in money markets.

Figure 7. Uncertainty about Future Short Term Money Market Rates



As mentioned earlier in the text, long-term interest rates have a pivotal role in monetary transmission. Central banks provide guidance to alter short-term rates expectations and to affect long-term rates. Thus, the effectiveness of these policies could be assessed by looking at the evolution of long-term interest rates. In Figure.8, the evolution of selected Eurozone economies could be observed. Forward guidance policy of ECB began on July 2013 and the long-term interest rates have followed a decreasing trend in selected countries from this date on. This meant that the ECB was able to reduce long-term rates by using forward guidance policies.¹³ In sum, the ECB succeeded by using forward guidance policies either in decreasing uncertainty in money markets or reducing long-term yields.

Figure 8. Long-term Interest Rates (20 years sovereign bond yields)

Source: Thomson's Reuters Datastream

5. Concluding Remarks

Global Financial Crisis and Sovereign Debt Crisis hampered the financial markets and curtailed the output growth in the Eurozone. Thus, the ECB -like its counterparts- pursued conventional and unconventional monetary policies to address the problems that rose with the financial crises. Unconventional monetary policies used by ECB could be classified into two categories: balance sheet and forward guidance policies. Balance sheet policies comprised the policies that expand the balance sheet of the central bank such as liquidity support or asset purchases. Forward guidance policies rested upon using communication tools to reduce market volatility and affect long-term interest rates.

ECB has been using these policies from the beginning of the financial crises. Following the first shock in August 2007, ECB has injected liquidity to support interbank markets. After Sovereign Debt Crisis, it began to purchase sovereign bonds to revive this market segment. Balance sheet of ECB has begun to expand as a result of these policies. ECB also add forward guidance policies to its toolkit since mid-2013.

ECB particularly has two aims in using unconventional monetary policies: alleviating the financial market stress and reviving the real economy. Therefore in this study, the effectiveness of these policies has been evaluated in these dimensions. ECB has been effective in calming financial market stress down either by using balance sheet or forward guidance policies. It has been effective to abate pressures on financial markets and reduce the market volatility. Furthermore, it has also been able to reduce long-term yields.

However, on the real side of the economy, things are quite different. Despite the repair of the transmission mechanisms, monetary impulse could not be transmitted to the real economy. As mentioned in this article, M1 and M3 have not increased as much as the balance

sheet expansion. Output recovered partly with respect to 2009, but could not be scaled up to pre-crisis values. Even though the interest rates are very low, due to insufficient confidence in economic agents, credits to real economy could not be soared.

To sum up, ECB could not be able to revive the real economy. It has been criticized heavily because of the size of the policies implemented. The programs that initiated by ECB were very modest in size comparing with FED or BOE. ECB admitted these criticisms and announced a new Quantitative Easing program that is extended in size. This new program has also emphasized channeling credits to non-financial corporate sector. It is too early to conclude on the consequences of this new program. However, the real problem of the Eurozone is the lack of confidence that deter economic agents from consumption or investment. It is hard to solve this with monetary policy tools because of the structural problems –like completion of banking union and transforming into a fiscal union- of the Eurozone. These structural problems should be resolved firstly and confidence to Eurozone economies should be maintained accordingly. Then the monetary impulse could be transmitted to the entire economy and stimulate the aggregate demand.

End Notes

1. *Mishkin (2009) expressed that this was not an indication of an impotent monetary policy. This was related to the severity of the crisis.*
2. *Forward guidance polices are not peculiar to crisis periods. Since 1990s, Central Banks have announced the future path of short –term interest rates in order to inform the public and change expectations. In 1999, BOJ used initially to alter expectations for lower long-term yields when the policy rate hits the zero-lower bound (Filardo & Hoffmann, 2014:38).*
3. *Constructive ambiguity is a negotiation technique that is used in sensitive political issues based on using ambiguous language. In central banking, this can be applied by using an ambiguous language about bail-outs. Financial institutions know that there is a probability of bail-out but they could not be sure. So this would lessen moral hazard. For more details see Schoenmaker (1995), Enoch et.al (1999) and Vinogradov (2010).*
4. *Forward guidance and signaling channel resembles each other as they are both based on communication tools. However they are different. In forward guidance the aim is to affect long-term yields by announcing the short-term policy rate path. But in the signaling channel of balance sheet policies the aim is not only related to long-term yields. Central banks also signal markets that they would do something to calm the markets. In signaling channel central bank also announces unconventional tools rather than the policy rate.*
5. *The imperfect substitution in private sector balance sheets is based on the preferred habitat theory. In this theory economic agents have different maturity preferences as well as interest rate expectations. For details see Modigliani & Sutch (1966), and Mishkin (1990).*
6. *Overnight Index Swap (OIS), is an interest rate swap rate which is equal to the geometric average of an overnight index rate over every day of the payment period. OIS involves exchanges of net payments, not the principal. So it is considered as risk fee.*
7. *See, <https://www.ecb.europa.eu/press/pressconf/2014/html/is140306.en.html>*
8. *This lending excludes to lending to households for house purchases and also aims at intensifying the preparatory work related to outright purchases of asset- backed securities (ABS). For details see http://www.ecb.europa.eu/press/pr/date/2014/html/pr140605_2.en.html and http://www.ecb.europa.eu/press/pr/date/2014/html/pr140703_2.en.html.*

9. For details see, the introductory statement of Monetary Policy Decision of 6/09/2012. <http://www.ecb.europa.eu/press/pressconf/2012/html/is120906.en.html>
10. This index is regarded as European VIX index. It measures the implied volatility of near term options on the Eurostoxx 50 index.
11. See Abbasi & Linzert (2011) for details.
12. The latest asset purchase program, PSPP is aiming to support credit to the Eurozone economy, rather than to decrease sovereign bond yields.
13. One could come up with another explanation, a decline in risk premium. It is true for Italy and Spain. With the fading effects of sovereign debt crisis, the risk premium declined in indebted countries and this probably has contributed to this downfall in interest rates. However, the risk premium of Germany is the lowest in the Eurozone since the beginning of Sovereign Debt Crisis and the long-term interest rates have also declined in Germany. This reflects that the ECB was able to affect long term interest rate by changing short-term expectations. It is important to add that, Quantitative Easing and its announcements have also contributed to this downfall. As mentioned in this article, asset purchases have enhanced the credibility of the forward guidance policies.

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