

## Central Banks in Times of Crisis: The FED vs. the ECB

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### Abstract

*Different economic and financial structures require different crisis responses. Different crises also require different tools and resources. The first 'stage' of the financial crisis (2007-09) was similar on both sides of the Atlantic, and the response was also quite similar. The second stage of the crisis is unique to the euro area. Increasing financial disintegration within the region has forced the ECB to become the central counterparty for the entire cross-border banking market and to intervene in the sovereign bond market of some stressed countries. The actions undertaken by the European Central Bank (ECB), however, have not always represented the best response, in terms of effectiveness, consistency and transparency. This is especially true for the Securities Markets Programme (SMP): by de facto imposing its absolute seniority during the Greek PSI (private sector involvement), the ECB has probably killed its future effectiveness.*

### Executive summary

Different economic and financial structures require different crisis responses. Different crises also require different tools and resources. It is crucial, in this sense, to separate the analysis of the action of the leading central banks into two phases. In phase I, following the burst of the global financial crisis (2007-09), monetary policy responses undertaken by the ECB, the Bank of England (BoE) and the US Federal Reserve (FED)

were quite similar. On both sides of the Atlantic, these included the extension of the scope of existing facilities as well as the engineering of new mechanisms to facilitate access of financial institutions to official liquidity.

The second phase of the crisis (2010-12), however, is unique to the euro area since the degree of financial stress and risk perception dominating the EU financial markets was unprecedented. After 2010, the main concern in the US was about the economic cycle. In order to boost a weak economy through lower long-term interest rates, the FED undertook massive asset purchases financed by central bank money, the so-called 'quantitative easing' (QE), leading to the accumulation of \$1.6 trillion in Treasuries on its balance sheet. A similar approach was followed by the BoE, which kept purchasing gilts and expanding its balance sheet up to £325 billion.

In the euro area, the situation was completely different. In the spring of 2010, the crisis took another turn and the ECB response shifted to another level. In May 2010, as markets got into a panic about a possible Greek insolvency, the ECB Council decided to intervene in the sovereign bond markets of troubled countries, through the SMP. Formally the programme did not constitute QE; however, given the huge amount of funds that, at the same time, were supplied to the

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banking sector, it is impossible to disentangle the sterilization operations. Lastly, in December 2011, the ECB decided to implement a new set of longer-term refinancing operations (LTROs) amounting to around €1,000 billion, aiming to sustain a broken interbank market.

The most evident consequence of these unconventional measures has been the increase in the size of the central banks' balance sheets. Total assets of BoE and the Fed almost tripled in about five years, while that of the ECB almost doubled.

A simple comparison between the sizes of the balance sheets is, however, misleading. While the Federal Reserve and the BoE have done QE, the ECB had to respond to increasing financial disintegration within the region. The ECB has been forced to become the central counterparty of the entire cross-border banking market and to intervene in the sovereign bond market of some stressed countries. Therefore, its main policy approach can be qualified as 'credit easing'.

In assessing the effectiveness of the two approaches, it emerges that while the ECB has responded massively to the crisis (LTRO and SMP), it has also tried to minimise its own risk. Alas, this implies that its policy cannot be fully effective. This approach is significantly different from the one chosen by the FED, which showed its willingness to take on credit risk in order to provide relief to private investors, who therefore could recover quickly.

## 1. Introduction

Different economic and financial structures require different crisis responses. This paper offers a comparison between the different actions taken by the US Federal Reserve and the European Central Bank since late 2007.<sup>1</sup> It is crucial, in this sense, to separate the analysis in two phases: a first 'stage', corresponding to the burst of the financial crisis (2007-09) and a second stage of the crisis (2010-12) that has characteristics unique to the euro area and thus has required specific and different actions of the ECB.

<sup>1</sup> In the course of the paper we also make reference to the crisis' response of the Bank of England.

## 2. Phase I: Similar crisis, similar policies

When the global financial crisis first broke in late August 2007, the large western central banks (the ECB, the Federal Reserve and the Bank of England) promptly responded by cutting interest rates down to close to zero and adopting a large set of unconventional policy measures. On both sides of the Atlantic, these included the extension of the scope of existing facilities, most notably the duration of the usual refinancing operations and lowering the standards for eligibility of collateral applied to banks. But central banks also engineered new mechanisms. For instance the Bank of England (BoE) swapped high-quality illiquid assets from banks in return for Treasuries. The FED broadened the set of counterparties for liquidity operations but also opened a series of swap facilities to allow other central banks to provide banks locally with dollars as that currency is widely used in inter-bank transactions outside the US.

Despite the scale of the response, the financial crisis intensified in the fall of 2008 following the collapse of Lehman Brothers. As the main effect of the collapse was a loss of confidence in the interbank system and a reluctance of banks to lend to each other, the primary objective of monetary authorities became to unblock the interbank markets by substantially easing access of the financial system to official liquidity. In order to achieve this objective, central banks intervened more directly to improve credit conditions in particular markets segments. Those measures included expanding further the availability of credit to financial institutions, a further reduction in main interest rates and asset purchases financed by central bank money, the so-called 'quantitative easing'. While the Bank of England privileged the purchase of medium and long-term government bonds (£200 billion of gilts between March 2009 and January 2010), the Federal Reserve purchased commercial papers, asset-backed securities and other private assets containing credit risk, for about \$1,000 billion during the year 2009. At this stage of the crisis, the FED was thus taking on credit risk (for instance through the so-called TALF, the Term Asset-Backed Securities Loan Facility)<sup>2</sup> and only later

<sup>2</sup> According to the FED website: "The TALF is intended to assist financial markets in accommodating the credit needs of

did the emphasis shift to sustaining the economy via lower interest rates (see below on the difference between QE and credit easing).

Compared to the over \$1,000 billion of asset purchases by the FED, the ECB's Covered Bond Purchase Programme (CBPP), which started in July 2009, of €60 billion was puny. Instead the ECB put in place a series of other equally unconventional measures for about €300 billion, focusing on expanding the provision of credit to banks in the framework of the so-called 'enhanced credit support programme', in order to assure the well functioning of the credit mechanism in the euro area:

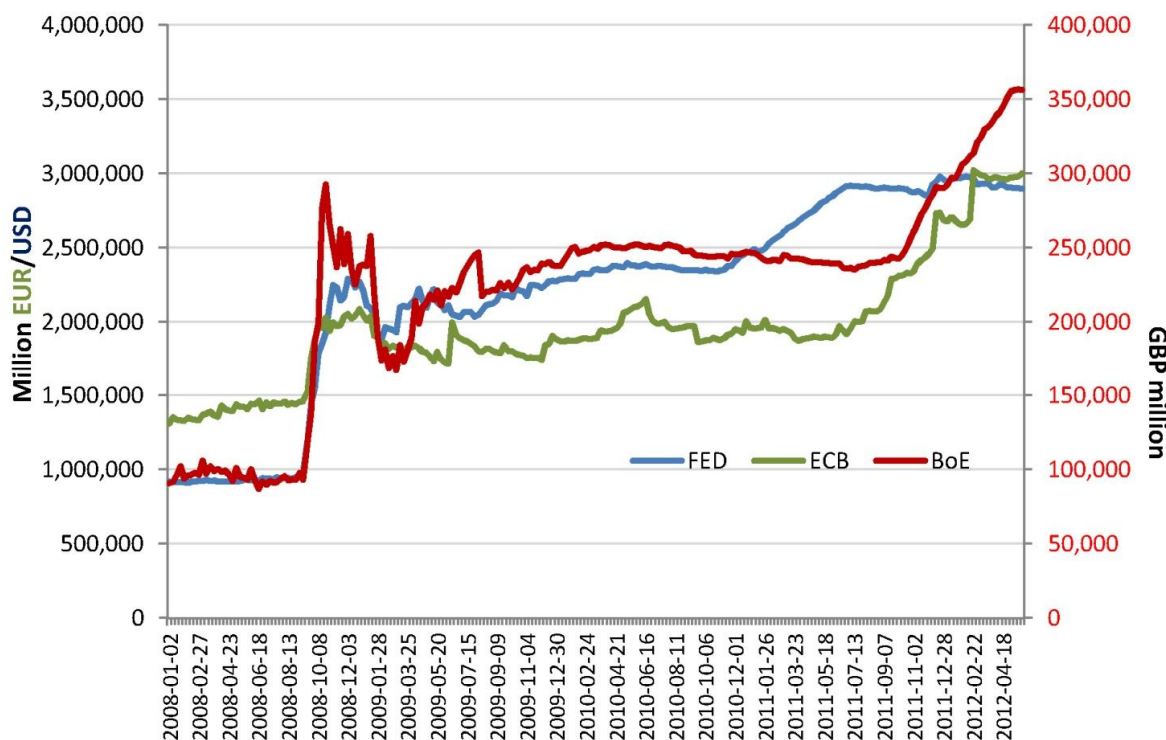
- switching from variable rate tender to fixed rate-full allotment tender procedure in all refinancing operations;
- extensions of the list of assets accepted as eligible collateral for refinancing operations to

further ease access to Eurosystem operations in an attempt to reduce asset-side constraints on banks' balance sheets;

- setting up of additional longer-term refinancing operations for financial institutions with a maturity of up to six months; and
- providing from time to time liquidity in foreign currency, through the swap line provided by the FED.

The common effect of these operations was an unprecedented expansion of central banks' balance sheets: Figure 1 shows that the increase has been particularly important in the UK, where it reached 300% between May 2006 and May 2012. In relative terms, the increase in the ECB balance sheet looks small with 'only' 170% over the same period, while the Fed expansion has been of the order of 230%.

Figure 1. Total assets/liabilities: ECB, FED and BoE



Source: Authors' elaboration on ECB, FED, BoE data.

consumers and businesses by facilitating the issuance of asset-backed securities collateralized by a variety of consumer and business loans. The loans provided through the TALF to eligible borrowers are non-recourse, meaning that the obligation of the borrower can be discharged by surrendering the collateral to the FRBNY" (see <http://www.federalreserve.gov/releases/h41/current/h41.htm#h41tab1>).

### 3. Phase II: Risk management vs. standard economic policy

The second stage of the crisis (2010-12) is unique to the euro area since the degree of financial stress and risk perception in the financial markets were not the same on both sides of the Atlantic. In the US, the main concern was about the economic cycle: the economy was not growing robustly and the labour market not recovering. A more intense stimulus through monetary policy was then deemed necessary. In August 2010, the FED decided to implement further asset purchases through open market operations, buying \$30 billion of short-term Treasury notes between August and September. In November 2010, a second wave of quantitative easing was announced leaving the amount of Treasuries on its balance sheet at \$1.6 trillion. A similar approach was followed by the BoE, which kept purchasing gilts and expanding its balance sheet up to £325 billion.

In continental Europe, the situation was different and in the spring of 2010, the crisis took another turn with the epicentre in the euro area and the ECB response shifting to another level. Until 2010, dealing with divergent sovereign bond yields did not represent a challenge for ECB.

The interest rate spreads on sovereign bonds issued by each of the euro area member states fell almost to zero during the period 2002-07 driven by the underestimation of intra-countries differences and internal disequilibria. While international investors were considering Greek and German bonds the same, the ECB did/could not obviously do otherwise, and accepted sovereign securities as collateral of the same quality regardless of the country that was issuing the paper.

In May 2010, as markets got into a panic about a possible Greek insolvency, the ECB Council decided to intervene and started buying Greek bonds in the secondary markets in order to reduce the pressure and give the euro area governments the necessary time to finalize the European rescue fund, the European Financial Stability Facility (EFSF). In these exceptional circumstances, described by President Trichet as “the most difficult situation since the Second World War -

perhaps even since the First World War”,<sup>3</sup> the ECB launched the Securities Markets Programme (SMP). The official explanation was the need to restore the proper functioning of the monetary policy transmission mechanisms in order to maintain medium term price stability.<sup>4</sup>

Figure 2 shows how the purchases made by the ECB under the two open market operations (SMP and CBPP) appear very limited in comparison to the QE undertaken by the FED and the BoE.

In addition, on several occasions, the ECB lowered the threshold for the eligibility of debt instruments issued or guaranteed by the governments of the most troubled countries.<sup>5</sup> This was needed given that the existing rules for eligible marketable assets required fulfilment of standards of credit quality in order to be accepted as collateral in monetary policy operations. Subsequently, these rules were changed to establish a sliding scale of haircuts defined as a function of credit ratings and to be applied to eligible securities.

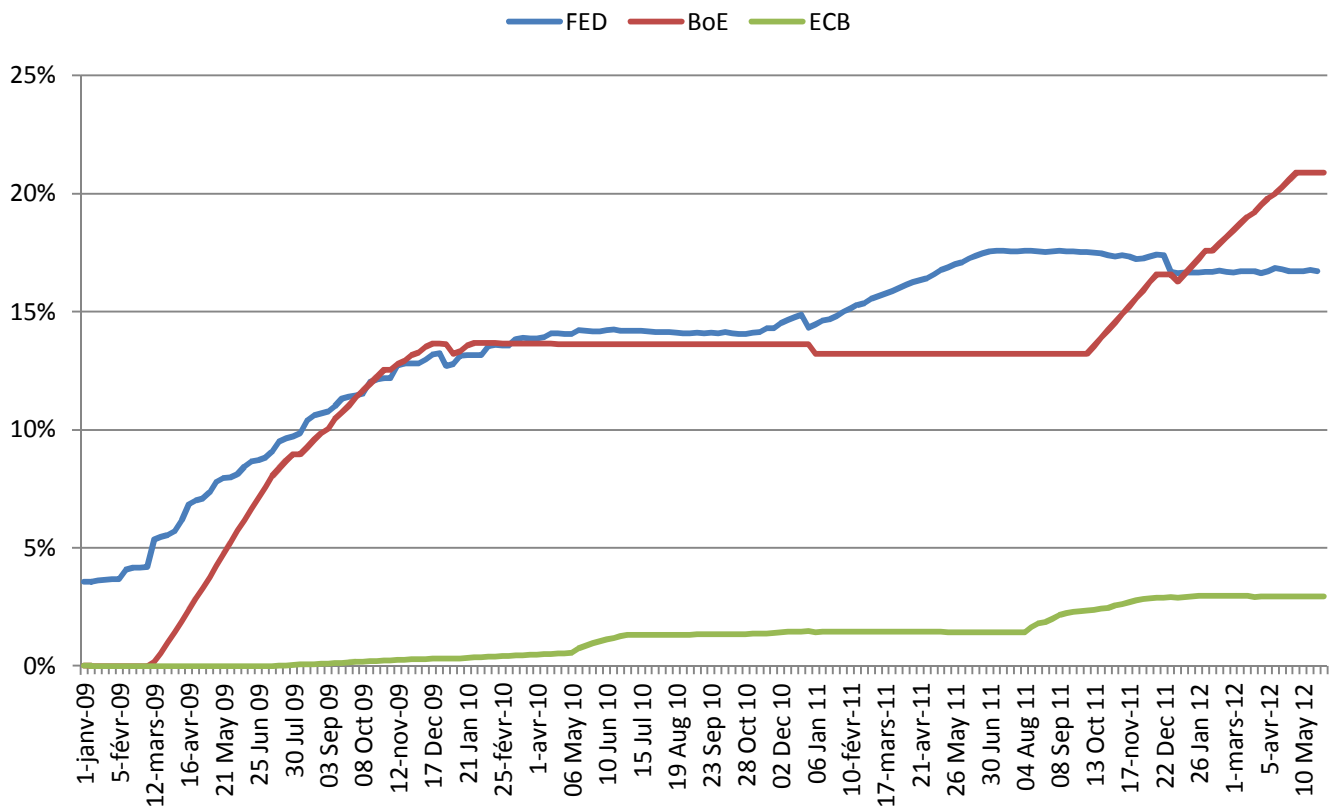
Formally the SMP did not constitute QE since the ECB sterilised its purchases by conducting liquidity-absorbing operations of the same amount. In reality, however, it is impossible to disentangle these sterilization operations and their effects, since the ECB maintained a full allotment policy on all (standard and long-term) refinancing operations.

<sup>3</sup> See: <http://www.ecb.int/press/key/date/2010/html/sp100515.en.html>.

<sup>4</sup> The official communiqué read: “address the severe tensions in certain market segments which are hampering the monetary policy transmission mechanism and thereby the effective conduct of monetary policy oriented towards price stability in the medium term”.

<sup>5</sup> The ECB changed eligibility rules for Greece, Ireland and Portugal, see its press releases for 3 May 2010: <http://www.ecb.europa.eu/press/pr/date/2010/html/pr100503.en.html>; for 31 March 2011: [http://www.ecb.int/press/pr/date/2011/html/pr110331\\_2.en.html](http://www.ecb.int/press/pr/date/2011/html/pr110331_2.en.html); and 7 July 2011: [http://www.ecb.europa.eu/press/pr/date/2011/html/pr110707\\_1.en.html](http://www.ecb.europa.eu/press/pr/date/2011/html/pr110707_1.en.html).

Figure 2. Central banks' securities purchases as % of GDP



Source: Authors' elaboration on ECB, FED, BoE data.

In other words, liquidity was absorbed to offset bond purchases while unlimited liquidity was provided to banks through standard and unconventional refinancing operations. Moreover, technically, the liquidity absorption (for the purpose of sterilization) consisted of the ECB attracting fixed-term deposits from commercial banks. However, the deposits that commercial banks were anyway holding at the ECB were always much larger than the amount required for 'sterilisation' operations. When commercial banks park hundreds of billions of excess liquidity at the central bank, it does not make much sense to insist on a fine difference between QE and a (sterilized) 'securities purchase programme'.

Finally, on 8 December 2011, the ECB decided to implement a new set of longer-term refinancing operations (LTROs) with a maturity of 36 months and the option of early repayment after one year. The first operation, conducted on 21 December, saw the participation of around 500 banks asking for €490 billion, while in the second one, conducted in February 2012, 800 banks asked for €530 billion (see the red square in Figure 4). Section 4 offers a critical evaluation of this

operation, but at this point it is important to remark that while the LTRO represents a peculiar action of the ECB during this second stage of the crisis, the FED had followed a similar approach in the early stage of the financial crisis in 2008 and had moved after 2010 to direct injection of liquidity through the QE.

#### 4. The role of transparency

In a ranking compiled in 2007 among the most transparent central banks in the world, the ECB ranked fifth, after (in descending order) the Reserve Bank of New Zealand, the Swedish Riksbank, the Bank of England, the Czech National Bank and the Bank of Canada.<sup>6</sup> Unfortunately the same transparency has not been assured during the SMP. The ECB has only published the weekly amount of bonds purchased without unveiling any other details, neither about the composition and maturity of the purchases nor the criteria for purchases or the planned amount of the programme. Data on weekly

<sup>6</sup> See Dincer & Eichengreen (2009).

purchases suggest that the ECB has embarked on market intervention intermittently. Market estimates indicate that in the first phase (from May 2010 until July 2011), the main (possibly only) target was Greek bonds, followed by Irish and Portuguese bonds. By contrast, after the 7th of August 2011, when the programme was reactivated after stagnating for about one year, the purchase was directed toward Spanish and Italian sovereign bonds.

The ECB's lack of transparency appears even greater if compared to the UK and US quantitative easing programmes. When the Bank of England announced its QE, it stated that "the Committee agreed that the Bank should finance £75 billion of asset purchase (...) the majority of the overall purchase by value over the next three months will be of gilts"<sup>7</sup> and added all rules that it would follow in the bond purchase. Similarly, the FED Committee announced "to purchase up to \$300 billion of longer-term Treasury securities over the next six months",<sup>8</sup> thus specifying explicitly the type of securities and the length of the programme.

In disclosing detailed information, the BoE and the FED aimed to ensure the accountability of both programmes to British and American taxpayers. The ECB failed in this respect. The absence of transparency has been often justified as necessary for the programme to be effective since a full disclosure of the purchase could have caused an uproar and worsened the financial (in)stability. In fact, this is weak argument. Traders could quite easily match market data with ECB purchase announcements and thus identify the bonds targeted by the SMP.

Another issue is the transparency concerning recipients of ECB financing, especially through the LTRO. The €1 trillion channelled into banks has raised concerns about the use made by banks of this money. The fall in the spreads of Spain and Italy in the first quarter of this year seemed to suggest that this part of the funds were used to sustain the demand for peripheral countries' debt, but the lack of details does not allow a rigorous analysis of the effects of this operation.

## 5. Effects of policy measures on balance sheets: Credit easing vs. quantitative easing

The most evident consequence of such unconventional measures has been the increase in the size of the central bank's balance sheet. Total assets of BoE and the FED almost tripled in about five years, while that of the ECB almost doubled (although starting at a higher level in terms of GDP).

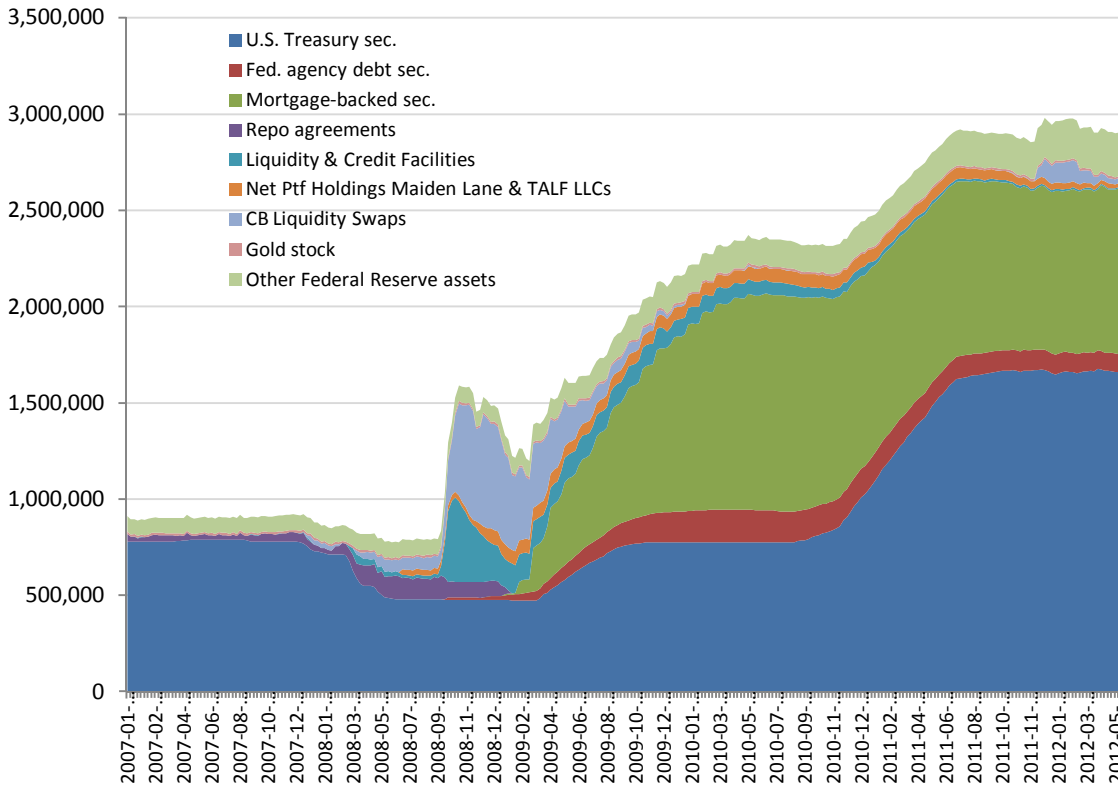
A simple comparison between the size of the balance sheets or their increase is misleading, however. The magnitudes are by now similar, but there are two qualitative differences between the ECB and the FED which are more important than mere balance-sheet size. The FED buys almost exclusively risk-free assets like US government bonds or government-guaranteed bonds (see Figure 3 for the evolution in the FED balance sheet), whereas the ECB has bought much smaller quantities of risky assets (see Figure 4, the pink area representing the SMP), for which the market was drying up. In addition, the FED has lent very little to banks, whereas the ECB has lent huge amounts to weak banks with no access to market funding (see the red square in Figure 4). The Federal Reserve does Quantitative Easing (trying to lower the riskless interest rate), while the ECB does 'credit easing'.<sup>9</sup>

<sup>7</sup> See <http://www.bankofengland.co.uk/publications/news/2009/019.htm> and <http://www.bankofengland.co.uk/markets/marketnotice090305.pdf> for a detailed explanation of the purchase programme.

<sup>8</sup> See <http://www.federalreserve.gov/newsevents/press/monetary/20090318a.htm>.

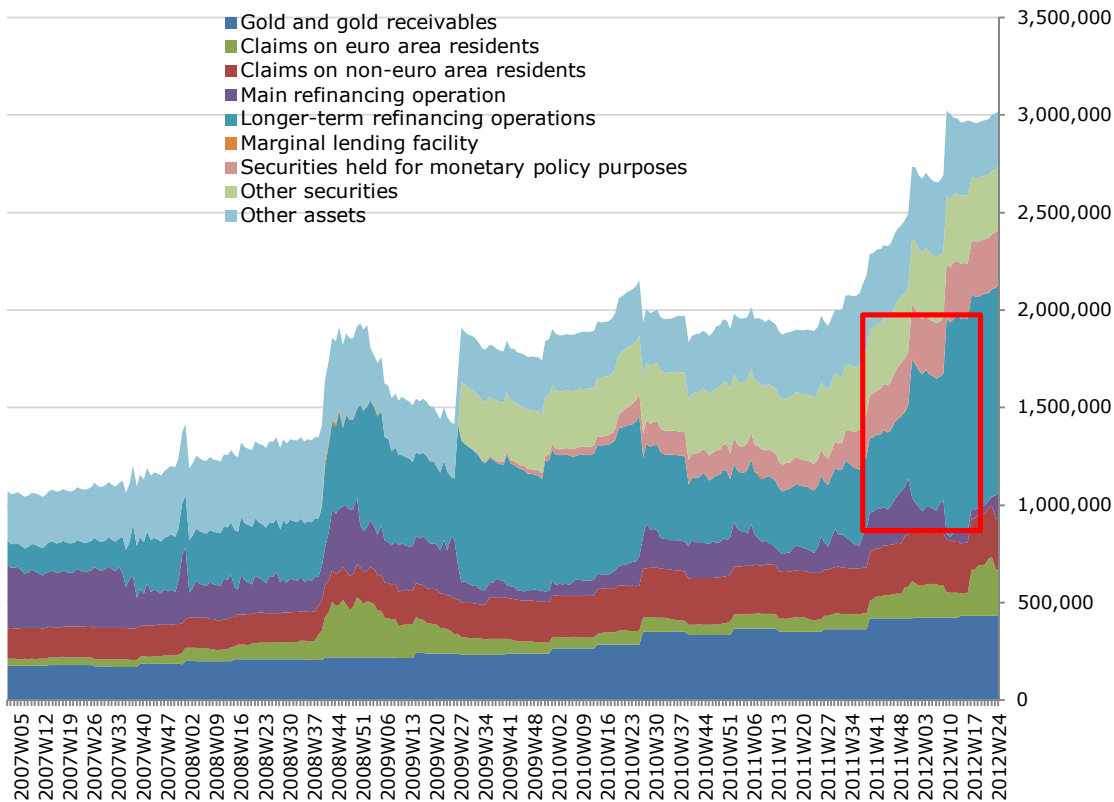
<sup>9</sup> This section is based on Gros (2012).

Figure 3. Evolution of FED balance sheet (\$ millions)



Source: Authors' elaboration based on FED data.

Figure 4. Evolution of ECB balance sheet 2007-2012 (€ millions)



Source: Authors' elaboration based on ECB data.

Quantitative easing is supposed to stimulate the economy when the central bank lowers long-term (riskless) interest rates by buying large amounts of longer-term government bonds with the deposits that it receives from banks. *"By contrast, the ECB's credit easing is motivated by a practical concern: banks from some parts of the euro area – namely, from the distressed countries on its periphery – have been effectively cut off from the inter-bank market."*<sup>10</sup>

The difference between these two approaches is reflected in the stance taken by world's two biggest central banks vis-à-vis risk-taking.

By buying US government bonds, the FED does not incur any credit risk, but it is taking interest-rate risk. The FED engages, like a typical bank, in 'maturity transformation'. It uses short-term deposits to finance the acquisition of long-term securities. With short-term deposit rates close to zero and long-term rates at around 2-3%, the FED is earning a nice gain equal to about 2-3% per year on its bond portfolio of now roughly \$1.5 trillion, which means about \$30-45 billion per annum. For the FED this gain is secondary to achieving the overall aim of lowering interest rates.

While QE involves little risk for the FED, equivalent operations are costly for commercial banks. Indeed, under current financial supervision rules, banks are obliged to limit maturity mismatch and are required to have some long-term funding against long-term commitments. However, since long-term funding is more expensive, the attractiveness of purchasing long-term securities is much lower for commercial banks. By contrast, the FED can determine its own cost of funds. It sets short-term interest rates and affects the long-term ones. Hence it can manage this risk.<sup>11</sup>

By contrast, the ECB does not assume any maturity risk with its LTRO, because the rate it charges on banks is the average of the short-term interest rates that will materialize over the next three years. It does, however, take on credit risk, because it is lending to banks that cannot obtain funding anywhere else.

<sup>10</sup> Gros (2012).

<sup>11</sup> Certainly the FED would inflict losses on itself by increasing interest rates. Therefore, the recent announcement that interest rates will be kept low for an extended period might also have been motivated by more than concern about a sluggish recovery.

*"The banks that are parking their money at the ECB (receiving only 0.25% interest) are clearly not the same ones that are taking out three-year loans at 1%. The deposits come largely from northern European banks (mainly German and Dutch), and LTRO loans go largely to banks in southern Europe (mainly Italy and Spain). In other words, the ECB has become the central counterparty to a banking system that is de facto segmented along national lines. The real problem for the ECB is that it is not properly insured against the credit risk that it is taking on. The 0.75% spread between deposit and lending rates (yielding €7.5 billion per year) does not provide much of a cushion against the losses that are looming in Greece, where the ECB has €130 billion at stake.*

*The ECB had to act when the eurozone's financial system was close to collapse at the end of last year. But its room for manoeuvre is even more restricted than that of the FED. Its balance sheet is now saddled with huge credit risks over which it has very little control. It can only hope that politicians deliver the adjustments in southern Europe that would allow the LTRO's recipient banks to survive."*<sup>12</sup>

## 6. How successful have central banks' measures been?

There are different channels through which injections of money into the economy (e.g. direct asset purchases in open market operations) by central banks could affect the economy. If the central bank intervenes in a market segment for which demand is scarce, the asset purchase is likely to have a significant impact on prices and therefore interest rates. Considering the effect of the QE on the British economy (Joyce et al., 2010), it could be seen as the asset prices in the United Kingdom recovered substantially during 2009 (although not all of the improvement can be attributed to QE): authors' estimations suggest that gilt yields were about 100 basis points lower than they would otherwise have been without QE.

Focusing on the US experience, there seems to be some evidence supporting the effectiveness of the QE: Gagnon et al. (2011) examine the effect of the December 2008 and March 2009 instalments of the Fed large-scale asset purchases and find that they raised market expectations of further asset purchases, thus reducing the yield on long-term assets. The overall size of the reduction in the ten-

<sup>12</sup> Gros (2012).

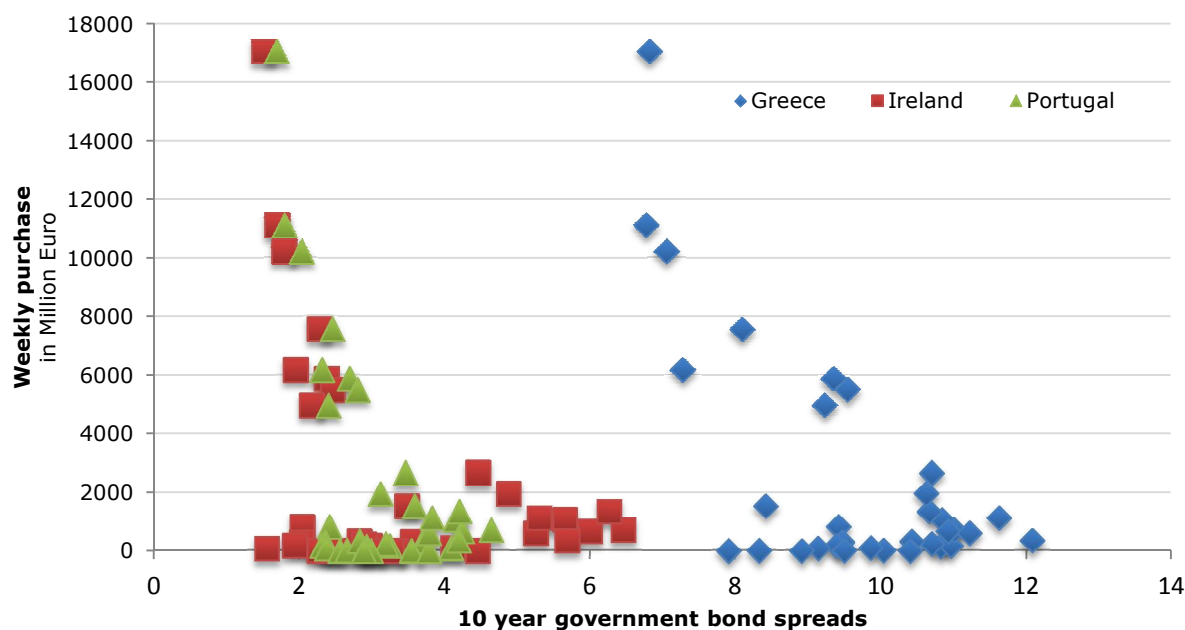


year term premium has been estimated to be somewhere between 30 and 100 basis points. The programmes had an even more powerful effect on longer-term interest rates on agency debt and agency mortgage-backed securities (MBS) by improving market liquidity and removing assets with high prepayment risk from private portfolios. Neely (2011) also shows that the 'quantitative easing' conducted by the Fed in 2010 has succeeded in reducing international long-term interest rates, while Hamilton & Wu (2011) estimate that the effects of the Fed action to sell \$400 billion in short-term securities and simultaneously purchasing \$400 billion in long-

term securities, have reduced the slope of the term structure of interest rates by 25 basis points.

Alas, evidence of the effectiveness of the ECB approach is not encouraging. When in August 2011, the ECB intervened in the market to buy Italian and Spanish bonds, yields experienced the largest fall since the euro began in 1999. A similar reaction had materialized for the Greek, Irish and Portuguese bonds in May 2010 when the SMP was launched. But as designed and conducted until now, the SMP has not delivered a long-term turnaround in the secondary market: market judgment about troubled countries has not changed after the ECB intervention.

Figure 5. ECB SMP purchase and GIP spreads (2010)



Sources: ECB statistical Data warehouse and Bloomberg.

As Figure 5 shows, the action undertaken by the ECB through the SMP has initially stabilised market conditions of Greek, Irish and Portuguese bonds, but only temporarily.

The ECB did not manage to achieve the unspoken aim of the SMP, namely to lower the risk premia on peripheral government debt securities. There are two explanations for this. First, if risk premia did not result from mere market panic, but actually reflected fundamentals (Krugman, 1988) a very limited intervention is unlikely to be effective. Moreover, there are now signs that the SMP could actually be counterproductive. The reason is that during the de facto default of Greece of March 2012, the ECB imposed its absolute

seniority. When the ECB purchased Greek bonds in 2010, it did so in the private market and it was generally assumed that it would therefore be treated *pari passu* as private investors. However, this was not the case. A procedural trick – changing the international securities identification number (ISIN) – was used to exclude the bonds held by the ECB from the PSI operation. The official justification was that, as the ECB is acting for a 'public policy purpose', it should not bear any loss.

In reality the question is not whether the ECB should have fully participated in the PSI, but whether it could have just relinquished its bond holdings for the price at which it had purchased

them. By requiring that the nominal amount should be paid back on bonds that it had acquired much below par, the ECB was telling the private investors that the haircut they had to bear was larger. Investors are now likely to take this 'subordination' effect into account, every time the ECB is involved. This implies that further SMP purchases could actually now have become counterproductive and might explain why the ECB has not re-activated the SMP despite record risk premia and borrowing costs in Spain and Italy.

## 7. Concluding remarks

Different economic and financial structures require different crisis responses. Different crises also require different tools and resources. For this reason, in order to understand and assess central banks' reactions to the crisis, it is crucial to distinguish the first phase of the global financial crisis (2007-09), which was rather similar on both sides of the Atlantic, from the second stage of the crisis that erupted in Europe and it is unique to the euro area.

While in the first stage the reaction was similar in the objective and to some extent in the tools, significant differences in the approach and in the effectiveness have emerged after 2010.

During the first leg of the crisis, the Federal Reserve took considerable risks by providing no-recourse loans against collateral, which at the time, appeared to be 'toxic'. The justification was that the market was in a state of panic. Ex post this judgment proved correct. The panic subsided and the Federal Reserve did not make any losses. As markets stabilized the Federal Reserve then tried to sustain employment by reducing interest rates, first the short term ones it controls directly and later longer term interest rates through its 'quantitative easing' and the 'operation twist'.

The ECB's policy was not too different from that of the FED during the first leg of the crisis. It extended the provision of central bank funds to banks and bought some assets (covered bonds) for which the market did not seem to function properly. However, in the euro area the general financial crisis mutated into a 'euro crisis' when savers in Northern Europe (especially Germany and the Netherlands) started withdrawing credit from the countries in the euro 'periphery'.

Overall, this means that while the ECB responded massively to the crisis through 'credit easing', it was trying at the same time to minimise its own risk. Yet this implies that its policy cannot be fully effective. As explained earlier, this is especially manifest in the SMP. As the markets now take the super seniority of the ECB into account, any further asset purchase by the ECB might actually be counterproductive. It could even increase the risk premium because investors know that fewer resources will be available as the ECB has a first call on the payments a government can make.

In addition, there is now a danger that other instruments of the ECB might also become less effective. With the LTRO, the ECB not only provided longer-term funding against an extended pool of assets eligible as collateral, it also increased considerably the haircuts applied to these newly eligible assets, in some cases up to 50% and even 75%. This means that huge overcollateralization is required to access the LTRO. Banks have to pledge assets between two and four times the amount of the funding they are receiving. Because of this, in case of insolvency, (unsecured) creditors of banks will have little left for themselves and private investors will thus become even more reluctant to provide the banks with funding. There is thus a danger that even the LTRO might not work if it were tried again.

The attempt by the ECB to limit its own risk is understandable, yet the consequences for the effectiveness of the policy should also be fully understood. This approach is significantly different from the one chosen by the FED, which by providing no-recourse loans to the private sector, through the TALF, gave a strong signal. It was willing to take on the credit risk of private investors, who were therefore able to recover more quickly.

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European Credit Research Institute (ECRI)

### **Research Networks organised by CEPS**

European Climate Platform (ECP)  
European Network for Better Regulation (ENBR)  
European Network of Economic Policy  
Research Institutes (ENEPRI)  
European Policy Institutes Network (EPIN)