EUROPEAN PARLIAMENT

DIRECTORATE GENERAL FOR INTERNAL POLICIES

**POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY**

# Non-Standard Policy Measures - A First Assessment



## NOTE

**Abstract**

The Bank of England (BoE), the Federal Reserve (Fed) and the European Central Bank (ECB) have responded to the crisis with exceptional initiatives that resulted in a strong increase in the size of their balance sheets. Since 2009, the BoE and Fed have mostly relied on large-scale purchases of government bonds while the ECB has relied on ample lending to financial institutions with repurchase agreements of collateral (repos), most notably the 3-year LTRO. The LTRO has successfully mitigated funding needs and reduced interbank stress. The ECB has become de facto the financial intermediary between banks in the North and in the South. The LTRO also had a significant impact on sovereign bond yields in the South and it has increased the holdings of government debt in Southern banks while Northern banks have reduced sovereign exposure. To date, however, the LTRO has had only weak effects on funding conditions for households and non-financial corporations and credit dynamics remain weak in the euro area and in particular in the South. The underlying structural problems as regards banks, the macroeconomic adjustment and the incomplete governance set-up of the euro area need to be addressed to reach lasting financial stability and economic growth.

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# LIST OF ABBREVIATIONS

**BoE** Bank of England

**ECB** European Central Bank

**EBA** European Banking Authority

**FED** Federal Reserve

**LTRO** Longer-Term Refinancing Operation

**MFI** Monetary Financial Institutions

**QE** Quantitative Easing

**SMP** Securities Market Programme

**EA** Euro Area

**AT** Austria

**BE** Belgium

**DE** Germany

**ES** Spain

**FI** Finland

**FR** France

**GR** Greece

**IE** Ireland

**IT** Italy

**NL** Netherlands

**PT** Portugal

**ES** Spain

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# EXECUTIVE SUMMARY

The first part of this note compares the different steps to address the crisis taken by the Bank of England (BoE), Federal Reserve and the ECB. Since 2009 the BoE's and Fed's policy responses have mostly relied on the purchase of government bonds. This quantitative easing was done with the clearly stated aim of supporting the macroeconomy as traditional lowering of the interest rate was constraint by the zero lower bound of the short term interest rate. The ECB has also relied on government bond purchases. These, however, have been much more limited and were done with the stated aim of improving the monetary transmission mechanism, not with the aim of improving credit conditions. The ECB, instead, has relied more on its traditional monetary policy instruments, namely repos. Although the increase in the overall balance sheet size of all three central banks is by now similar in size, its composition therefore differs significantly.

The size and the nature of the two recent repos of the ECB, the LTROs, call for an assessment of their effectiveness. The ECB basically stepped in the void of a dysfunctional interbank market and provided large amounts of liquidity. The data show that liquidity was taken up in particular by banks in countries under stress. At the same time, a large part of the total liquidity increase was parked in the deposit facility of the ECB and it appears that mostly banks in the North have parked liquidity in such a way. The ECB has replaced an interbank market between the North and the South of the euro area and thereby prevented a sudden stop of capital flows. The LTRO has also led to a decrease in interest rates on government bonds in the South and the holdings of government securities has increased significantly in the banking system in the South while Northern banks have significantly reduced their holdings of government debt. In terms of the credit to the non-financial corporate as well as the household sector, so far no change in the subdued dynamics in Southern Europe can be observed. This may relate to the low demand for credit due to the ongoing deleveraging in both the corporate and household sector. Interest rates for households and corporations have become more heterogeneous across the euro area and the LTRO has not yet reduced this heterogeneity. At the same time, nominal interest rates continue to be low in most countries of the South.

The overall assessment of the LTRO is therefore a mixed one. It has stabilized financial conditions and the interbank market. At the same time, it has not fundamentally altered credit conditions in Southern Europe. Monetary policy cannot solve the underlying structural problems in the banking system, the structural reform needs as well as the short comings of the euro area governance set-up. Monetary policy is made difficult and less effective by the existing economic and institutional heterogeneity.

# 1. INTRODUCTION

Since summer 2007 the US Federal Reserve, the Bank of England (BoE) and the ECB have embarked on extraordinary initiatives to ward off the global financial crisis and its repercussions. Statements by the respective central bankers, however, suggested for long that their aims were not identical. Both Ben Bernanke, the chairman of the Fed and Mervyn King, the governor of the BoE, indicated early on that, to borrow from Clausewitz, they regarded the new course of action as a continuation of interest rate policy through other means. Quantitative easing was intended to affect the yield curve in a situation when its lower end had reached the zero bound and thereby to stimulate the economy despite the rigidity of the policy rate (Bernanke 2009, King 2009).

Up until the end of its tenure Jean-Claude Trichet, however, repeatedly indicated that the aim of the ECB's unconventional policy was not to substitute interest rate cuts at the zero bound, but rather to ensure a proper transmission of interest rate changes to the non-financial sector. According to the so-called separation principle adopted by the ECB, the goal of its non-standard measures was not to overcome the zero bound (and in fact, the policy rate was never brought to zero) but to substitute an impaired interbank market, so that interest rate policy impulses could be transmitted to the economy. The ECB went as far as emphasising that liquidity initiatives could conceptually be undertaken at any level of the policy rate. As indicated by Fahr et al. (2011),

> *"Quantitative easing can be seen as a substitute for conventional policy easing, to be exploited only once there is no more room for manoeuvre in policy interest rates [...]. The enhanced credit support programme [of the ECB] was independent of the level of the MRO rate: it could have been adopted, thus generating a large expansion of the ECB's balance sheet, at any interest rate level."*

This difference of emphasis was consistent with the reluctance of the ECB to embark on wholesale purchases of government bonds such as those carried out by the Fed and the BoE. Although the ECB in May 2010 also initiated the purchase of selected government bonds within the context of the Securities Market Programme (SMP), it did it for limited amounts, with visible reluctance, and with the stated aim of improving the transmission mechanism of monetary policy in countries where it had been impaired by tensions on the government bond market. Again, the central bank was careful not to suggest any interference with monetary stimulation purposes.

At end-2011, however, the ECB embarked on a large-scale provision of 3-years liquidity to the banking system. Both the size (almost EUR1 trillion gross) and the nature of this operation lead to re-examine whether these distinctions are still valid, or whether the ECB has de facto joined the other two central banks and has since then conducted a large-scale unconventional monetary stimulus.

On the face of it, the 3-years Long-Term Refinancing Operation (LTRO) does not depart qualitatively from the ECB's prior actions. The central bank has provided wholesale liquidity to banks in a situation when market indicators were again indicating mounting tensions on the interbank market. Far from increasing its purchases of government bonds, the central bank has since December 2011 reduced those conducted within the framework of the SMP. The magnitude of the operation, however, is such that it is difficult to maintain that it has not had significant macroeconomic effects.

The aim of this paper is to investigate whether facts are consistent with words and, specifically, whether the ECB has de facto adopted a stance similar to those of the Fed and the BoE.

# 2. CONCEPTUAL FRAMEWORK

Expressions used since the beginning of the crisis to characterise the central banks' extraordinary actions are confusing: 'unconventional policies', 'quantitative easing', 'qualitative easing', 'credit easing' are often used as if they were interchangeable, or the exact nature of the distinction they introduce is obscure.

Central bank actions can be categorised on the basis of three criteria:

- Whether they involve **departure from open market operations** as routinely conducted by the central bank. This is a matter of procedures and the reference is past behaviour. According to this criterion a central bank's operation can be unconventional (because it departs from standard practice) whereas the same operation cannot be considered as such for another central bank (because it corresponds to standard practice). For example, the use of repos was unconventional for the Fed in 2008-2009, but not for the ECB.
- Whether they involve **intervention on particular market segments**, e.g. credit markets or the government bond market. This is a matter of targeting of the central bank intervention. However, intervention on a particular market segment can be motivated either by concerns specific to this segment or, in the case of interventions whose aim is to affect the yield curve, by overall macroeconomic objectives. To be specific, the central bank can purchase government bonds to ease tensions in a particular market (as done by the ECB within the framework of the SMP) or to shape the yield curve and thereby affect growth.
- Whether they result in an **increase in the balance sheet of the central bank**. This is a matter of monetary impact. However, whether or not there is an expansion of base money does not necessarily matter from the point of view of the non-financial sector. If the expansion of the monetary base was simply the counterpart of a drop in the monetary multiplier, there is no reason to consider it has had an impact on the economy. For example, if the central bank substitutes the interbank market to lend directly to banks, as done at the height of the 2008-2009 stress, the expansion in the base money that takes place should have no impact beyond the banking system.

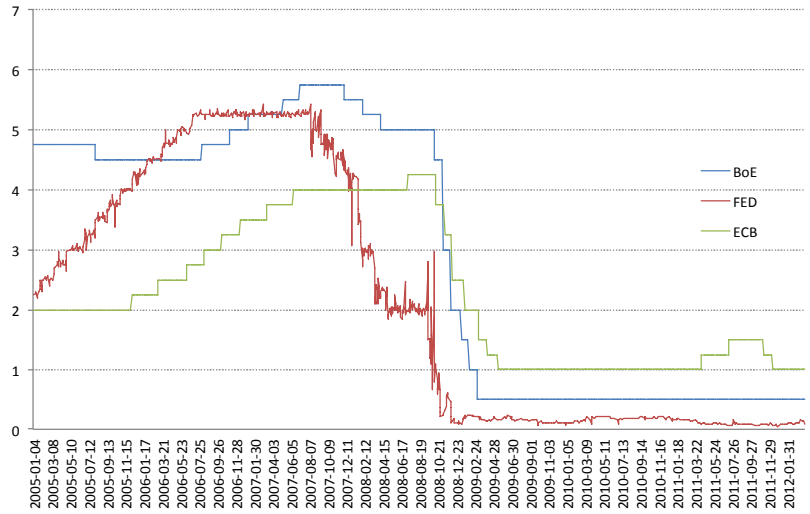
This short categorisation indicates that there is no straightforward way to characterise a central bank's policy. Especially, focusing on partial criteria (procedures; markets; or the evolution of base money) can be misleading as the same action can have both different motivations and different impacts.

What really matters and what in fact underlines the ECB's separation principle is whether extraordinary central bank initiatives address problems within the banking sector with the aim of ensuring a proper functioning of it and the proper transmission of interest rate decisions to the economy, or whether they aim at, and result in, changes in the financing conditions of non-financial agents, thereby amounting to monetary policy moves.

# 3. THREE POLICIES COMPARED

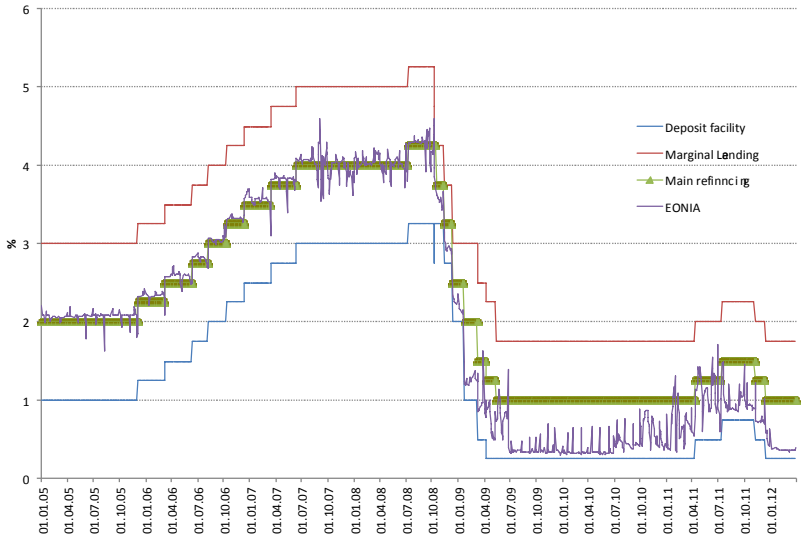
To compare the policies followed by the three central banks, we start by looking at the policy rates throughout the crisis period (Figure 1). The timing and speed of the policy moves differs, the levels reached also differ, and the ECB was alone in attempting an early return to normalcy with its spring 2011 hikes, but on the whole the three central banks followed a broadly similar pattern of sharp reduction in response to the deterioration of the financial situation. It should also be taken into account that although the ECB policy rate did not decline below 1 per cent, the fixed-rate, full-allotment liquidity provision pushed the EONIA (the risk-free overnight rate) below 0.5 per cent between summer 2009 and autumn 2010, and again since the beginning of 2012 (Figure 2).

**Figure 1: Policy rates of the Fed, the BoE and the ECB, 2005-2012**




**SOURCE:** ECB; FED; BoE

**Figure 2: Euro area interest rates, 2005-2012**




**SOURCE:** ECB, Bundesbank

We next turn to the comparison of balance sheets. Here the comparison is made difficult by statistical discrepancies and the presence on the central banks' balance sheet of assets unrelated to monetary policy but whose valuation may fluctuate over time, suggesting policy actions that did not take place. To make the comparison meaningful we first purged the balance sheet of gold, foreign exchange reserves and inherited assets that are not part of monetary operations (real estate, remaining loans to governments, etc.).[1] The details can be found in the Annex. We also normalise by measuring balance sheets as a proportion of 2007 GDP.

All three central banks have experienced a dramatic increase of their assets and liabilities (Figure 3), and all three exhibit a similar pattern: massive expansion at the time of the Lehman shock in September 2008, followed by a stabilisation or partial reversal, and further expansion at a later stage (summer 2010 for the Fed and autumn 2011 for the BoE and the ECB). Differences are also noteworthy: first, the initial crisis response was more massive in the case of the Fed and the BoE than the ECB. Second, the evolution of the ECB balance sheet (which exhibits spikes corresponding to the introduction or the termination of liquidity provision schemes) was on a declining trend until late spring 2011, at which time the initial expansion had been almost entirely reversed. Since then however its balance sheet has expanded dramatically and it has reached a level close to those reached by the other two central banks.

**Figure 3: Balance sheets of the Fed, the BoE, the Eurosystem in percentage of 2007 GDP, 2007-2012**


**SOURCE:** ECB, BoE, FED

[1] This type of comparison was advocated by ECB president Mario Draghi in the introductory statement to his press conference on 8 March 2012, in which he said that
"*The Eurosystem has a very large volume of assets that have nothing to do with monetary policy, e.g. gold, foreign exchange reserves, among other things. If you compare the ECB's balance sheet with that of the Federal Reserve System or the Bank of England, the latter are very lean, they do not have the same volume of assets. You have to make the comparison in terms of the additional risks caused by the two LTROs. You have to compare the ratio of monetary policy instruments to GDP in the three different areas of the world.*"

We next turn to the composition of the asset side of the balance sheet. In order to find out and compare what accounts for this expansion and which were the instruments used, we adopt a common decomposition. We distinguish five categories:

1. Lending to financial institutions, mainly within the framework of repurchase agreements (repos);
2. Government securities held by the central banks within the framework of asset purchase programmes;
3. Non-government securities held within the framework of asset purchase programmes;
4. Foreign exchange swaps with other central banks (for the Fed) / foreign currency lending to domestic institutions (for the BoE and the ECB).
5. Other assets not elsewhere classified.

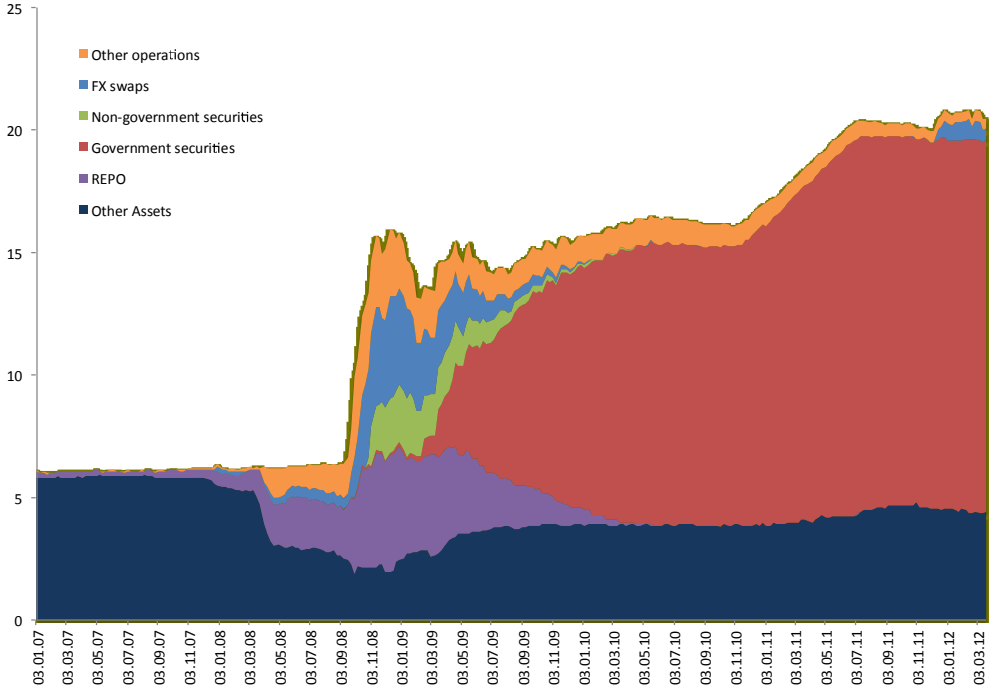
The first three categories correspond to the three main instruments used by central banks in the context of the current crisis and they correspond to the three sets of tools distinguished by Fed chairman Ben Bernanke in his presentation of the Federal Reserve's crisis response (Bernanke, 2009). The same instruments have to varying degrees also been used by the other two central banks.

The fourth category is intended to capture the effect of foreign exchange swaps entered into by the Fed and its partner central banks with the purpose of providing US dollar liquidity to European financial institutions.

The fifth category is a residual. Only for the Fed, we include an additional category called "Other Operations" that includes important programmes conducted during the financial crisis that are however not easily classifiable as REPOs or securities purchase but that we want to differentiate from "Other Assets".

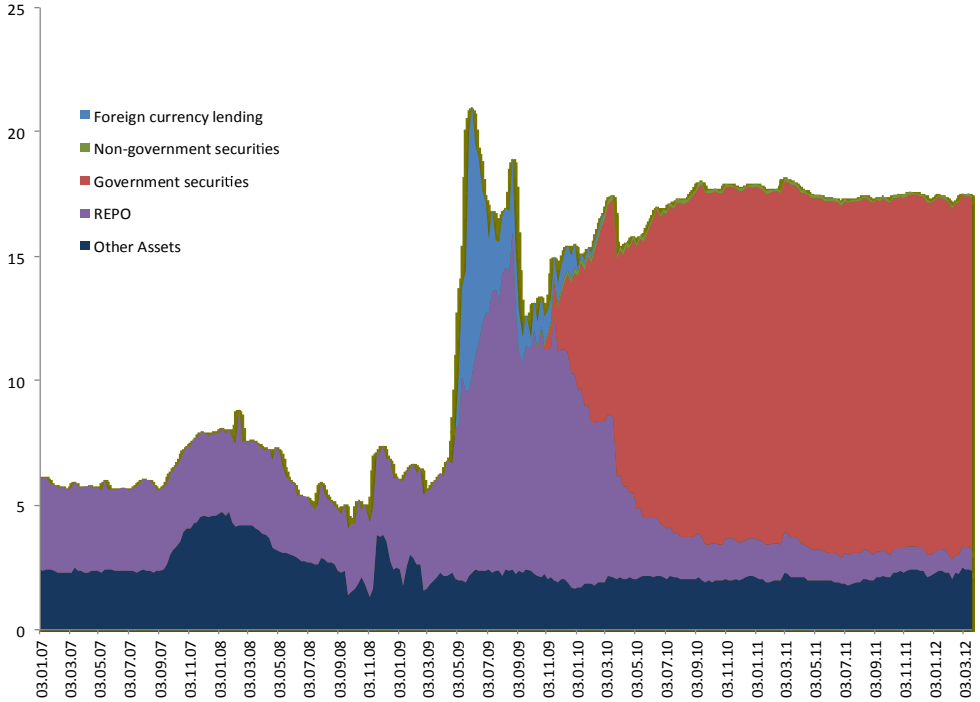
The Annex gives the correspondence between our classification and those used by national central banks for the presentation of their balance sheets. Figures 4, 5 and 6 give the evolution of the composition of the central bank's balance sheets.

**Figure 4: Assets held by the Federal Reserve, 2007-2012**



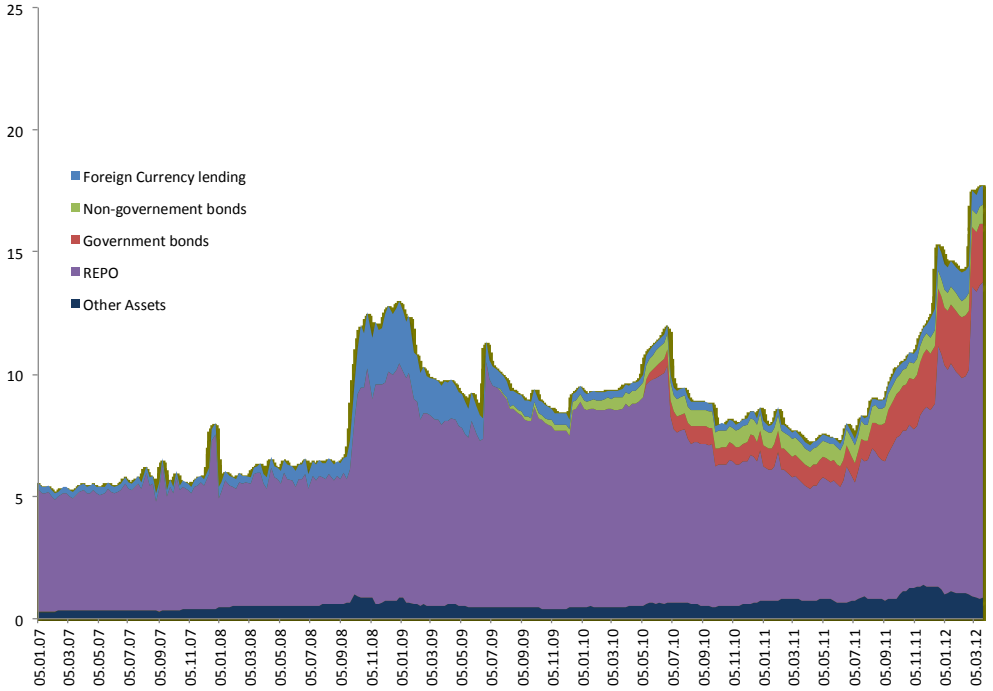

**Source:** FED Cleveland and FED Board of Governors' Balance Sheets Statistics

**Figure 5: Assets held by the Bank of England, 2007-2012**




**Source:** Bank of England (BoE)

**Figure 6: Assets held by the Eurosystem, 2007-2012**




**SOURCE**: European Central Bank (ECB)

The decomposition leads to highlight significant difference in the policy actions of, on the one hand, the Fed and the BoE and, on the other hand, the ECB:

- In both the US and the UK, the surge of repo lending to financial institutions was short-lived. It took place in response to the disruption of the interbank market following the Lehman shock and was unwound in the course of 2009. By the beginning of 2010 it had either disappeared entirely (Fed) or been reduced to traditional proportions (BoE), and did not resume afterward. In the case of the ECB, however, there were repeated spikes of repo lending and it resumed on a massive scale in December 2011.
- In the US and the UK, government bonds purchased within the framework of credit easing or quantitative easing programmes largely substituted repo operations from 2009 onwards. At end February 2012 these assets accounted 103 per cent of the increase in the overall size of the Fed balance sheet since February 2007, and 116 per cent in the UK. In the euro area, however, the bulk of the increase took the form of repos operations. These accounted for 64 per cent of the increase in the size of the balance sheet between February 2007 and February 2012, against 20 per cent for government bonds.
- Other categories of assets represent a relatively minor part of all three balance sheets. Swaps and dollar liquidity provision represented a temporarily significant part in 2008-2009 only. Non-government securities were significant only for the Fed and only for a very short period.

On the whole, what this comparison indicates is that by early 2012 all three central banks had increased the size of their balance sheets by roughly comparable amounts but that their composition was entirely different. Purchases of government bonds accounted

overwhelmingly for the increase in the US and the UK. Liquidity provision to the banking system accounted for the largest part of increase in the euro area.

By itself this difference is however not necessarily indicative of a difference in the monetary stance. One interpretation of it is that at end-2011 the ECB had to face a severe dysfunction of the banking system and had no choice but to substitute again the clogged interbank market through providing large-scale liquidity support to banks. Another interpretation is that the provision of cheap, long-term liquidity to banks was a way to give them incentives to resume lending to the non-financial sector (including the government sector through bond purchases). By itself the observation of the composition of the balance sheet cannot discriminate between these two interpretations. Finding out which is correct requires assessing the impact of policy actions on nonfinancial agents.

# 4. ASSESSING THE IMPACT OF RECENT ECB ACTION

After having studied the ECB action in response to the crisis and contrasting this with action at the BoE and the Fed, we turn to an assessment of the impact of ECB action. We start by describing the response in the interbank market; we then turn to the impact of the LTRO on banks' stock market performance, before discussing the impact on the real economy as well as on the government bond market.

## 4.1. Interbank market

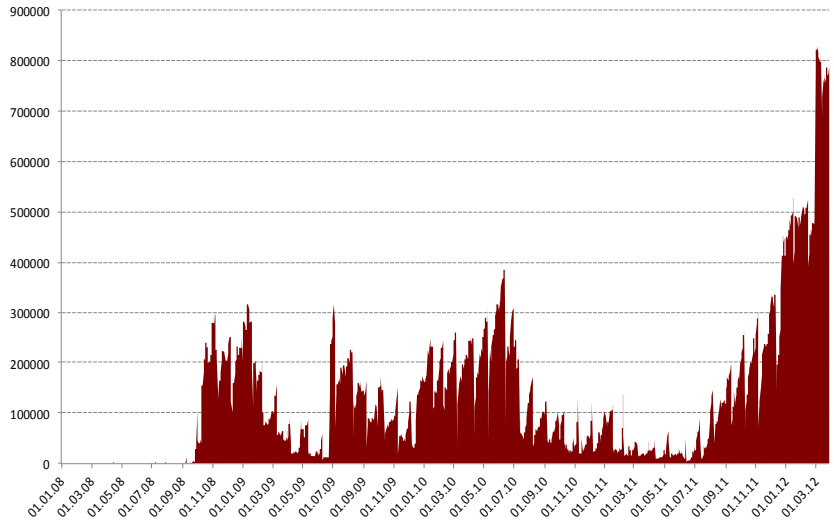
The LTRO of the ECB has had a dramatic impact on the functioning of the interbank market. The Euribor/EONIA swap spreads, which measures the difference between secured and unsecured overnight lending, is an often used to assess the stress in interbank lending. Prior to the LTRO, it had exceeded levels reached in the first phase of the global financial crisis, before the collapse of Lehman Brothers. It has decreased massively since the start of the LTRO. Determined ECB action was therefore arguably very important to calm the banking sector and to reduce the risk of a major accident.

**Figure 7: EURIBOR/EONIA swap spread**


**Source:** Datastream

At the same time, one should not mistake the reduction in the interbank stress indicator as an actual improvement of interbank relations. In fact, by lending massively to banks, the ECB has largely stepped into the interbank market, substituting it to a large extent. The use of the ECB's deposit facility shows that banks park liquidity at the ECB in overnight deposits amounting to almost EUR 800 billion and there is little evidence that this is changing.

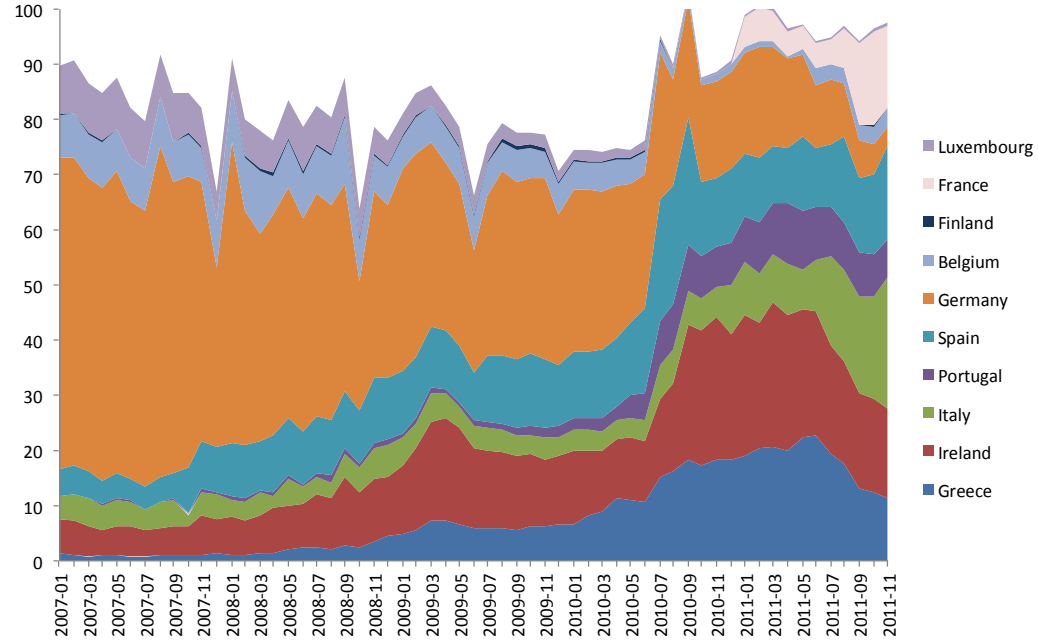
**Figure 8: Use of the Deposit Facility**




**Source:** ECB

Effects have also been very asymmetric. The countries' share in access to ECB liquidity through repos has changed markedly in the course of the last three years (see Figure 9). Prior to the more acute phases of the crisis, most liquidity was provided to banks located in Germany. Their share has declined dramatically while banks in countries in trouble have increasingly taken recourse to the ECB liquidity. The ECB has thus stepped into a dysfunctional interbank market by providing increasingly funds to stressed banks in the euro area periphery, thereby replacing the outflow of capital from private sources (see for example Merler and Pisani-Ferry 2012b).

**Figure 9: Countries' share in Eurosystem Refinancing Operations (01.2007/11.2011)**



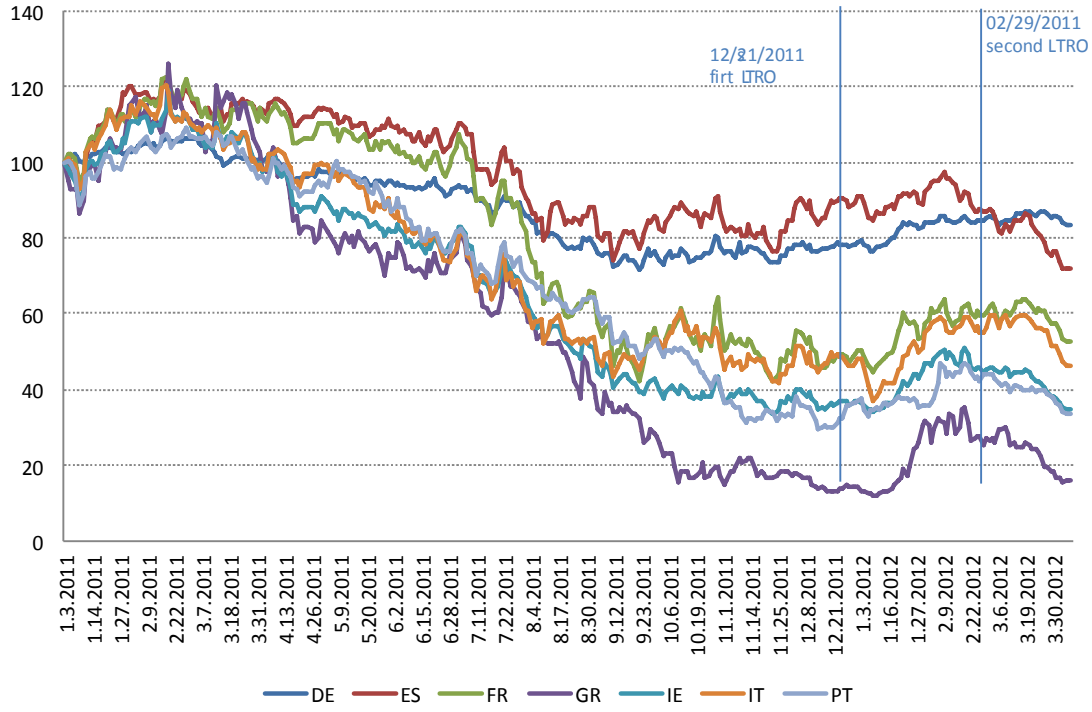

**Source:** National Central Banks and ECB. Note that Emergency Liquidity Assistance is not included

## 4.2. Impact on banks

The LTRO has at least temporarily solved the acute funding needs of banks in the euro area by providing abundant liquidity at low rates with lower collateral standards. It has not, however, fundamentally altered the underlying problems of weak banks. One way of assessing this is to look at the stock market value of the banks. If the LTRO has increased the solvency of banks, their stock prices should have increased too. In principle, the low-cost 3-year loans offered by the ECB should be seen by market operators as helpful for restoring the soundness of the banking system and thereby help banks stock.

Angeloni and Wolff (2012) look at the normalized average bank stock market index (consisting of the banks located in a given country) since January 2011. The sample consists of those banks stress-tested in the recent stress test of the EBA. A clear pattern of the effects of the ECB's LTRO cannot be discerned. Stocks have continued to move sideways since October and seem unaffected by the ECB's operations. This result suggests that the ECB helped ensure the funding of banks but did not address solvency concerns affecting European banks. ECB action has helped the financial system's stability but not the shareholders of banks.

**Figure 10: Banks' Price Stock Market Indexes**



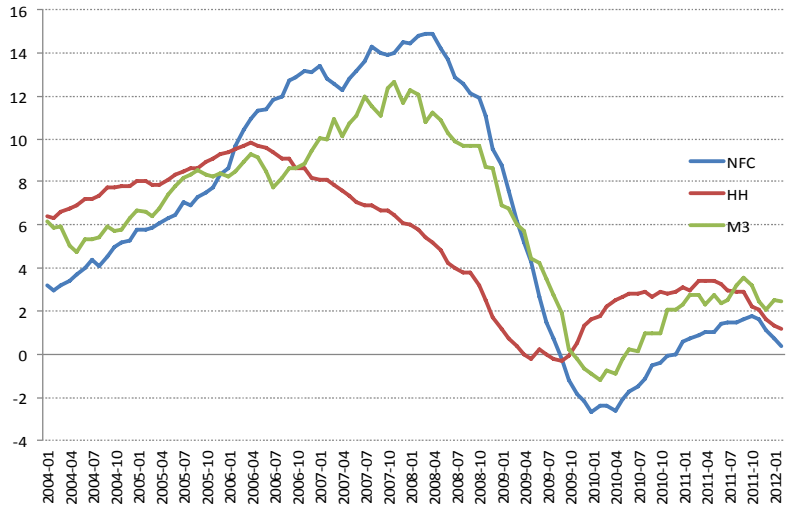

**Source:** Datastream.
**Note:** Stock market index normalized to 100 for January 2011.

## 4.3. Pass-through to the real economy

The LTRO has clearly helped to improve the funding conditions of banks. At the same time, the large increase in the deposit facility suggests that banks still hoard a lot of liquidity at the ECB, even though this means incurring losses (liquidity received with the LTRO costs 1% while the deposit facility only offers 0.25%). Confidence has therefore not yet come back to the euro area banking market. Is there any evidence that the LTRO has led to an expansion of credit growth to the euro area corporate and household sector?

Credit growth to non-financial corporations and to households continues to be very weak and falling in the euro area as a whole (Figure 11). The figure does not suggest that there is yet a change in the downward credit trend and annual credit growth in February 2012 is at 0.4% for the non-financial corporate and 1.2% for the household sector. At the same time, M3 dynamics seem to de-couple a bit from the credit dynamics. One explanation for this is that one additional counterpart to M3 on the asset side besides credit to the private sector is credit to the governments and purchases of government bonds and we look into this below.

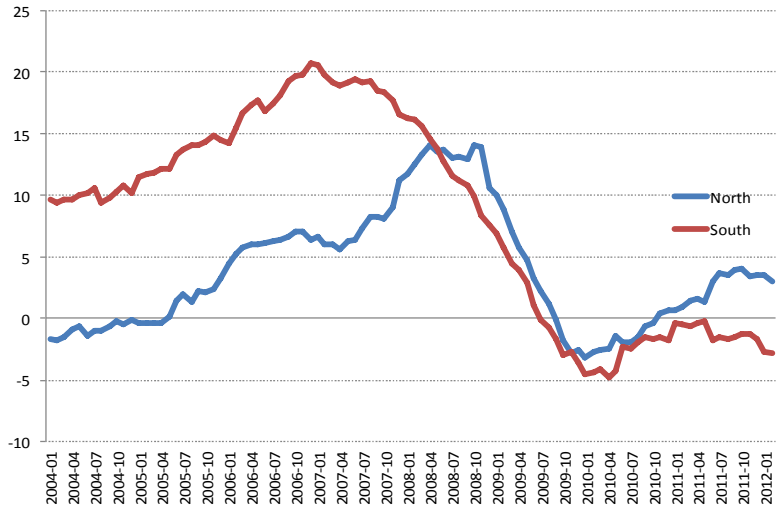
**Figure 11: Loans to non-financial corporations and households vs. M3 annual growth rate (%)**




**Source:** ECB

The aggregate numbers conceal substantial heterogeneity across countries of the euro area. Figures 12 and 13 show the growth of loans given to non-financial corporations in selected euro area countries and the interest rate charged. The figures document the steep decline in credit growth in the countries with a huge credit boom before the crisis. It is also very clearly visible that credit growth rebalanced during 2007-2008, with countries such as Germany that had for a long time period a subdued credit growth now experiencing a significant pick-up in credit.

**Figure 12: Banks' loans to non-financial corporations, annual growth rate (%)**

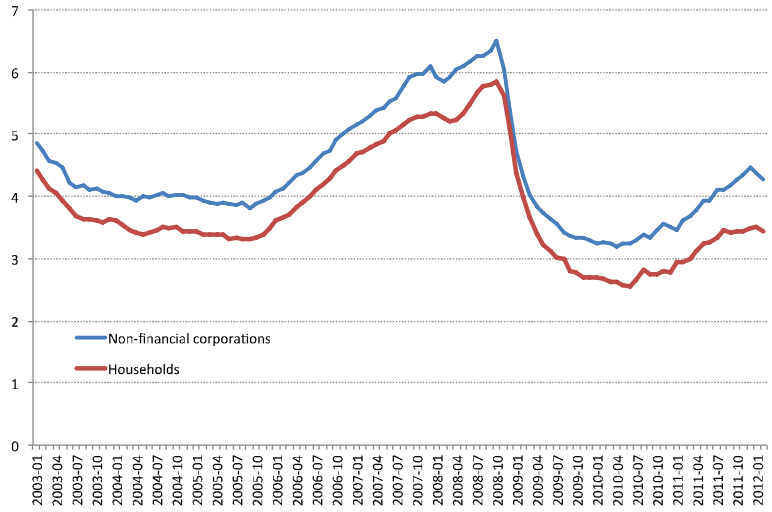



**Source:** ECB
**Note:** North: Netherlands, France Finland, Germany, Belgium, Austria. South: Greece, Ireland, Italy, Portugal and Spain.

Credit growth recovered since the middle of 2010 in the countries of the north, including France, while credit in the South as well as Ireland remains to date subdued. The data do not provide evidence that the LTRO has changed these underlying credit dynamics. Credit growth to non-financial corporations in Spain, Greece, Ireland and Portugal remains negative and it approaches negative territory in Italy.

The data do not, however, allow concluding that credit growth is impaired by the lack of central bank liquidity. Rather, they may reflect weak demand for credit, i.e. the ongoing deleveraging in the corporate and household sector, and credit rationing by weak banking systems. In this case the response should go beyond abundant provisioning of liquidity and involve measures addressing more structural weaknesses. This may include more forceful re-capitalization plans as well as other (euro area) measures to restore confidence in the banking systems.

**Figure 13: Euro Area, Banks' interest rates on loans to non financial corporations and household (%)**

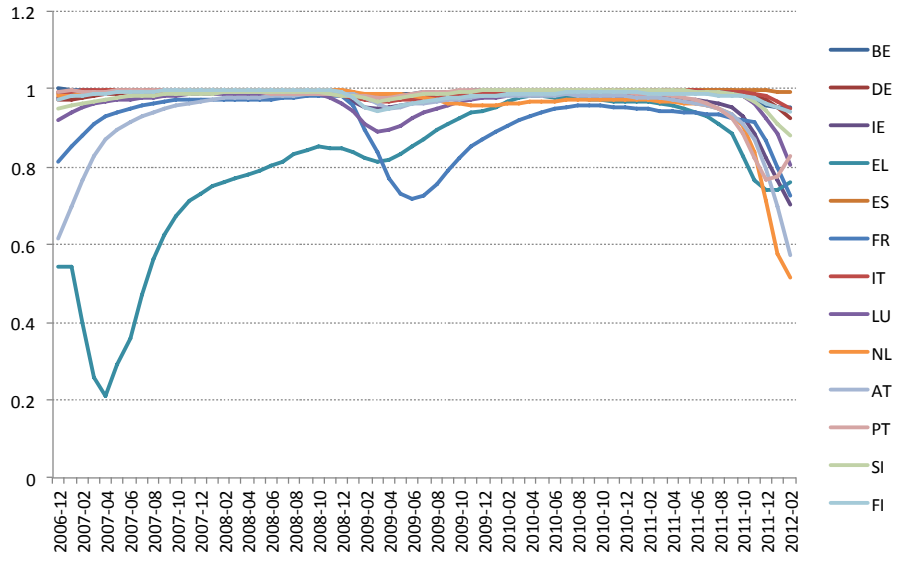



**Source:** ECB, MFI interest rates.
**Note:** Loans to non-financial corporations up to EUR 1 million at floating rate and up to 1 year initial rate fixation; loans to households for house purchase at floating rated up to 1 year initial rate fixation

Interest rates have fallen dramatically in the euro area for the corporate and household sector following the Lehman Brothers bankruptcy. During 2011, interest rates have gradually increased and only very recently since December have interest rates on loans to corporations fallen again. The LTRO has thus helped to improve aggregate interest rate conditions in the euro area.

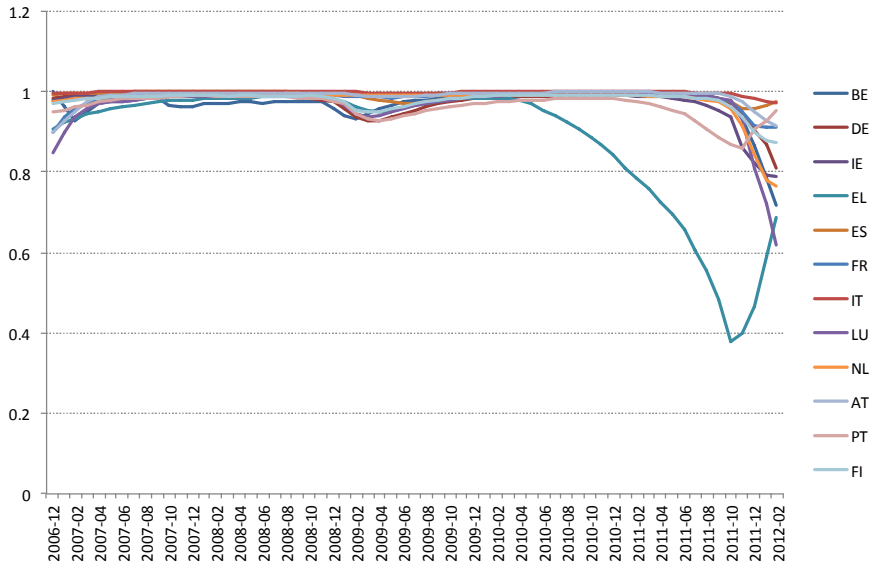
A significant dispersion of interest rates can be observed within the euro area. In Figure 14, we show the correlation between interest rates for loans to households for the purchase of homes in a specific country with the euro area rate. As can be seen, the correlation has come down markedly suggesting that interest rate conditions across the euro area have become more heterogeneous. For the early part of the sample, some countries, in particular Greece, had a lower level of interest rate integration. This may be explained by regulatory and other factors. For the interest rates in the corporate sector, we observe a high degree of integration which came down very significantly recently (see Figure 15).

**Figure 14: Financial integration of loans for house purchases.**




**Source:** ECB, MFI interest rates.
**Note:** 2-year backward-moving correlation coefficient of interest rates for house purchase at floating rate and up to 1 year initial rate fixation (1.2.1.5.) with the euro area rate.

**Figure 15: Financial integration of corporate credit loans**




**Source:** ECB, MFI interest rates.
**Note:** 2 year backward-looking moving correlation coefficient Loans up to EUR 1 million at floating rate and up to 1 year initial rate fixation with the euro area rate.

At the same time, however, interest rate levels are still favourable in a number of countries where one would suspect that problems could exist (see Table 1). In Ireland, for example, it is cheaper to get a loan for a house purchase than it is in Germany. For household loans, credit conditions therefore still seem to be reasonable across the euro area.

**Table 1 : Banks' interest rates on loans for house purchase**

| Loans to households for house purchases, at floating rate and up to 1 year initial rate fixation | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **EA** | **BE** | **DE** | **IE** | **GR** | **ES** | **FR** | **IT** | **NL** | **AT** | **PT** | **FI** |
| June 2007 | 5.00 | 4.87 | 5.64 | 4.95 | 4.90 | 5.01 | 4.37 | 5.18 | 5.01 | 5.19 | 4.70 | 4.73 |
| January 2009 | 4.37 | 4.36 | 4.97 | 3.72 | 4.55 | 4.8 | 5.23 | 4.34 | 4.74 | 5.01 | 4.12 | 3.18 |
| December 2010 | 2.78 | 3.12 | 3.38 | 3.01 | 3.65 | 2.52 | 3.06 | 2.52 | 3.58 | 2.75 | 2.96 | 2.08 |
| November 2011 | 3.43 | 3.81 | 3.74 | 3.12 | 4.48 | 3.48 | 3.64 | 3.33 | 4.04 | 3.1 | 4.33 | 2.53 |
| February 2012 | 3.44 | 3.86 | 3.55 | 3.09 | 3.77 | 3.54 | 3.71 | 3.99 | 4.01 | 3.06 | 4.38 | 2.27 |

**Source:** ECB

This contrasts with credit interest rate conditions for corporations (see Table 2). While they have improved in most countries of the euro area compared to the pre-crisis level of June 2007, in Greece and Portugal they have clearly deteriorated. Also the relative ranking of interest rates has markedly changed with interest rates in Belgium, France and Germany now being among the lowest while interest rates in Spain – once more favourable than in France – have now become clearly less favourable.

**Table 2 : Banks' interest rates on loans to non financial corporations**

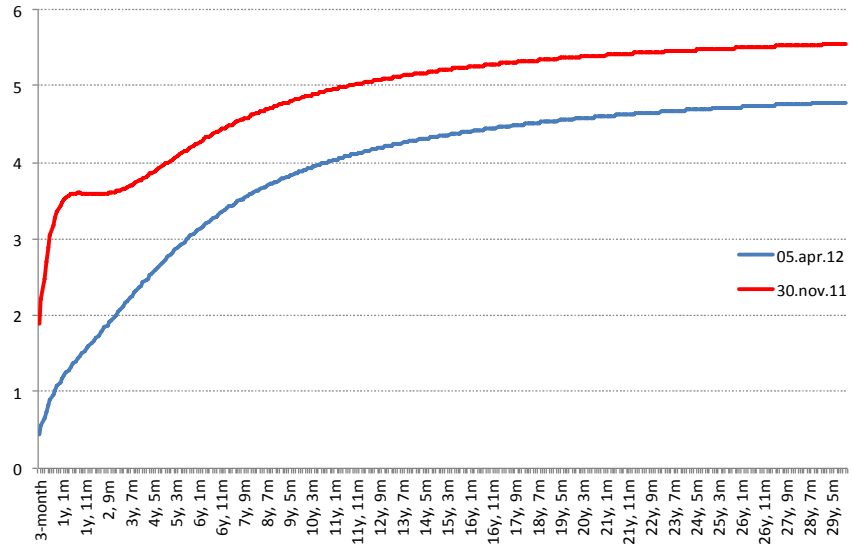
| Loans to non-financial corporations, up to EUR 1 mn at floating rate and up to 1 year initial rate fixation | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **EA** | **BE** | **DE** | **IE** | **GR** | **ES** | **FR** | **IT** | **NL** | **AT** | **PT** | **FI** |
| June 2007 | 5.53 | 5.52 | 6.09 | 6.19 | 6.48 | 5.33 | 5.39 | 5.42 | 5.08 | 5.10 | 6.92 | 5.35 |
| January 2009 | 4.73 | 4.08 | 4.55 | 5.26 | 5.45 | 4.93 | 4.36 | 4.59 | 4.31 | 4.01 | 7.12 | 3.71 |
| December 2010 | 3.50 | 2.63 | 3.77 | 3.87 | 6.34 | 3.78 | 2.65 | 3.18 | 3.47 | 2.55 | 5.92 | 2.86 |
| November 2011 | 4.34 | 2.89 | 3.92 | 5.29 | 7.18 | 4.91 | 3.2 | 4.58 | 3.60 | 2.93 | 7.56 | 3.26 |
| February 2012 | 4.28 | 2.38 | 3.56 | 4.72 | 7.02 | 4.96 | 3.04 | 4.92 | 3.30 | 2.67 | 7.54 | 3.21 |

**Source:** ECB

## 4.4. Government bond markets

The LTRO had a very strong and significant effect on interest rate conditions in the euro area government bond market. The yield curves have come down on average by more than 1 percentage point in the short end and a bit less than 1 percentage point at the long end. The LTRO has also clearly helped to reduce the abnormal shape of the yield curve at the short end where yields had been very high. At country level, Bate and Boone (2012) show that the yield curves for Spanish and Italian government have been affected, especially on the short-end.

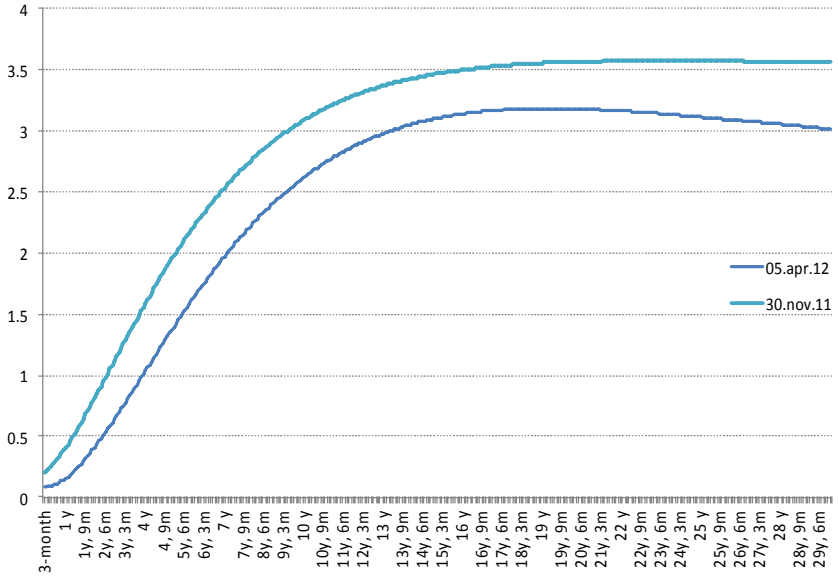
**Figure 16: Euro Area yield curve for government bonds (all issuers)**




**Source:** ECB

The impact on the yield curve has been less pronounced for the government bonds of AAA countries (see Figure 17). In particular in the short-end the decrease is less than 0.2 percentage points and also the shape of the yield curve was well behaved before the LTRO. The yield curve data therefore indicate that the LTRO has had a particularly strong effect on the government bond yields of countries with lower credit ratings. Some of the liquidity in the banking system thus appears to have been used to buy more government bonds of weaker euro area economies than of stronger euro area economies. The decrease in spreads could thus be a result of this.

**Figure 17: Euro Area yield curve for government bonds (only AAA issuers)**




**Source:** ECB

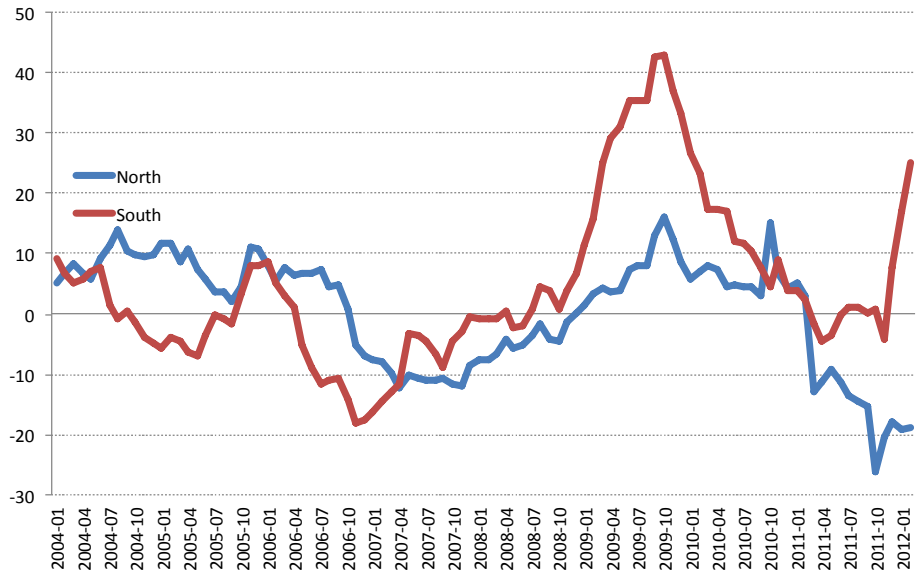
An alternative possibility is, however, that the LTRO has allowed credit conditions as the banking system to stabilise thereby increase financial stability and the proper functioning of monetary policy. These better stability prospects may have led to a reversal in the sentiment and thereby reduced interest rates in the periphery bond markets by more than in the AAA countries.

To distinguish between these two possibilities, we look into government bond purchases by monetary and financial institutions (MFIs) in the countries of the euro area. The ECB provides statistics on purchases by MFIs located in different countries of government securities issued by euro area governments. Unfortunately, the statistics does not differentiate between the issuers of the government securities. The EBA stress tests as well as other prior experience, however, show that banks tend to exhibit a large home bias in the purchase and holding of government bonds. It is therefore probably safe to assume that more purchases by Spanish banks and less purchases by German banks of government securities mean that more Spanish bonds than German bonds have been bought, especially as other data indicate that purchases by non-residents have decreased in weaker countries (Merler and Pisani-Ferry 2012a).

For the euro area as a whole, the holding of government securities by euro area banks has increased since the end of November 2011 from EUR 1382 billion to EUR 1497 billion, i.e. by around 8 percent.

The aggregate figure conceals significant heterogeneity. Figure 18 shows indeed a significantly different behaviour of banks' purchases of government securities across different countries. During the peak of the crisis in 2009, government bond holds of banks in the South increased dramatically probably reflecting the lack of demand for funds by the private sector and the strong fiscal expansion by the government sector. The LTRO led again to a dramatic increase in the buying of government bonds, which is not at all visible in the Northern countries. Government bond holdings have increased in particular in Spain's, Italy's and Portugal's banks by EUR 68 billion, EUR 54 billion and EUR 4 billion respectively.

**Figure 18: Banks' holding of Euro Area general government securities, annual growth rate (%)**




**Source:** ECB, MFI balance sheets
**Note:** North: Netherlands, France Finland, Germany, Belgium, Austria. South: Greece, Ireland, Italy, Portugal and Spain.

Overall, the data thus suggest that the largest part of the additional ECB liquidity ended up in the deposit facility of the ECB itself. The interbank market remains stressed but acute funding needs of banks have been addressed by the LTRO and it was therefore of crucial importance to preserve financial stability. Significant amounts of the LTRO were used to buy government securities leading to a decline in spreads as well as yields and this has also helped to increase financial stability, even though we have shown that the LTRO has not improved the solvency conditions of banks. Relatively little evidence can be found that the LTRO found its way to improving actual credit flows to households and corporations of countries under financial stress. This suggests that banks, households and corporations do not primarily have a liquidity problem. Instead, the large deleveraging task to reduce debt overhang in households and corporations may be one of the principal factors for weak credit dynamics (Ahearne and Wolff 2012). Furthermore, confidence in the overall construction of EMU as it currently stands impairs credit in the weaker countries of EMU (Merler and Pisani-Ferry 2012b).

# 5. CONCLUSIONS

The ECB has with the recent LTROs managed a massive expansion of its balance sheet. Many observers have called this the euro area equivalent of quantitative easing (QE) as done by the Fed and the BoE. Large parts of this liquidity, however, are parked in the overnight deposits at the ECB, reducing its effectiveness for the overall monetary policy stance.

The main obstacle for the ECB is not the fact that the Treaty on which it is based puts tight limits on the purchase of government bonds compared to those existing in the UK and the US. Rather, the absence of a banking and fiscal union and the strong heterogeneity within the euro area reduces the effectiveness of the instruments in use. The absence of a common euro area reference asset precludes directly influencing the benchmark yield curve. The combination of sovereign and banking fragility, in turn, means that additional liquidity provided to the banks in the euro area will be used to smooth the effect of the exit of private funding and the selective buying of government bonds by banks, which in turn increases fragility.

The 3-year LTRO has been an appropriate response to a situation of extreme stress among European financial institutions. As long as the confidence crisis prevails, however, there are inherent limits to its effectiveness. Additional ECB liquidity will not improve credit conditions in countries under stress. ECB policy is rendered less effective by the heterogeneity across countries and the incomplete fiscal set-up. The ECB therefore rightly calls for some time already for a stronger fiscal union.

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# ANNEX

The ECB, the FED and the BoE conduct monetary policy in different ways and adopted different policies to deal with the crisis. To compare them, we reclassified the items presented in the balance sheet into five macro-categories:

- REPOs: including lending to financial institutions
- Purchase of government securities
- Purchase of non-government securities
- Foreign exchange swaps/foreign currency lending to banks
- Other assets
- Other operations, including those new schemes adopted that cannot be easily classified in another category

**TABLE A1. Balance Sheet Items of the Bank of England**

| ITEM IN BALANCE SHEET | DESCRIPTION | CLASSIFICATION |
|---|---|---|
| **Short term open market operations** | Composed by: 1-week REPOs, fine-tuning repos and repos at other maturity within maintenance period | **REPO** |
| **Longer-term sterling repo** | | **REPO** |
| **Ways and Means advances to HM Government** | | **Other Assets** |
| **Bonds and other securities acquired via market transactions** | It includes the small foreign exchange reserves that the Bank of England holds in support of its monetary policy objective. These are not the UK's official holdings of international reserves, which are almost entirely held in a government account administered by Her Majesty's Treasury (the Exchange Equalisation Account – EEA). The Bank acts as HMT's Agent in the day-to-day management of the EEA, but the EEA is not on the Bank's balance sheet. We cannot exclude this item from the balance sheet because: (i) it is included into the assets related to monetary policy and (ii) reserves are not the only component of it. | **Other Assets** |
| **Other Assets** | Other Assets includes the government and non-government securities purchased by the Bank of England as well as the USD swaps conducted in agreement with other central banks. The three components have been disaggregated and showed separately. The rest id included into Other assets as residual. | **Government securities**<br><br>**Non-government securities** |

| ITEM IN BALANCE SHEET | DESCRIPTION | CLASSIFICATION |
|---|---|---|
| | | **Lending in foreign currency**<br><br>**Other assets** |

**Source:** Bank of England (BoE)

## Table A2: Balance Sheet Items of the European Central Bank

| ITEM IN BALANCE SHEET | DESCRIPTION | CLASSIFICATION |
|---|---|---|
| **Main refinancing Operations (MRO)** | Regular liquidity-providing open market operation executed by the Eurosystem in the form of reverse transactions. Main refinancing operations are conducted through weekly standard tenders in the form of reverse transactions and normally have a maturity of one week. | **REPO** |
| **Longer-term refinancing operations (LTRO)** | Liquidity providing reverse transactions with a monthly frequency and a maturity of normally three months. | **REPO** |
| **Marginal Lending Facility** | Standing facility of the Eurosystem which counterparties may use to obtain overnight liquidity from a national central bank at a pre-specified interest rate against eligible assets. | **REPO** |
| **Fine-tuning** | Open-market operations executed on ad-hoc basis with the aim of managing the liquidity situation in the market and steering interest rates, in particular in order to smooth the effects on interest rates caused by unexpected liquidity fluctuations in the market. They are included by the ECB in the category of lending to EA credit institutions related to monetary policy (item is insignificant) | **REPO** |
| **Securities held for monetary purposes** | The item is composed by the government bonds purchased under the Securities Market Programme (SMP) and non-government securities purchased under the Covered Bond Purchase Program (CBPP). We disaggregate them and present them separately. | **Government securities**<br><br>**Non-government securities** |
| **Claims on euro area residents** | It is related to the USD liquidity line set up with the FED. The liquidity provided | **Lending in foreign** |

| ITEM IN BALANCE SHEET | DESCRIPTION | CLASSIFICATION |
|---|---|---|
| **denominated in foreign currency** | under this temporary arrangement is identified in the ECB annual report on the liability side ("Liabilities to non-euro residents denominated in euro"). On the asset side, the item that matches it is "Claims on EA residents in foreign currency". It is not included by the ECB in the items related to monetary policy, but we include it as it is the asset counterpart of the USD swaps. Given that it does not include only USD liquidity swaps (before 2008), we include it as lending to EA institutions in foreign currency. | **currency** |
| **Credit related to margin call** | The ECB includes it into the asset related to monetary policy, under lending to financial institutions but it cannot considered a REPO, so we include it under "Other Assets" (the item is however insignificant). | **Other Assets** |
| **Other claims on euro area credit institutions denominated in euro** | In 2010 the Governing Council decided that the euro area central banks would make available for lending bonds bought under the covered bond purchase programme. The ECB implemented these lending operations through matched repurchase transactions, whereby amounts received under repurchase agreements are fully and simultaneously reinvested with the same counterparty under a reverse repurchase agreement which is actually recorded under this "Other claims on euro area credit institutions denominated in euro". The ECB does not include it in assets related to monetary policy but being connected to the CBPP we include it as "Other Assets". | **Other Assets** |
| **Claims on non-euro area residents denominated in euro** | As at 31 December 2010 this item consisted of a claim on a non-euro area central bank in connection with an agreement on repurchase transactions established with the ECB. Under this agreement the non-euro area central bank can borrow euro against eligible collateral in order to support its domestic liquidity-providing<br><br>Operations. It is not included by ECB in the assets related to monetary policy and it does not concern the EA, we therefore exclude it | **Other Assets** |
| **General Government debt denominated in euro** | Outstanding non-marketable claims on euro area governments stemming from before 1 January 1994, from which date onwards Eurosystem NCBs were no longer allowed to provide credit facilities to governments or make direct purchases of debt instruments from governments. This debt will be redeemed by governments in due course. | **Being a residual from pre-1994 and not related to monetary policy, it has been excluded** |

| ITEM IN BALANCE SHEET | DESCRIPTION | CLASSIFICATION |
|---|---|---|
| **Claims on non-euro area residents denominated in foreign currency** | Represents the main FX reserves of the ECB. It is composed by: (i) receivables from the IMF and (ii) balances with banks and securities investments, external loans and other external assets (foreign currency assets other than gold and SDR holdings with non-euro area residents). | **Excluded** |
| **Gold** | | **Excluded** |
| **Other Assets** | Collective item that includes items in the course of settlement, coins of the euro area if an NCB is not the legal issuer, tangible and intangible fixed assets and other financial assets. Other financial assets comprises participating interests and investments in subsidiaries; equities held for strategic/policy reasons, securities, including equities, and other financial instruments and balances (e.g. fixed-term deposits and current accounts), held as an earmarked portfolio: reverse repo transactions with credit institutions in connection with the management of securities portfolios. This item also contains revaluation differences arising on off-balance-sheet instruments and accruals and prepaid expenditure. | **Excluded** |
| **Securities other than those held for monetary purposes** | Recorded at market value, they present considerable valuation effects | **Excluded** |

**Source:** European Central Bank (ECB)

## Table A3: Balance Sheet Items Federal Reserve

| ITEM IN BALANCE SHEET | DESCRIPTION | CLASSIFICATION |
|---|---|---|
| **REPO** | Repurchase agreements reflect some of the Federal Reserve's temporary open market operations. | **REPO** |
| **Credit to depository institutions** | Traditionally, the Fed has provided healthy banks with short-term credit through short-term loans at its **discount window-most** typically over **one business day**. Such loans are usually **secured with very high-quality collateral**. | **REPO** |
| **Term-auction credit (TAF)** | To overcome the stigma problem of the Federal Reserve's Discount Window, the Fed unveiled the Term Auction Facility (TAF) in December 2007. The TAF **auctions funds to depository institutions against the same kinds of collateral that can be used to secure funds at the discount window**. But because healthy banks are just as likely to participate in the auction as those in trouble, individual banks are not assumed to be under distress just because they use the facility. | **REPO** |
| **Currency Swaps** | At the same time it introduced the TAF, the Federal Reserve announced it would extend currency swap lines with the European Central Bank and the Swiss National Bank. The swap lines provide these central banks with dollars, which they can use to supply liquidity to credit markets in their jurisdictions that are based on dollars. | **FX swaps** |
| **Credit extensions (PDCF)** | To deal with the shortage of collateral, the Federal Reserve introduced the **Primary Dealer Credit Facility (PDCF)**. The FED's discount window is reserved to depository institutions: the PDCF authorized the Federal Reserve Bank of New York to create a similar lending facility for primary dealers (mostly investment banks). In effect, **it created a temporary "discount window" for some of the largest non-depository institutions, collateralized by a broad range of investment-grade debt securities**. Even if it is an extraordinary operation, we consider it to be comparable with the discount window and therefore include it in REPO | **REPO** |
| **Long Term treasury purchases** | | **Purchase of Government securities** |

| ITEM IN BALANCE SHEET | DESCRIPTION | CLASSIFICATION |
|---|---|---|
| **Mortgage-backed securities** | To help reduce the cost and increase the availability of credit for the purchase of houses, on November 25, 2008, the Federal Reserve announced that it would buy MBS guaranteed by the Government Sponsored Enterprises Fannie Mae, Freddie Mac, and Ginnie Mae. Given that these agencies are Government Sponsored Enterprises, we include this into "Purchases of Government Securities"<br><br>*Source: Federal Reserve System Monthly Report on Credit and Liquidity Programs and the Balance Sheet, December 2009* | **Purchase of Government securities** |
| **Federal Agency Debt securities** | These represent the purchase of direct obligations of Fannie Mae, Freddie Mac, and the Federal Home Loan Banks. Again, we include them in "Purchases of Government bonds" | **Purchase of Government securities** |
| **Commercial Paper Funding Facility** | It was introduced to support the commercial paper market. Commercial paper is short-term (overnight to 270-day maturity) debt issued by corporations, often to manage cash needs in the short run, such as payroll obligations. It is most often unsecured, but in before the crisis many financial institutions secured their paper (called "asset-backed commercial paper") with their holdings of long-term assets, most notably mortgage-backed bonds. Uncertain credit markets in the fall of 2008 led to concerns that companies that had issued unsecured paper or asset-backed commercial paper would be unable to roll it over into new debt. At the time the CPFF was announced, the market would only allow paper to be rolled over one night and at very high interest rates. The CPFF is intended to alleviate the rollover risk. **The facility purchases 3-month unsecured and asset-backed commercial paper carrying credit ratings in the top tier**. | **Purchase of non-Government securities** |
| **Traditional securities holdings** | It represents the stock of securities traditionally held by Federal Reserve Bankso in connection with its open market operations (conducted via outright purchases or sales of securities). | **Other Assets** |
| **Other FED Assets** | | **Other Assets** |
| **Securities Lent to dealers (TSLF)** | The TSLF is a 28-day facility that will offer Treasury to the Federal Reserve's primary dealers in exchange for other program-eligible collateral. Intended to promote liquidity in the financing markets for Treasury and other collateral and | **Other Operations** |

| ITEM IN BALANCE SHEET | DESCRIPTION | CLASSIFICATION |
|---|---|---|
| | thus to foster the functioning of financial markets more generally. **It is not directly cash in exchange for a security, but rather a liquid security in exchange for a less liquid security. Idea is to deal with shortage of collateral.** Therefore we cannot classify it as a repo and include it in "Other Operations".<br><br>**Note:** In the US primary dealers are those bank, broker/dealer or other financial institution that are able to trade directly with the U.S. Federal Reserve (e.g. underwriting new government debt). These dealers must meet certain liquidity and quality requirements. | |
| **Credit Extension (AIG)** | Under section 13(3) of the Federal Reserve Act, the Federal Reserve was able to **extend loans directly to a distressed financial institution**, namely AIG. The loan is **collateralized by all of AIG's assets**, and the U.S. government received a 77.9 percent equity interest in AIG. | **Other Operations** |
| **Asset-backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF)** | Money Market Mutual Funds are investment vehicles holding funds on behalf of individuals, pension funds, municipalities, businesses, and others. During the financial crisis, MMMFs experienced significant withdrawals of funds by investors and were forced to meet the demand for withdrawals by selling assets in illiquid markets. The AMLF was introduced to help MMMFs that held asset-backed commercial paper (ABCP) meet investors' demands for redemptions, and to foster liquidity in the ABCP market and money market more generally.<br><br>Under the program, the Federal Reserve provided loans to a number of financial institutions. These institutions used the funding to purchase eligible ABCP from MMMFs. Borrowers under the AMLF, therefore, served as conduits in providing liquidity to MMMFs, and the MMMFs were the primary beneficiaries of the AMLF. AMLF loans were fully collateralized by the ABCP purchased by the AMLF borrower. | **Other Operations** |
| **Term Asset backed securities (TALF)** | The program provides both liquidity and capital to the consumer and small business loan asset-backed securities markets. The Fed lent money against asset-backed securities that were backed by student, auto, credit card, and SBA loans. The Treasury Department provided USD 100 billion in credit protection from its Troubled Asset Relief Program (TARP) to the TALF-a cushion against losses on the ABS collateral. | **Other Operations** |

| ITEM IN BALANCE SHEET | DESCRIPTION | CLASSIFICATION |
|---|---|---|
| **Maiden Lane 1/2/3** | The Maiden Lane LLC (limited liability companies) are **tied to pools of assets that the Fed has lent against to stabilize specific companies and asset classes.**<br><br>**Maiden Lane 1**<br><br>The Maiden Lane I consisted of a **loan to J.P. Morgan backed by a pool of securities that were obtained from the acquisition of Bear Stearns in March 2008.** The pool consisted primarily of investment-grade residential and commercial mortgage-backed securities.<br><br>**Maiden Lane 2**<br><br>Maiden Lane II purpose traces back to AIG. Federal Reserve extended **a loan to AIG to meet cash redemptions and stabilize the value of the mortgage-backed securities. The loan collateral (mortgage bonds) is represented in the Maiden Lane II vehicle**.<br><br>**Maiden Lane 3**<br><br>Maiden Lane III was created after billions were loaned to AIG. The insurer had extended credit protection-in the form of credit default swaps-on billions of dollars' worth of collateralized debt obligations (CDOs). When AIG's credit rating was downgraded, the credit default swap holders ordered collateral postings at levels that threatened the company's solvency. Beginning in late November 2008, **the Fed loaned funds to Maiden Lane III so that it could begin to purchase the CDOs upon which the credit default swap contracts had been written (the CDOs also serve as collateral for the Fed loan).** | |

**Source:** FED Cleveland