ECB Policy Responses between 2007 and 2014: a chronological analysis and a money quantity assessment of their effects

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**Abstract:** In this paper, we analyse the ECB policy measures in place since the outbreak of the financial crisis. First, we discuss the categorisation of the measures implemented by the ECB. Second, we study the phases of the crises and the concrete policy responses. Third, we conduct a comparative analysis of the ECB and the FED responses at the beginning of the crises with regard to the financial system structure, the determinants of the balance sheet size and composition, the risk absorbed, and the exit strategy involved. Finally, we discuss the effectiveness of the ECB’s monetary policy from a traditional monetarist perspective during the entire period, by analysing its impact on monetary aggregates and the money multiplier.

**Key words:** ECB, unconventional monetary policy, money multiplier, monetary aggregates, European crises

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‘There was a time, not too long ago, when central banking was considered to be a rather boring and unexciting occupation [...] I can confidently say that this time has passed’. Those words by Mario Draghi (2013, April 15) reflect the change in the conduct of monetary policy after the burst of the global financial bubble. Since the outbreak of the international financial crisis, central banking’s boring times have been left behind, and instead, a more active monetary policy has been implemented by the European Central Bank (ECB) and by other major central banks. The common use of interest rate policies has been accompanied by brisk balance sheet policies in terms of the assets and liabilities’ composition and expansion. In addition, the communication policy has changed, with an objective of increased confidence and reduced uncertainty regarding the future development of the economy.

However, the effects of all those measures have not been as expected. The increases in the ECB balance sheet and the change in its composition have not been translated into back-to-normality credit flows, nor has the regularisation of the traditional channels of the transmission mechanism; there has also been no steady recuperation of the Eurozone economy.

In this paper, we analyse the ECB policy measures since the outbreak of the financial crisis. We focus on the non-standard/unconventional measures and their effects on the monetary aggregates and money multiplier. Beyond this brief introduction, the paper is organised as follows. In the first section, we discuss the categorisation of the measures implemented by the ECB since the outbreak of the crisis. In the second section, we analyse the phases of the financial and European sovereign debt crises and the developments of the European economy. In the third section, we conduct a comparative analysis of the distinctive factors behind both the ECB policies and those of the FED. In the fourth section, we present a quantitative analysis of the ECB monetary policy effects in terms of monetary aggregates and the money multiplier. Finally, we provide some final remarks.
1. DISCUSSION OF CONVENTIONAL VERSUS UNCONVENTIONAL MEASURES

Since the outbreak of the financial crisis, ECB and other major central banks have implemented measures beyond their standard toolkit. For instance, ECB has introduced full-allotment loans with fixed rates, an expansion of the list of assets eligible as collateral, longer-term liquidity provisions in the euro and other currencies, changed the required reserve ratio, implemented outright purchases of specific securities, modified interest rate corridors, and introduced new communication tools.

Nonetheless, during this new age of central banking, there have been some fundamental features that have not changed. For instance, regarding the institutional framework, central banks’ (CBs) statutes have not been amended, and independence, even when it has been questioned, is still present as a primary pillar. Moreover, the monetary policy strategy, for the ECB, is still focused on its main mandate, i.e., achieving in the medium-term an inflation rate below but close to 2% (Lorenzo Bini-Smaghi, 2012). Although the operational framework has not changed in a fundamental way, the ECB continues lending while the Federal Reserve (FED), the Bank of England (BoE), and other CBs continue buying and selling securities in their open market operations. This reflects, respectively, the bank-based financial system of the Eurozone and the capital market-based financial system of the U.S. These contrasting procedures to open market operations aid in understanding the difference in evolution in the size and composition of ECB and FED balance sheets and partly explain the effectiveness of the measures.¹

Nevertheless, a fundamental change has been the adoption of a new mandate for the supervision of the Eurozone banking system (Zsolt Darvas and Silvia Merler, 2013), beginning in late-2014.

The objective of the implementation of non-standard measures by the ECB has been to reactivate the traditional channels by which standard monetary policy operates (Jerome Creel, Paul Hubert and Mathilde Viennot, 2013; Christophe Blot and Fabien Labondance, 2013; Ali Al-Eyd and S. Pelin Berkmen, 2013), to complement standard measures (Matthieu Darracq-Paries and Robert De Santis, 2013; Philippe Cour-Thimann and Bernhard Winkler, 2012), and to avoid perverse effects in financial markets from an excessively fast deleveraging process (Bini-Smaghi, 2013). In a recent speech, Naoyuki Shinohara (2014) noted some early positive effects of non-standard measures, such as those helping to prevent the financial system from collapsing, reduced the risk of a euro area break up and supported global economic activity in a broad sense.

¹ Effectiveness of ECB measures in comparison with FED and BoE is also related to the absence of banking and fiscal union, market fragmentation and heterogeneities within the Eurozone (Jean Pisani-Ferry and Guntram Wolff, 2012).
There is no consensus on how to define the extraordinary policy measures implemented by the ECB, that is, standard or non-standard, conventional or unconventional, or whether the change in the balance sheet can be framed as quantitative easing, qualitative easing, balance sheet policy, or credit easing. If we strictly focus on what the ECB states in its website teaching material, those measures implemented are framed as ‘non-standard, unconventional measures’ and are considered part of its toolkit, but ‘by definition exceptional and temporary in nature’ (ECB, 2014, February 5); they are also targeted specifically at enhancing credit support. The change in the conduction of ECB monetary policy is more obvious if we analyse the communication strategy.

One of the first mentions of ‘non-standard actions’ was made by Jean-Claude Trichet when asked about the possibility of a liquidity trap in January 2009. A month later, Trichet framed the new measures implemented by the ECB as non-standard actions; since December 2009, he has assured the continuous monitoring of those (non-standard) actions to avoid ‘distortions associated with maintaining non-standard measures for too long’. From June 2010 to August 2012, all those measures were explicitly considered ‘temporary in nature’ by the way they were constructed (ECB, 2011). However, it was not until mid-2012, that is, when risk premiums for Spain and Italy reached their highest peak, when the ECB reflected three major changes in their communication tools. The first was presented in late-July 2012 when Draghi (July 26, 2012) affirmed that ‘[w]ithin our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough’. The second change appeared in April 2013, switching from ‘[non-standard measures are] temporary in nature’ to ‘policy stance will remain accommodative for as long as needed’. The third, in April 2014, showed the possibility of implementing unconventional instruments (the first time the word unconventional was used in an ECB conference) due to the risk of a too prolonged period of low inflation. This was reaffirmed in June 2014, when Draghi assured that ECB has ‘decided to intensify preparatory work related to outright purchases in the [Asset-Backed Security] ABS market to enhance the functioning of the monetary policy transmission mechanism’.

However, as mentioned above, there is no consensus on how to define the ECB extraordinary operating measures in place since the outbreak of the crisis. Are ECB measures unconventional? Claudio Borio and Piti Disyatat (2010, pp. 53) affirm that the distinguishing feature of unconventional monetary policy is the active use by the CB of its balance sheet to directly affect market prices and conditions beyond a short-term interest rate, differentiating between balance sheet policies and interest rates policies. In terms of the ECB jargon that the typical division is between key interest rates --main refinancing

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operations (MRO) and corridor rates -- and any others. However, even these two broad categories do not help much; setting a negative interest rate on the deposit facility may be considered a simple interest rate decision, but it is really unconventional. Under this broad division, ECB measures such as Securities Markets Programme (SMP), Covered Bond Purchase Programme 1 and 2 (CBPP1, CBPP2), the implementation of 6-months, 1-year and 3-years LTROS, and other measures lie in the field of unconventional measures. However, in stricto sensu, they are not unconventional because some of those policies were in conventional use in the 1960s–70s (Borio and Disyatat, 2010, pp. 54). Those measures are part of the non-so-unconventional balance sheet policy toolkit. In other words, those measures are partly non-standard measures (at least in recent times) intended to change the composition of the assets on their balance sheet, the so-called qualitative easing (Michele Lenza, Huw Pill and Lucrezia Reichlin, 2010).

Are some of the ECB measures a type of quantitative easing (QE)? The traditional definition of QE implied three conditions: 1) an explicit target for bank reserves providing ample liquidity to realise a current account balances’ target substantially in excess of the required reserves; 2) conditional commitment to maintain high reserve levels into the future; and 3) increased purchases of long-term government bonds to facilitate the attainment of the target bank reserves (Hiroshi Ugai, 2007, pp. 2-3). ECB measures cannot be framed under the traditional definitions of QE because Outright Monetary Transactions (OMT) have not been implemented and SMP has been fully sterilised. Instead, expansion in the ECB balance sheet came primarily from increases in the extraordinary longer maturity loans with broader accepted collateral. Thus, ECB measures are not QE in the traditional sense, even when, in a broader definition, those measures can be framed as QE.  

Do ECB measures lie in the Bernanke definition of credit easing? The former FED president, Ben Bernanke, highlighted the different approach of the FED to supporting credit markets with respect to the Japanese QE of the 2001-2006 period. In the words of Ben Bernanke (2009, January 13): ‘Our approach [...] involves an expansion of the central bank’s balance sheet. However, in a pure QE regime, the focus of policy is the quantity of bank reserves [...]; the composition of loans and securities on the asset side of the central bank’s balance sheet is incidental. [...] credit easing approach focuses on the mix of loans and securities that it holds and on how this composition of assets affects credit conditions for households and businesses’. In other words, credit easing is intended to restore specific interest rates or markets; that is, by buying/selling different assets (public and private), CB affects specific interest rates and market conditions. Because ECB measures have not involved the massive purchase of assets, it cannot be considered purely as QE or as credit

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3 For instance, adopting the characterisation made by Mark Spiegel (2001) where QE is aimed at reducing long-term interest rates when policy rates are close to zero.
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The fact that most of the transactions on the asset side of the ECB balance sheet are collateralised loans instead of asset purchases reflects the bank-based financial structure of the Euro Area (Brett W. Fawley and Christopher J. Neely, 2013) and makes most of the balance sheet endogenously determined when full allotment is working. Taking into account the particular characteristics of the Eurozone, the measures implemented by the ECB can be framed as endogenous credit easing because of the focus on relaxing bank collateral requirements and funding liquidity constraints (Bini-Smaghi, 2009).

To sum, since the start of the crisis, monetary policy has significantly changed, making it quite difficult to match new realities with old categories. This is most likely what the new norm for monetary policy is all about.

2. CHRONOLOGY OF ECB MEASURES SINCE 2007

Since 2007, and mostly after the Lehman moment, ECB has implemented a series of measures to address the effects of the financial and the European sovereign debt crises (Antonio Millaruelo and Ana del-Río, 2013; Christiaan Pattipeilohy et al., 2013; José L. Malode-Molina, 2013; Fabian Eser et al., 2012; Sylvester Eijffinger and Lex Hoogduin. 2012). In normal times (ECB, 2002), that is, until fall 2008, the ECB estimated the liquidity needs in the banking system that arise from autonomous factors plus reserve requirements and provided the system with this amount on a weekly basis, through open market operation (OMO), at the interest rate set by the ECB, the MRO rate. Commercial banks bid for the CB money (reserves) at a rate very close to the rate set by ECB, and this rate smoothly transmitted to the whole yield curve. Because ECB sets the loan conditions in the Eurozone bank-based financial system, monetary base (MB) is partially exogenously determined by the central bank. Interbank rate (EONIA) fluctuates between the marginal lending facility rate (upper limit) and the deposit rate (lower limit). The difference between the marginal lending facility rate and the deposit rate is the interest rate corridor. This interest rate corridor had been symmetrical with respect to the MRO from April 1999 until November 2013, well beyond typical. However, the corridor width has changed several times since the outbreak of the financial crisis. The downsizing of the corridor width reduces the volatility margin of the interbank rate, lowers the interbank turnover, and broadens the CB’s balance sheet, which, at this time, helps to more accurately steer the interbank rate (Ulrich Bindseil and Juliusz Jablecki, 2011). The conventional ECB lending procedure, used from June 2000 to October 2008, has been used under variable rate tenders, minimum bid rates, and fixed allotments. However, as a consequence of the financial crisis, ECB has decided to follow a fixed rate procedure with full allotment.
In the following section, we present a chronological analysis of the ECB measures implemented since the outbreak of the financial crisis, dividing the six to seven year period into four clearly defined phases of the Eurozone economy. Phases were chosen as periods of stress-calm in the European economy and reflected in the expansion of the ECB balance sheet (see Figure 1).

Insert Figure 1

Phase I: From the start of the global financial crisis in September 2008 (Lehman collapse) to April 2010

During Phase I, ECB measures were targeted at ‘enhanced credit support’ (ECB, 2010). In the first part of Phase I (September 2008 to December 2009), there was an acute banking crisis where the financial shock increased instability in the demand for central bank money, in particular, to greater precautionary holdings; in other words, instability arose from an increase in counterparty risk because of mounting insolvency and liquidity risks exacerbated by asymmetric information. The ECB money auctioned turned out to be insufficient, and money market rates started to increase, while liquidity demand was becoming unstable. After a long discussion through the fall of 2008, the ECB decided to move to a fixed rate system with full allotment tenders. This move was intended to reassure market participants that, if banks faced unforeseen liquidity shortages, they could refinance through the ECB at a known rate for a known period, for as much as they needed. This has made ECB money and bank reserves mostly endogenous-determined since October 2008.

Regarding interest rate policies, ECB cut MRO interest rate (from 4.25 to 1.00) and reduced interest rate corridor from 200 basis points (bp) to 100 bp until January 2009, increasing corridor width again up to 200 bp until April 2009 and reducing it to 150 bp since May 2009.

Moreover, ECB changed the loan conditions by implementing three and six-month full allotment Long-Term Refinancing Operations (LTROs) in November 2008 (300 billion of euros) plus 12-months LTROs in June 2009 (442 billion euros). It lowered the rating threshold for collateral and agreed currency swaps with major CBs, including the FED, the BoE, the Swiss National Bank, and the Bank of Japan. Finally, the ECB introduced the Covered Bond Purchase Programme 1 (CBPP1) to promote the ongoing decline in money market term rates, to ease funding conditions for credit institutions and enterprises, to encourage credit institutions to maintain and expand their lending to clients, and to improve market liquidity in important segments of the private debt securities market. Despite the high expectations placed on CBPP1, this programme only reached a relatively small 61 billion euros.
Nevertheless, all the liquidity injected during this acute banking crisis provoked a considerable increase in the balance sheet of the ECB for the first time in its short history, approximately a 30% increase in less than a year whereas in ‘normal times’ the year on year increase was approximately 4%. From January to May 2010 market conditions appear to improve slightly and correspond to the phasing-out of the non-standard measures taken thus far. In fact, even a small decrease in the balance sheet can be observed.

However, fears on the part of the ECB that this type of abnormal monetary policy could be dangerous, particularly too much intervention by the ECB in the money market, challenge the exit strategy, potential inflation dangers, and reduction incentives for banks to strengthen their solvency; in addition, the presumption that the crisis would be short-lived induced the ECB to insist that full allotment procedures, as with all the non-standard actions, were ‘temporary in nature’ (ECB, 2011).

Phase II: From the start of the euro area sovereign debt crisis in May 2010 (Greek crisis) to August 2011

Phase II corresponds to the first-round of the sovereign crisis that lasted from May 2010 to August 2011. The main point to make in this entire phase is that, although the sovereign crisis was mounting rapidly, ECB was reluctant to act as a lender of last resort for sovereigns where, in less than a year (May 2010 to March 2011), Greece, Ireland, and Portugal were bailed-out. The sole measure worth mentioning was the initiation of the Securities Markets Programme (SMP) that reached 100 billion of euros in August 2011 and was fully sterilised through ‘Fixed term Deposits’ because of potential inflation fears.

During this phase, the ECB did not take relevant measures, notwithstanding the SMP. In fact, the ECB balance sheet did not significantly increase. In the last part of Phase II (April 2011 to August 2011) conditions seemed relatively stable again and hardly any interventions took place. The ECB even decided to raise interest rates from 1.00% to 1.25% in April 2011 and to 1.5% in July 2011 ‘in the light of upside risks to price stability’. Moreover, the SMP was not renewed.

Phase III: Re-intensification of the euro area sovereign debt crisis coupled with increased banking sector strain from August 2011 to May 2013

In the first part of Phase III (August 2011 to January 2013), there was an acute re-intensification of both crises -financial and sovereign debt- that was labelled as the ‘diabolic loop’, which forced the ECB to finally became a true committed lender of last resort for the banking system. This commitment was announced while declaring that the
non-standard measures would be there as long as necessary. In fact, the mantra that ‘all
our non-standard monetary policy measures are temporary in nature’ proved to be
counterproductive. It increased uncertainty among banks, led to even more liquidity
demand for precautionary reasons, and led to a rapid deleveraging that generated a credit
crunch. Finally, at the start of this phase and after the re-intensification of both crises, the
ECB decided on an extension of the maturities of LTROs. There was no alternative for the
ECB than providing unlimited funding to the banking system; in August 2012 the ECB
declared that the non-standard measures will be there as long as necessary.

Regarding interest rate policies, negative bond market developments were observed in Italy
and Spain in late July 2011, which led the ECB to cut the MRO interest rate to 0.75%. In
addition to interest rate policies, ECB reactivated SMP in July 2011, achieving a maximum
purchase amount of sovereign bonds of stressed countries of 220 billion euros in February
2012. It also implemented Covered Bond Purchase Programme 2 (CBPP2), which reached a
high of 16 billion euros. However, most likely the most significant measure was the
announcement in September 2012 of the so-called Outright Monetary Transactions (OMT)
programme. Since that time, the OMT programme has been available but no operations
have been conducted, thus far.

The main change in the size of the ECB balance sheet came from two Very Long-Term
Refinancing Operations (VLTROs), the first one in December 2011 with an amount of 489
billion euros, and the second in February 2012 with an amount of 529 billion euros, both
with a 36-month maturity and the option for early repayment after one year. In addition to
these measures, ECB reduced the reserve requirements from 2% to 1% in mid-2012. The
sum of all those measures led to a peak in the balance sheet of close to 3 trillion euros and
of nearly 800 billion euro in excess liquidity close.

In the last part of Phase III (January 2013 to May 2013), tensions in money markets and
bond markets receded somewhat and banks started to repay loans, which translated into a
decreasing trend in the size of the ECB balance sheet and of excess liquidity.

Phase IV: From June 2013 to May 2014—Back to normal times? Deflationary risk says not
really

The main characteristic of this phase was the sharp decrease in the size of the balance
sheet and of excess reserves, which is explained by the early repayment of the 1-trillion
VLTROs. On the one hand, apparently this may be interpreted as good news because it
reveals that banks are not that dependent on ECB liquidity to obtain funds but, on the other
hand, it means that banks have not been using these excess reserves to grant credit; it also
means that banks preferred to deleverage. Moreover, this fast decrease in excess reserves has been pushing up the EONIA rate toward the MRO rate.

In Phase IV, money market interest rates displayed significant volatility, reflected in the variability of EONIA rate. The response of the ECB to this situation and to the overall assessment of inflationary outlook was to cut the MRO rate by 25 bp to 0.25% in November 2013. The marginal lending facility rate was cut to 0.75% and deposit rate to 0.0% reducing the corridor width from 150 bp to 75 bp and becoming asymmetric.

In mid-2013, the ECB introduced a type of forward guidance, an innovation in its communication strategy to clarify the future path of key interest rates, reducing uncertainty and the interest rate volatility (Andrew Filardo and Boris Hofmann, 2014). Forward guidance is a communication policy instrument consisting of the announcement of a conditional future behaviour of key policy instruments (ECB, 2014b), which depends on the credibility of the commitment and is conditional, given that the future path of the policy instrument depends on the evolution of the two pillars of the ECB, economic and monetary analysis. In Draghi’s words ‘[t]he Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time [...] we will monitor all incoming information on economic and monetary developments’. However, the type of forward guidance implemented by the ECB has been loosely defined and does not include benchmark, nor numerical, thresholds based on relevant variables, neither temporal, with a predefined period of time (Paul Hubert and Fabien Labondance, 2013); this potentially reduces the effectiveness of the measure.

Finally in June 2014, ECB announced a series of measures to address the deflationary risks (Gregory Claeys et al., 2014) present in the Eurozone since late-2013. The MRO interest rate were cut by 10 bp to 0.15%, the marginal lending facility rate to 0.40%, and the deposit rate to -0.10% with the corridor reduced from 75 bp to 50 bp and symmetric; thus, the zero bound has been technically reached. On this interest rate, policies highlight the fact that, for first time deposit rates are negative. Moreover, ECB announced the suspension of the SMP sterilisation.

Another innovation is the implementation of Targeted Long-Term Refinancing Operations (TLTRO) with a 4-year maturity aimed specifically at refinancing all types of loans to non-financial institutions (NFI), except for house purchases and sovereign bonds. The rates for LTR0 will have a spread of 10 bp over the MRO rate and an initial amount of 400 billion euros.

Insert Figure 2
Insert Table 1
Another way to see the effects of those measures is to analyse the assets and liabilities on the ECB balance sheet in a simplified version [see Figure 2]. By adding net autonomous liquidity factors plus reserves requirements, we obtain the liquidity needs of the banking system [see Table 1]. If the ECB accommodates exactly these liquidity needs through loans (MRO and LTRO), there is no excess of liquidity in the banking system. This was the normal workings of the ECB before the crisis: excess liquidity close to zero [ECB, 2002]. However, since the outbreak of the crisis, we can see in the graph the evolution of the excess liquidity or excess reserves and the changing composition of the assets on the balance sheet. Regarding excess liquidity, it is worth remembering that it started to reach a considerable amount, particularly since Phase III observed a re-intensification of the crisis. Excess liquidity reached approximately 800 billion euros in summer 2012, but at the beginning of 2013, it started to decrease rapidly once banks began to repay the 1 trillion VLTROs. It is quite clear as well, that this important reserve amount has been injected by the ECB by switching from MRO to LTRO and through the very timid purchasing of CBPP 1 and 2.

3. A BRIEF COMPARISON BETWEEN THE ECB AND FED

With regard to the operational and institutional differences between the ECB and the FED, there are two main points to highlight. On the one hand, due to the fundamentally bank-based financing structure in Eurozone countries [see first part of Table 2]; approximately 90% of non-autonomous assets on the ECB’s balance sheet consist of collateralised loans. The item ‘Securities held for monetary purposes’ on the ECB balance sheet, consisting of SMP plus CBPPs, has been a very small proportion of total assets (a maximum of 11%). For the U.S. FED, the figures are the opposite; that is, nearly 90% of the assets on the balance sheet are composed of ‘Securities held outright’, most of these, until maturity.

Insert Figure 3

Insert Table 2

On the other hand, since the Lehman moment, the FED and BoE sharply expanded their balance sheet, whereas for the ECB, expansion was moderated at the beginning; later, a steady increase can be observed [see Figure 3]. There are three reasons behind this behaviour. First, at the beginning of the global financial crisis, the ECB balance sheet as a share of the GDP was higher than for the FED and the BoE; therefore, the ECB did not require an increase in the proportion of the other CBs to accommodate the extraordinary demand for liquidity [Lenza et al., 2010]. Second, given the bank-based financial structure of the Eurozone, ECB addressed the first part of the crisis through operations with their regular counterparts, i.e., changes in the structure of the assets of the balance sheet rather than its expansion [Lenza et al., 2010]. Finally, before the European sovereign debt
crisis in mid-2010, the stronger effects of the crisis appeared to take place in the U.S. and the United Kingdom (Cour-Thimann and Winkler, 2012). Notwithstanding, from the beginning of the crisis until the end of 2012, the ECB balance sheet almost tripled, similar to what happened with the FED. However, since the beginning of 2013, the ECB balance sheet has shrunk by 50%, in clear contrast to the FED. Inasmuch as ECB loans were set with full allotment, fixed rates, and the possibility for early repayment, the ECB balance sheet is mostly endogenously determined by banks (see second part of Table 2).

The primary explanation for this rapid reduction in excess reserves is that money markets are now regaining their role as the principal market for bank funds and therefore, central bank money is not in as much demand (ECB, 2014b). Moreover, another reason proffered by some commentators (Mickey Levy, 2014) may be that banks facing proximate Asset Quality Review (AQR) are getting rid of assets that impose a burden to capital requirements.

With regard to the exit strategy (see third part of Table 2), the ECB non-standard measures were ‘temporary in nature’. The longer maturity ECB loans before mid-2014 was three years (VLTRO), with the possibility of an early repayment after one year. This has made it possible for banks to repay these loans in advance, as has been happening since 2013; this simultaneously makes the exit strategy less disruptive. The FED balance sheet may start to diminish only once securities mature. However, approximately 70% of the securities held by the FED have a maturity of between five and 10 years. The other option is an active programme of selling those assets, which makes the exit strategy more challenging (Tobias Rehbock, 2013).

Finally, the risk implied and absorbed was significantly different between the ECB and FED’s balance sheet policies because of the nature of the open market operations (borrowing/buying-selling) and the financial market structures (see fourth part of Table 2). Although it is not easy to assess the risk absorbed, because it depends on future economic developments, the risk taken by the FED appears to be higher than that of the ECB (Alex Cukierman, 2013). Although ECB collateral has been broadened because the eligibility rating threshold has been lowered (BBB-), and therefore, counterparty risk increased, it is still less risky than the asset purchasing of the FED. In fact, when the so-called tapering was announced by the FED (consisting of a reduction of its monthly bond-buying programme) in the mid-2013, the disruption in financial markets was considerable. However, in the Eurozone, the balance sheet reduction has not caused any significant alteration in financial markets thus far, apart from the already mentioned upward convergence of the EONIA rate towards the MRO rate.
4. QUANTITY ANALYSIS OF THE EFFECTS OF ECB MEASURES

As mentioned in the above section, due to the ample liquidity in the banking system associated with special LTROs, EONIA has been closed to the deposit facility rate since late-2011 (see Figure 4). However, early loans repayment by banks and the consequent reduction in excess liquidity have made the EONIA rate converge towards MROs since late 2013. Nevertheless, a clear effect of ECB decisions is that EONIA and EURIBOR are historically low, having technically reached the zero bound.

Insert Figure 4

The pathway of MRO rate towards the zero bound has forced the narrowing of the corridor width. Decisions regarding interest rates corridor width deserve some comments because of its potential effects on the level and volatility of the EONIA rate. A narrower corridor, which seems to be the decision taken by the ECB, allows the CB to more accurately steer money market interest rates and to avoid larger fluctuations. However, the counterpart is that a narrower corridor requires a more frequent intervention by the CB in money markets and more frequent changes in the ECB balance sheet. If the upper limit of the corridor would have been maintained 100 basis points above the MRO rate, as was the norm until recently, with such low interest rates (1.00%) the EONIA could have risen to 2.00%, doubling the interest rate and provoking a clearly tighter monetary policy stance. Avoiding this potential risk has been the main argument for the ECB to reduce the upper margin of the corridor. Regarding the bottom limit, if MRO rates approximate the zero bound, the deposit facility rate must necessarily become negative, otherwise the corridor becomes asymmetric. A negative deposit rate is new territory and makes possible, although unlikely, that the EONIA becomes negative for banks with excess reserves.

Insert Figure 5

As seen in Figure 5, notwithstanding the reduction in the ECB key rates, financial fragmentation is still happening and credit flows decreasing. The main arguments put forward to explain the still stagnant credit flows in the Eurozone are from the supply point of view, the ongoing deleveraging process in the banking system facing more demanding capital requirements and the coming AQR in a situation in which getting new capital is a more expensive option. In addition, credit demand has remained weak because it lags behind the business cycle.

Insert Figure 6

Turning to the evolution of money aggregates and the money multiplier (MM) it is evident from Figure 6 what has happened during these years. During Phase I, which corresponds to the period of acute banking crisis, there was a clear run for liquid assets, not only by banks, but by non-financial corporations as well. This increase in liquidity preference shows as a
portfolio switch from M3 (M2) to M1. M1 increase reached a figure close to 14% whereas M3 growth became negative in the last part of this period (-2%). Phase II shows a convergence towards a very low growth of all monetary aggregates coinciding with the start of the credit crunch. Since Phase III, a low growth regime becomes the norm; a growth well below the long run reference for price stability (4.5%). This should have been a clear alert to deflationary risks for the ECB a long time ago because this behaviour still maintains its monetary pillar and M3 growth rate of 4.5% as a long run reference to cross-check for price stability. However, until June 2014, the ECB did not take any explicit any measure to counteract deflationary risks.

A traditional (monetarist) way to analyse monetary policy effectiveness is through the MM, which assumes a mechanical relation between monetary base and money supply; a relation linked by the behaviour of banks as passive intermediaries between NFI credit demand and CB money. In this respect, particularly when interest rates are close to zero, the analysis of monetary policy effectiveness through this modelling may shed some additional light on this issue.

Insert Figure 7

As seen in Figure 7, since the beginning of the crisis, the evolution of MM of M3 illustrates the ineffectiveness of the monetary policy: most of the liquidity injected into the banking system has been hoarded in the deposit facility and consequently, banks’ reserve ratio has risen from the required ratio of 1% to 10% in mid-2012. Additionally, currency to deposit ratios have increased from 8% to 10%. The increase, at the beginning of the crisis in Phase I, of the deposit ratio may be explained by fears of bank runs. However, it curiously continues increasing thereafter. Apparently, the crisis is having a lasting effect on cash preference by NFI that may have a permanent effect on the MM and on the analysis of monetary developments in the Eurozone.

Insert Figure 8

In Figure 8 it is even more evident what has happened: the downward trend of the MM of M3 has compensated almost totally for the upward trend of total bank reserves, and as a consequence, the M3 trend is almost flat. Thereby, the significant reduction of the MM from 10 to 7 during most of the period analysed explains that, despite the nearly one trillion increase in bank reserves following VLTROs, this has not had the expected expansionary effect on the broad money supply (M3).
5. FINAL REMARKS

Since the outbreak of the financial crisis, the ECB has taken many unusual measures, but most likely too little, too late. With the benefit of hindsight, its strategy can be considered backward looking in times when principal actors should be more proactive and take larger risks to counteract such negative scenarios. The ECB has acted as a lender of last resort to the banking system, providing banks with ample liquidity and avoiding the collapse of the system; yet it did so hesitantly until the end of 2011, four years after the outbreak of the financial crisis, when the 1 trillion VLTROs were placed and ECB stated that non-standard measures will be available as long as necessary. Simultaneously, the FED and the BoE had already embarked on QE long before.

As a lender of last resort to stressed sovereigns of the Eurozone, the actions of the ECB have been even more cautious and late and have therefore had some perverse effects. The ECB has not prevented the public debt market from settling into a type of negative equilibrium during Phase III; the former generated a full-fledged sovereign crisis that mutated rapidly into a bank solvency crisis.

Two years after the bailout of Greece, when the euro was near a break up in summer 2012, and long after the banking system in southern countries was already seriously contaminated, Draghi proclaimed the magical words. However, the OMT is still unreleased and SMP purchases remain sterilised (until mid-2014) for fear of inflation. The fragility of banks’ solvency has been determinant of the frailness of the transmission mechanism, financial market fragmentation, and minimal credit flows. This partially explains the past recession and the expected deflationary outlook for the euro area.

Why so late and too little? Because the ECB has too tight a straitjacket and a narrow mandate: price stability. Until this is amended and the ECB becomes a real CB, all the blame is not attributable to the ECB alone, but to politics as well. This means a change in the legal framework of the ECB to include not only its function as a lender of last resort, but a triple mandate: price stability, maximum employment, and banking supervision and regulation (Christophe Blot et al., 2014).
REFERENCES


Figure 1 ECB balance sheet
Source: ECB Statistical Data Warehouse

Figure 2 Selected components of the ECB balance sheet
Source: ECB Statistical Data Warehouse
Figure 3 Evolution of the asset components: Fed and the ECB
Source: ECB Statistical Data Warehouse and FED

Figure 4 Key ECB Interest Rates
This project has received funding from the European Union’s Seventh Framework Programme for research, technological development and demonstration under grant agreement no 266800.

Source: ECB

**Figure 5** Fragmentation in the Eurozone

Source: ECB Statistical Data Warehouse

**Figure 6** Monetary Aggregates

Source: Own calculations based on ECB
This project has received funding from the European Union’s Seventh Framework Programme for research, technological development and demonstration under grant agreement no 266800

Figure 7 Bank Reserves, Liquidity and Reserve Requirements
Source: Own calculations based on ECB

Figure 8 Money multiplier and total reserves
Source: Own calculations based on ECB

Simplified balance sheet of the Eurosystem (Net Autonomous
Liquidity Factors

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomous Liquidity Factors</td>
<td>Autonomous Liquidity Factors</td>
</tr>
<tr>
<td>Net Foreign Assets</td>
<td>Banknotes in circulation</td>
</tr>
<tr>
<td></td>
<td>Government deposits</td>
</tr>
<tr>
<td></td>
<td>Other autonomous factors (net)</td>
</tr>
</tbody>
</table>

Net Autonomous Liquidity Factors = Assets Autonomous Liquidity Factors minus Liabilities Autonomous Liquidity Factors (Source: ECB, 2002)

**Table 1 Simplified balance sheet of the Eurosystem (Net Autonomous Liquidity Factors)**

<table>
<thead>
<tr>
<th>Comparison: ECB vs FED</th>
<th>ECB</th>
<th>FED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Framework:</td>
<td>Bank-based financial system Lending-based OMO</td>
<td>Capital market-based financial system Assets purchase-based OMO</td>
</tr>
<tr>
<td>types of Open Market</td>
<td>Balance sheet size is endogenously determined by banks. Full</td>
<td>Balance sheet size is exogenously determined. Securities purchases</td>
</tr>
<tr>
<td>Operations (OMO)</td>
<td>allotment loans with fixed rates Early repayment in 3-years</td>
<td>determine the balance sheet size.</td>
</tr>
<tr>
<td></td>
<td>LVTRO</td>
<td></td>
</tr>
<tr>
<td>Balance sheet</td>
<td>Non-standard measures are “temporary in nature” by construction</td>
<td>Balance sheet might start to diminish only once securities mature</td>
</tr>
<tr>
<td>determination</td>
<td>Maturity is at maximum 3 years VLTROs and banks might pay back these</td>
<td>Mature for close to 70% of assets is between 5 and 10 years)</td>
</tr>
<tr>
<td></td>
<td>loans in advance as is happening since 2013.</td>
<td>The other option is an selling strategy</td>
</tr>
<tr>
<td>Exit strategy</td>
<td></td>
<td>More challenging exit</td>
</tr>
<tr>
<td>Assumed risk</td>
<td>Less disruptive exit strategy</td>
<td>strategy given the amount of securities to sell</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Collateral</td>
<td>Collateral has been broadened</td>
<td>FED monetary policy absorbs more risk than</td>
</tr>
<tr>
<td></td>
<td>Rating threshold lowered</td>
<td>that of the ECB.</td>
</tr>
<tr>
<td></td>
<td>Counterparty risk increased,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>it is still less risky than FED.</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2 ECB and FED differences**
Financialisation, Economy, Society and Sustainable Development (FESSUD) is a 10 million euro project largely funded by a near 8 million euro grant from the European Commission under Framework Programme 7 (contract number: 266800). The University of Leeds is the lead co-ordinator for the research project with a budget of over 2 million euros.

**THE ABSTRACT OF THE PROJECT IS:**

The research programme will integrate diverse levels, methods and disciplinary traditions with the aim of developing a comprehensive policy agenda for changing the role of the financial system to help achieve a future which is sustainable in environmental, social and economic terms. The programme involves an integrated and balanced consortium involving partners from 14 countries that has unsurpassed experience of deploying diverse perspectives both within economics and across disciplines inclusive of economics. The programme is distinctively pluralistic, and aims to forge alliances across the social sciences, so as to understand how finance can better serve economic, social and environmental needs. The central issues addressed are the ways in which the growth and performance of economies in the last 30 years have been dependent on the characteristics of the processes of financialisation; how has financialisation impacted on the achievement of specific economic, social, and environmental objectives?; the nature of the relationship between financialisation and the sustainability of the financial system, economic development and the environment?; the lessons to be drawn from the crisis about the nature and impacts of financialisation?; what are the requisites of a financial system able to support a process of sustainable development, broadly conceived?
## THE PARTNERS IN THE CONSORTIUM ARE:

<table>
<thead>
<tr>
<th>Participant Number</th>
<th>Participant organisation name</th>
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<td>1 (Coordinator)</td>
<td>University of Leeds</td>
<td>UK</td>
</tr>
<tr>
<td>2</td>
<td>University of Siena</td>
<td>Italy</td>
</tr>
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<td>3</td>
<td>School of Oriental and African Studies</td>
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<td>4</td>
<td>Fondation Nationale des Sciences Politiques</td>
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<td>Pour la Solidarite, Brussels</td>
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<td>University of Witwatersrand</td>
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<td>15</td>
<td>University of the Basque Country, Bilbao</td>
<td>Spain</td>
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</table>

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