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**EXCEPTIONAL POLICIES FOR EXCEPTIONAL TIMES: THE ECB'S RESPONSE TO THE ROLLING CRISES OF THE EURO AREA, AND HOW IT HAS BROUGHT US TOWARDS A NEW GRAND BARGAIN**

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# EXCEPTIONAL POLICIES FOR EXCEPTIONAL TIMES: THE ECB'S RESPONSE TO THE ROLLING CRISES OF THE EURO AREA, AND HOW IT HAS BROUGHT US TOWARDS A NEW GRAND BARGAIN

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# ABSTRACT

## Exceptional policies for exceptional times: The ECB's response to the rolling crises of the Euro Area, and how it has brought us towards a new grand bargain

This paper provides an appraisal of European Central Bank (ECB) policy from the beginning of the financial crisis to the summer of 2014. It argues that, as the crisis unfolded, ECB policy can be characterized as an attempt at finding a middle way between "monetary dominance" embedded in the Treaty and "fiscal dominance". This middle course was pragmatic response to the challenges being faced but it failed to offer a stable solution to the underlying solvency issues, while permitting (or even creating) a damaging set of dislocations, notably a fragmentation of Euro financial markets, with damaging consequences on the real economy. We argue that since Draghi's pledge to do "whatever it takes" to sustain the euro in July 2012, the ECB has attempted to construct a new institutional framework. We conclude that, although there are promising developments in some areas such as banking union, without a "new bargain" on how to deal with the debt overhang which is the legacy of the crisis, the euro area is under threat.

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## 1. Introduction

This paper provides an appraisal of European Central Bank (ECB) policy from the beginning of the financial crisis in the summer of 2007 to the summer of 2014.

We divide seven years of crises into three phases: (1) a banking crisis (2007-09), where the immediate issue was addressing liquidity difficulties in the financial sector; (2) a sovereign crisis (2010-12), where the central concerns were addressing (inter-related) solvency issues in public finances and bank balance sheets; and, finally, (3) an attempt to build a new, more workable framework for the Euro area (2012 to date), starting with ECB President Mario Draghi's commitment to do "whatever it takes" to sustain the Euro (which took institutional form in the announcement of the ECB's outright monetary transactions (OMT) programme). We freeze our narrative in September 2014.

In each phase, the ECB faced a variety of challenges, which it met with various tools and varying degrees of success. As it fought the crises, the ECB expanded its functions beyond the traditional domain of monetary policy, eventually becoming the single banking supervisor for the euro area and taking a leading role in the creating and managing a new framework for macro prudential surveillance.

During the first phase, the ECB was largely addressing liquidity problems. In this respect, it proved successful in stabilising the financial sector, even if, as for the central banks of other major developed economies, it was unable to prevent a sharp macroeconomic downturn. Broadly speaking, the ECB delivered successfully on its core central banking tasks, while relying on other authorities to address underlying weakness in public and banking sector balance sheets that threatened solvency and sustainability in the medium term.

Unfortunately, the trust placed in other authorities proved misplaced. National fiscal authorities either could not or would not act to contain solvency problems. Area-wide 'federal' institutions that could have provided some risk-sharing mechanism across countries did not exist. In short, the Maastricht framework for monetary union proved inadequate. The ECB was then called upon to act to address these solvency issues (which became entwined with, and to some extent indistinguishable from, liquidity concerns), even though they fell outside the traditional realm of central bank responsibilities. At this stage, the ECB's measures became less effective. Because sovereign and banking concerns had a national dimension, the failure to deal with them promptly and credibly led to a re-fragmentation of financial markets that both exacerbated the impact of the crisis itself (particularly in the stressed peripheral countries), but also impaired the ECB's attempts to stabilise the economy and prices.

The ECB's approach in this second phase of the crisis can be characterised as "muddling through": enough was done to prevent a collapse of the financial system or break-up of the Euro area, but the underlying problems – the solvency issues on public and bank balance sheets and the inadequacy of the institutional infrastructure to deal with them – were not really addressed. The ECB found itself in a dilemma: either stick to the old rules embodied in the Maastricht set-up (and risk financial and macroeconomic instability) or act in a pragmatic manner (and risk hitting the institutional and political constraints that Maastricht had set out to manage). Unsurprisingly, in real time and under the immediate pressure of market tension, the ECB adopted the latter strategy.

Looking ahead, at the heart of the matter is the issue of whether (and, if so, how) the ECB should manage legacy debt problems – which cannot simply be wished away – by taking fiscal and banking risk on to its own balance sheet.

On the one hand, the central bank balance sheet is a natural vehicle to warehouse a large stock of debt, which can then be reduced through time. There are many historical examples where the central bank has played the role of a 'sinking fund' in order to allow an economy to emerge from beneath an excessive debt burden.

On the other hand, in the context of Monetary Union, warehousing legacy debt has significant cross-country distributional effects since the legacy problems are of different magnitude in different Euro area countries. There is an understandable reluctance on the part of those countries which would be net contributors to such a scheme to enter into large and potentially unlimited commitments without a credible institutional infrastructure to protect them from ill-discipline elsewhere. And in this respect, the Maastricht Treaty framework has proved inadequate.

With Mr. Draghi's pledge to do "whatever it takes" to sustain the Euro, we have entered a new phase, which centres on designing and implementing a new policy framework to supersede Maastricht. This new framework has several key elements: the ECB's OMT programme; the conduct of an asset quality review and stress test of all the major banks, as a first step towards the establishment of unified supervision at the ECB; and Mr. Draghi's recent call for a framework to support a more appropriate 'policy mix' at the area-wide level, while building the political feasibility and economic effectiveness of further non-standard central bank actions via commitment by governments to (and monitoring of) reform.

Each of these elements can be seen as an attempt to build confidence that adjustment and reform will limit future exposures while facilitating the sharing of legacy burdens. This will be necessary stabilise the Euro area and create an environment more conducive to growth. And ultimately, restoring growth in the Euro area is a precondition for achieving fiscal and financial sustainability.

As with any time consistency problem of this type, the key question is how to enforce commitment to longer-term adjustment while relieving the burden of legacy problems in the short run. The traditional answer to this question is to build economic institutions that underpin the credibility of reform and discipline over the medium term, and thereby give confidence that legacy problems can be addressed without creating moral hazard and/or threats to the credibility of the ECB in its pursuit of price stability. Mr. Draghi's Jackson Hole initiative, complementing the creation of the banking union, should be seen in this light. At this stage, whether his efforts will be successful remains an open question.

## 2. Setting the scene – Growing vulnerabilities ahead of the crisis

Before developing a narrative of the financial crisis from 2007, we outline a number of secular trends in the banking sector (focusing on the European experience) in the preceding decade, which played an important role in building the balance sheet vulnerabilities that eventually became important channels for the transmission of financial stress.

Over the course of the first decade of monetary union, European banks' dependence on wholesale funding rose. As bank credit growth increased rapidly during the mid-2000s, the ratio of loans to traditional deposits increased and banks made greater recourse to wholesale sources of funding (e.g., interbank deposits, etc.) (Giannone et al., 2012; Reichlin, 2014).

One aspect of the wholesale funding was the use of off-balance sheet vehicles to expand lending, which was associated with a growing role for securitization and other structured products. While the bulk of such activity took place in the US, European banks also engaged and were, in some cases, purchasers of US-originated asset-backed securities.

These developments made bank funding more 'flighty' in nature than more traditional sources, such as retail deposits. Given the maturity and relationship-based nature of the corporate loan book in Euro area banks, maturity transformation and liquidity risk faced by the banking system increased. Moreover, the accumulation of intra-banking sector leverage created systemic vulnerability: if one institution chose to shrink its balance sheet, the resulting withdrawal of wholesale funding puts pressure on others to do likewise (and so on). A self-sustaining spiral of forced deleveraging could ensue.

The first decade of monetary union saw a significant rise in cross-border exposures of banks. This had both: (1) a global dimension, reflecting flows across borders with the rest of the world (including London as an offshore financial centre for the Euro area); and (2) an intra-euro area dimension, reflecting flows across borders within the euro area (e.g., financing from Germany to Spain).

Although retail markets remained segmented as a consequence of national level supervision, the mid-2000s saw a large increase in cross-border bank wholesale funding, as savers in countries with slow growing economies (notably Germany) financed the higher growth of credit and demand in countries such as Spain and Ireland.

Behind this integration of European wholesale and financial markets was the progressive integration of the intra euro area sovereign bond market and the resulting compression of sovereign spreads. This convergence has been interpreted as a consequence of the markets not pricing sovereign risk due to the implicit guarantee provided by the ECB (e.g., Ehrmann et al., 2011).

As a result of these developments, the euro area banking system became vulnerable. Exposure to external shocks, such as the consequences of the meltdown of the US subprime mortgage market from mid-2007 and subsequently the systemic effects of the failure of Lehman in September 2008, increased. Moreover, bank funding became more vulnerable to a run in the inter-bank market driven by non-domestic counterparts, both those resident outside the euro area but also those in other countries within the euro area (Colangelo et al., 2014). Hence the flight to safety took the form of a renationalization of the inter-bank market and a fragmentation of the euro area financial system.

## 3. **<u>Phase 1</u>: <u>The banking / liquidity crisis</u>**

### *3.1 Narrative*

In response to deteriorating bank balance sheets following the onset of the US subprime crisis and uncertainty as to which banks were most profoundly affected, adverse selection in the interbank market led to a hoarding of liquidity and to dislocations in the money market. The failure of Lehman Bros in September 2008 intensified this adverse selection significantly: if an institutional as large as Lehman could fail, who was safe? Following Lehman's failure, the interbank market seized up altogether, both internationally and within the euro area (Heider et al., 2009).

One symptom of the panic then gripping financial markets was the substantial rise in money market interest rate spreads: spreads between secured and unsecured money market rates rose to unprecedented highs (see Figure 1), while interbank transactions volumes fell to low levels, especially at longer maturities. This was a global phenomenon: following the catalysts of sub-prime dislocations and Lehman's failure, the euro area was affected in largely the same manner as other jurisdictions such as the US or UK. Central banks were thus confronted with rising tensions and a seizing-up of the inter-bank money market. The ECB was in the vanguard in addressing these challenges.

First and foremost, the ECB responded with the adoption of fixed rate / full allotment (FRFA) tender procedures in all its regular monetary policy operations (Table 1). This measure created a perfectly elastic supply of liquidity to bank counterparties at an interest rate determine by the ECB. By providing certainty on the availability of central bank liquidity (with regards to both quantity and price), this measure helped to restore confidence and stabilise the banking sector at a time of high stress.

Second, the ECB expanded its list of eligible collateral, to include securities (other than ABS) rated BBB or higher, while also further lengthening the average maturity of its outstanding operations (see Figure 8).

Third, over time the ECB increased the number and variety of Eurosystem longer-term operations. Innovations included: the introduction of a so-called "maintenance period operation" (i.e. a repo operation at the start of the maintenance period that matures at the end of the maintenance period, with an implied maturity of around one month[1]); and the introduction of LTROs with six month maturity. The ECB also broadened its set of counterparties, notably to include the European Investment Bank (EIB).

Taken together, these measures considerably expanded the scope for central bank intermediation to substitute for a money market subject to severe disruption and which could no longer be relied upon to distribute liquidity efficiently across banks or serve its crucial payment function (Lenza et al, 2011). In so doing, the ECB maintained the circulation of payments and liquidity among banks – and thus avoided a more dramatic and costly dislocation in financial stability.

In parallel with these attempts to maintain interbank flows, the ECB also supported bank funding by undertaking (relatively small) purchases of bank covered bonds. The objective of these purchases was to revive market activity, rather than inject liquidity to the system. Moreover, in concert with other leading central banks, the ECB introduced operations to address the US dollar funding difficulties of its domestic counterparties against Eurosystem collateral, on the basis of financing via an FX swap agreed with the US Federal Reserve.

In sum, these actions resulted in a significant expansion of the ECB balance sheet from October 2008. But rather than an attempt to 'inject' liquidity into the euro money market, the balance sheet

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1 See ECB (2012) for a description of monetary policy operations in the Eurosystem.

expansion was a by-product of a set of non-standard measures aimed at supporting the functioning of crucial segments of the financial market, thereby promoting effective monetary policy transmission and avoiding a costly financial collapse.

ECB actions in this period were governed by the so-called separation principle (Trichet, 2008), which dictated that its non-standard interventions in the money market were oriented to supporting market functioning, leaving the traditional interest rate instrument of monetary policy free to pursue the objective of price stability.

In this context, the ECB raised its policy rates by 25bp in July 2008 (see Figure 7), on the grounds that consumer price inflation was substantially above target and in order to pre-empt a self-fulfilling inflationary process that threatened to take hold via wage developments. With the benefit of hindsight, this decision suggests that the ECB was slow to recognize the weakening of the global economy that had started in the first half of 2008 and the underlying fragility of the financial system that triggered that weakening.

That said, both within and without the euro area, the ECB acted on the basis that conventional monetary policy should not be deflected from its primary goal of price stability, and that other measures would be taken to forestall a banking crisis. Clearly, in the case of Lehman, the ECB under-estimated the willingness of the US authorities to stand aside in the face of the failure of a core financial institution. As the euro area macroeconomic situation deteriorated sharply from Lehman's failure onwards, the rate hike was quickly reversed. Policy rates were cut in October, and progressively reduced from 4.25% (for the rate on the main refinancing operation) to 1% by the middle of 2009 (Figure 7).

### *3.2 Discussion*

After Lehman's failure, the ECB – like the Federal Reserve and Bank of England – implemented non-standard policies that, as we have seen, led to the expansion of its balance sheet. But this outcome reflected standard central bank practice and orthodox economic thinking in the face of a liquidity problem. Given access to the 'printing press', central banks can provide liquidity at essentially zero cost and are thus uniquely well-placed to absorb liquidity risk. From a welfare perspective, central banks should absorb liquidity risk fully and at all times by satiating the private sector's demand for liquidity. This is an implication of both Friedman's rule for monetary policy and Bagehot's rule for containing financial crises.

Given the predominance of banks as a channel of financial intermediation in Europe, the ECB designed its policy so as to deal directly with banks and focused, in particular, on replacing the wholesale funding market which had come almost to a stop after the collapse of Lehman Brothers in the fall of 2008.

In this phase the ECB can be seen as having been very successful. As Tommaso Padoa Schioppa correctly anticipated (Padoa Schioppa, 2004) (and contrary to claims by some before the crisis), the Eurosystem proved to be sufficiently robust to be able to face an inter-bank run by providing emergency liquidity and adopting what he called a 'market operation approach' to its role as lender of last resort (Reichlin, 2014).

The ECB did well also judging from the performance of the real economy and inflation developments. A recovery of economic activity started in the third quarter of 2009 (see the CEPR dating committee www.cepr.org) and HICP inflation returned to target by the end of the period (Figure 10).

Among others, Lenza et al. (2011), Giannone et al. (2012), Peersman (2011) attempt to measure the macroeconomic impact of these non-standard policy measures. Based on a variety of counterfactual exercises, such papers conclude that the effectiveness of the ECB's actions was not constrained by the zero lower bound and that these measures were supportive of economic activity, largely by preventing a more discontinuous and dramatic curtailment of credit provision to the real economy.

As regards the level of interest rates over this period, Giannone et al. (2012, 2014) and Pill and Smets (2013), show that by the end of 2009 and until 2012 the actual path of 3-month Euribor was below the counterfactual one based on the historical ECB monetary policy rule. This indicates that, by its historical standard the ECB policy was very accommodative and, unlike what happened in the US, the zero lower bound constraint on the interest rate was very short lived. The recovery of euro area inflation rates to levels above 2% by the end of this period accounts for this result. In this respect, the euro area experience contrasts with evidence from the US, where the zero lower bound appears to have been a binding constraint on rate setting throughout the crisis period (Stock and Watson, 2013).

However, the ECB's measures did not implement the fundamental changes (such as the restructuring of banks and their balance sheets, involving closures and recapitalizations as necessary) that may have been needed to address deeper underlying solvency problems in both public and private sector balance sheets in the euro area. But the ECB's measures were not intended to. Rather it was left to the responsible authorities (national governments and regulators) to address these concerns.

Where the state had the fiscal capacity to do so (e.g. in Germany), failing banks were rescued by state intervention (with ECB liquidity support merely smoothing the path). But in other cases, where fiscal capacity to clean up the problem was inadequate, the fundamental problems were simply deferred. Indeed, the palliative created by the ECB's liquidity actions blunted the incentives for the national authorities to act (Giannone et al., 2011b).

But such procrastination can also be attributed to a lack of tools (or lack of willingness to pool resources) for crisis resolution at the area-wide level. Where bank balance sheets are larger than GDP, inadequate fiscal capacity is almost inevitable, whatever the state of sovereign finances. This procrastination in the context of inadequate area-wide fiscal resources and institutions serves to explain why European banks started their necessary deleveraging process only in 2012, three years after the Lehman crisis and three years after the US banks that had been provided with prompt and conditional fiscal support via the TARP in 2009 (Reichlin, 2014).

## 4. Phase 2: Spring 2010 to Summer 2012 – The sovereign / solvency crisis

### *4.1 Narrative*

The election of a new Greek government in the autumn of 2009 led to a restatement of the Greek fiscal position. Underlying solvency problems were laid bare. Concerns multiplied, especially as the broader macroeconomic downturn and implicit liabilities towards the financial sector threatened further deterioration in the context of the financial crisis.

Greek sovereign spreads against Germany widened (see Figure 2) and bidders at public debt auctions demanded greater concessions. By the early spring of 2010, Greece faced a funding strike: it was unable to raise funds on the market to meet current payments. This placed the ECB in a bind.

The natural implication of the Treaty was to call for a market solution to the Greek crisis which would have implied letting Greece default. The ECB, however, was understandably concerned that permitting a default on the sovereign debt of a euro area country could potentially trigger exit from the euro. This, in turn, could have led to contagion to other countries: if Greece were to default and/or exit, then this possibility would be entertained for other peripheral Euro area economies. A related concern was financial contagion to the financial sector in core countries, as French and German banks had significant exposures to Greek sovereign debt.

But the ECB on its own was not well-equipped to address the solvency problem that threatened Greece. It had not been endowed with the necessary instruments and was subject to institutional constraints that were expressly designed to protect it from pressure to deliver quasi-fiscal support to address solvency problems.

The ECB therefore looked to the national governments to provide the necessary fiscal support. This approach faced its own challenges given the Treaty's 'no bail out' clause. But by late April a set of bilateral loans from other Euro area countries had been agreed (a framework which eventually took a stronger institutional form in the European Financial Stability Facility (EFSF) and ultimately the European Stability Mechanism (ESM)), within the context of what became a so-called "troika" adjustment programme under the auspices of (and also co-financed by) the IMF.

Yet even this initiative failed to restore market confidence, in part because private holders of Greek debt became concerned they were being subordinated by official loans (i.e., if – for reasons of political feasibility – official loans were to be made senior to private sector holdings, then in the event of default the remaining private holders would suffer larger losses). In early May 2010, market tensions in Greece reached fever pitch, cross-border contagion intensified and the ECB was compelled to act.

Imposing immediate losses on private holders of Greek sovereign debt was one way forward. This threatened severe contagion and financial disruption. Alternatively, the ECB could assume the credit risk in Greek sovereign debt by purchasing it aggressively in potentially unlimited amounts (and presumably holding it on the ECB balance sheet indefinitely). Yet this was politically contentious and would have violated Treaty prohibitions. Each approach faced its own practical difficulties – but either would have addressed the underlying solvency problem directly.

In the end, the ECB adopted a middle way between these two strategies. It announced the securities markets programme (SMP), which entailed making outright purchases of Greek (and other peripheral) sovereign debt. Ostensibly, the SMP was intended to maintain effective monetary policy transmission and market functioning across the euro area by avoiding a fragmentation of markets along national lines. But in practice these sovereign purchases by the ECB avoided a hard Greek default and allowed immediate funding of the Greek sovereign as (what became) the 'troika programme' was put in place (as well as buying time to prepare for what was euphemistically called 'private sector involvement' (PSI) in debt restructuring, whereby private sector debt holders voluntarily agreed to accept write-downs). In parallel, the ECB relaxed its ratings and valuation requirements for the use of sovereign debt as collateral in ECB operations, and reduced haircuts, justified on the basis that once within a programme Greece would adjust, not default, and therefore market pricing of Greek debt was wrong.

Through these measures, the ECB helped to take Greece 'out of the market', both with regard to sovereign financing (which was provided through the SMP and the troika programme) and bank funding (which came via ECB operations using the relaxed collateral standards, as well as through the provision of emergency liquidity assistance by the Bank of Greece). Yet since this "muddling through" approach did not offer credible debt relief, it left the underlying debt sustainability problem to fester.

Over time, Greece has been given some debt relief: private holders accepted a restructuring in 2012 and SMP bond purchases are now maturing and rolling onto the balance sheet of the ESM (or being refinanced by the private sector as market access is slowly regained). But the intervening period has proved very costly for Greece, and contagion to other parts of the euro area has not been avoided. Both Ireland (in November 2010) and Portugal (in June 2011), in the face of their own macroeconomic and financial challenges, made their own requests for external official financial support and went into troika programmes.

Despite the severity of the ongoing sovereign crisis (see the dynamics of sovereign spreads described in Figure 4), in April 2011 the ECB increased its refi rate by 25bps to 1.25%, and again in July to 1.5%. These hikes reflected a belief that the peak of the crisis had passed and a normalization of monetary policy could commence, with inflation already rising. At that juncture the ECB staff's macroeconomic projections were predicting a decline in GDP growth in 2011-12 (Figure 11) and an increase in inflation (Figure 10). It therefore appears that the weight given to the inflation outlook in driving policy decisions was (as in the 2008 episode) excessive: with the benefit of hindsight, these rate increases look premature.

As Greece, Ireland and Portugal entered troika programmes in 2010-11, questions arose about whether contagion would extend to the larger sovereign bond markets for Italy and Spain. Certainly, there were reasons for concern.

Long standing public finance challenges in Italy had been brought into sharp relief by the financial crisis and fiscal stresses elsewhere in the euro area. The political environment in mid-2011 was not conducive to taking difficult measures to arrest the slow erosion of market confidence, which was reflected in widening sovereign spreads (particularly from the spring of 2011). In Spain, the interaction between bank and sovereign balance sheets was at centre stage. Although Spain had entered the financial crisis with a relatively low level of public debt, the depth of the recession and the explicit and implicit public liabilities towards the financial sector (which had suffered as the credit-financed property boom in Spain collapsed) led to a rapid deterioration of the Spanish public finances (both in data and in perception).

A natural market concern in this context was whether the EFSF / ESM bailout mechanisms that had been used to support the smaller peripheral countries would be adequate to support large countries such as Spain or Italy. The magnitude of outstanding sovereign debt for these countries dwarfed the available funds. And despite the insistence of the European authorities that the losses that had been imposed on holders of Greek debt via PSI were a one-off, the fact of sovereign restructuring in the euro area had unnerved market participants. The rationale and legal basis for the ECB's actions – on the one hand, using the rhetoric of the Treaty regarding the avoidance of monetary financing while, on the other hand, acting to prevent a Greek sovereign default – created uncertainties as to how the ECB would deal with a broader sovereign crisis, and hence uncertainty about the future of the single currency itself. The ECB's approach also had controversial distributional consequences, transferring exposures to (and ultimately losses from) programme countries away from private sector balance sheets to the balance sheet of the public sector (see Figure 14).

These challenges were further compounded by the interactions between sovereign and bank balance sheets. As peripheral banks held large quantities of home country sovereign debt on their balance sheets, sovereign stresses weighed on attempts to stabilise and strengthen bank balance sheets that were anyway under pressure owing to the economic slowdown and the aftermath of excessive and ill-directed credit creation in the past (at least in Spain). Equally, because sovereigns had extended potentially large implicit guarantees to the banking sector by offering a fiscal backstop to preserve financial stability, weakness in bank balance sheets threatened to affect sovereign funding.

All of this was compounded by the newly perceived potential for euro exit. Faced with the possibility of a financial collapse owing to sovereign default and its impact on the banking sector, it was natural to assume that the affected country might re-introduce its own currency to provide liquidity to its financial system. Assets in vulnerable countries began to incorporate a 'redenomination' risk premium for fear of depreciation following euro exit. This risk premium pushed up yields and bank funding costs, to the detriment of medium-term sustainability of sovereign and bank balance sheets as well as developments in the real economy, which in turn made exit more likely.

This vicious cycle, whereby rising redenomination risk became self-fulfilling, was an example of a multiple equilibria situation akin to developing countries' debt crises (Calvo (1988) is the seminal discussion). In such circumstances, drawing a hard distinction between liquidity and solvency issues may not be possible (De Grauwe (2012) was a forceful advocate of this point). The ECB was again faced with a dilemma: while it had proved comfortable in proving liquidity elastically to the banking sector in a classic lender-of-last-resort role during the early phases of the crisis, the fiscal solvency risks that had become manifest in Greece and the institutional constraints imposed by the Treaty complicated its assessment of how to deal with Italian and Spanish sovereign financing difficulties.

Another implication of the close relationship between banks and sovereigns and the emergence of redenomination risk was fragmentation of euro financial markets along national lines. Cross-border funding for banks dried up because of fear of capital losses on exit and/or crisis (see Figure 5).

Initially the ECB attempted to meet these challenges using the tools that had been employed for the small peripheral countries. In August 2011, ECB purchases of government bonds under the SMP extended to Italy and Spain. But this proved ineffective in halting the crisis for a number of reasons. First, in recognition of concerns in the core that ECB sovereign purchases constituted monetization and undermined incentives for fiscal discipline and adjustment, the SMP actions were always characterized as limited and temporary, which undermined market confidence that the ECB was prepared to offer a full backstop. Second, also to ease sensitivities about the adverse incentives created for reform, the ECB had conditioned its provision of support to Italy via the SMP on certain policy commitments made by the government. But this led to a backlash against 'political interference from unelected technocrats' in Italy, which threatened the political feasibility of the support. This was compounded by comments from the Italian leadership that the conditionality would anyway be of no consequence. Third, concerns about subordination of private sector holders persisted.

As a result, sovereign tensions – and thus pressure on the banking system and fragmentation of euro markets – persisted. By late 2011 (as Mario Draghi replaced Jean-Claude Trichet as President of the ECB) the threat of a banking crisis loomed.

In response, Mr. Draghi announced a set of longer-term refinancing operations with an exceptionally long 3-year maturity and FRFA tenders. In a similar manner to the shorter-term operations introduced by Mr. Trichet following the failure of Lehman, these operations offered the ECB balance sheet as a central counterparty to conduct interbank transactions, but now at longer maturities more relevant to funding and not just liquidity management of banks. Moreover, through these operations the ECB used the banking system as a conduit for supporting the sovereign sector. Banks could engage in a 'carry trade' by borrowing at the ECB 3-year LTRO facility to buy domestic sovereign debt which (in the stressed peripheral countries) yielded much more. Not only did this improve the profitability and thus capital position of the banks, it also substantially eased the financing difficulties faced by Italy and Spain as foreign investors (from both within and outside the euro area) failed to roll their outstanding holdings for fear of exit, restructuring and crisis.

Because the ECB's role in these transactions largely consisted of intermediating cross-border flows of capital as the private euro financial markets fragmented, a rapid increase in so-called TARGET 2 balances emerged (see Figure 9).

Through these means, an immediate bank funding crisis in early 2012 was avoided. But – as with the money market operations conducted in late 2008 – these interventions left the fundamental issues unaddressed. In particular, purchases of sovereign debt by banks of the same country funded by 3-year LTRO borrowing from the ECB served to intensify the interconnectedness between bank and sovereign balance sheets that had been an underlying cause of tension.

### *4.2 Discussion*

ECB policy during this phase was reactive rather than proactive. It enabled the financial system and sovereign funding to survive, but without creating good incentives for the necessary fundamental changes to be made.

Rather than choosing between the two solutions to solvency problems – either (1) strict “monetary dominance”, including the possibility of sovereign default, or (2) de facto monetization by potentially unlimited purchases of troubled sovereign debt – the ECB opted for a middle way. But this strategy lacked credibility. It was tested by the market in the summer of 2011 when contagion spread to Italy and Spain.

The strategy failed not only because it lacked conceptual clarity but also because it was based on the miscalculation that provision of liquidity, fiscal austerity and an emphasis on supply side reforms would have led to the stabilization of debt in Greece, Ireland and Portugal, especially in a context in which exchange rate devaluation could not be used in the adjustment.

Not addressing the problem of banks’ recapitalization in the early stage of the crisis also proved to be very costly. Cheap ECB funding allowed banks to continue to ‘evergreen’ their outstanding loan portfolios (including loans of questionable quality) rather than being forced to undergo the clean-up and strengthening of their balance sheets that the deleveraging process in the US (triggered by the TARP and Federal Reserve stress tests) had achieved. Figure 13 shows that in this period there was a collapse in loans to non-financial corporations which was more significant than that experienced in 2008-2009 if we consider that the decline of industrial production in 2011-2012 was more subdued (Colangelo et al., 2014; Reichlin, 2014). Figure 12 illustrates the weakness of lending by showing that, over this period, the growth of M3 was positive.

These were dark years for the euro area. Uncertainty about the repartition of responsibility between the different agencies - the central bank, the governments and the European federal authorities - led eventually, as we have seen, to a fragmentation of the financial markets, a credit crunch and a second recession.

## 5. Phase 3: September 2012 to August 2014 – The beginning of a new framework?

### *5.1 Narrative*

As we have seen, the contagion of sovereign market tensions across countries interacted with already fragile national banking systems in a manner that re-segmented Euro markets as foreign capital (from both outside the Euro area and other Euro area countries) withdrew. While solvency problems were evident in some peripheral countries, in others tensions appear to have been driven more by default concerns created as a result of rollover risk.

It was in this context that ECB President Mario Draghi made his famous pledge in July 2012 to do “whatever it takes” to preserve the Euro. This commitment took institutional form in the ECB’s outright monetary transactions (OMT) programme introduced in September that year.

The OMT scheme foresaw the possibility of central bank purchases of the shorter-dated government debt of countries that entered European Stability Mechanism (ESM) programmes (and accepted the implied conditionality). This created the capacity for the ECB balance sheet to be used to warehouse the public debt of large peripheral countries in the face of roll over risk – just as had already been achieved for the small countries via the troika – while retaining the important element of conditionality to maintain incentives for fiscal discipline and contain moral hazard. In so doing, the ECB assumed the “convertibility risk” that was associated with the potential exit of stressed countries from the Euro area.

The introduction of the OMT has exerted a powerful effect on market sentiment, leading to a substantial narrowing of peripheral sovereign spreads over German yields (see Altavilla et al., 2014 for a quantitative assessment of the OMT on credit risk). In turn, the stabilisation of financial markets has created an environment conducive to the stabilisation of the real economy, while providing breathing space for the necessary underlying area-wide governance improvements and national structural reforms and fiscal consolidation to be implemented.

Crucially the OMT worked through expectational channels and the credibility of Mr. Draghi’s “whatever it takes” announcement. The promise to underwrite sovereign debt has proved sufficient to re-coordinate private market participants on a ‘good’ equilibrium where debt rolls and sovereign credit risk premia remain contained. As a result, OMT purchases have never been made: the ECB has not bought one Euro of peripheral sovereign debt since the OMT was announced in September 2012, and the larger peripheral countries (Italy and Spain) have not entered ESM programmes to activate the possibility of such purchases.

The substantial success of the OMT announcement was founded on using an 'off-balance sheet approach' to stabilise sovereign markets. In essence, Mr. Draghi issued a put option on peripheral debt (albeit one with a vague strike price), rather than making outright purchases. This approach allowed him to navigate the dangerous waters between, on the one hand, understandable German concerns about the abuse of central bank financing stemming from the unique institutional set-up of the Euro area and, on the other, market participants' concerns about the sustainability of peripheral fiscal positions in the face of both fundamental weaknesses in the public finances and roll over risk at a time of market tension.

But importantly this off-balance-sheet approach did not impose conditionality on the benefiting countries, which remained outside ESM programmes. Spain and Italy enjoyed substantial reductions in their financing costs as a result of the announcement of the OMT, but did not have to satisfy the conditions implied by participation in an ESM programme, comparable to those set for the small peripheral economies by the troika. Implementing the necessary macroeconomic adjustment was therefore a matter of trust.

To their credit, the Spanish authorities have pursued significant adjustment even without the imposition of explicit conditionality. But Italy's macroeconomic adjustment has been, at best, more hesitant than that in Spain. And with market pressure diminished by the OMT, it remains to be seen whether the promised institutional and economic restructuring of Italy will be delivered.

But it is not only at the national level that institutional and economic reform is required. As we have argued elsewhere, a fundamental weakness in the Euro area construct remains the threat that a resegmentation of financial markets will create an explosive dynamic. Rather than absorbing risk and helping to stabilize the system, the financial sector can become a magnifier and accelerant of centrifugal forces.

An important contributor to such financial segmentation is the emergence of the *Teufelskreis* (or "diabolical loop") between sovereign and bank balance sheets: banking problems weaken sovereign balance sheets given the (often implicit) government guarantees provided to the financial sector, while banks typically hold a significant portfolio of domestic sovereign debt, such that a weakening of the sovereign balance sheet may raise concerns about the solvency of banks. Breaking this link and thereby establishing a 'level playing field' for Euro area banks independent of their domicile and links to specific sovereigns is seen as an essential support for financial stability, better integrated markets and effective monetary policy transmission.

It was in this context that the June 2012 EU summit promised to create a "banking union" with the goal of breaking the connection between sovereigns and banks. Indeed, the political pledges made at this summit were an important facilitator of Mr. Draghi's "whatever it takes" intervention and subsequent announcement of the OMT.

The European "banking union" consists of several elements: a single supervisory mechanism (SRM) at the ECB; a single resolution mechanism (SRM) to deal with failing banks; more transparent and uniform application of state aid rules to government support for the banking sector; and the banking recovery and resolution directive (BRRD) to define when and how the authorities can intervene to support troubled banks. Other elements originally conceived at the time of the June 2012 announcement – notably a common area-wide deposit insurance scheme – appear, at least at this stage, stillborn (see Hellwig, 2014 for a critical appraisal).

A significant step in this context has been the announcement and then the implementation of a comprehensive review of the asset quality of the large banks under the supervision of the ECB. Only at this stage, in anticipation of this exercise, the euro area banks started a process of recapitalization. Figure 2 shows that banks risk in Italy and Spain, as measured by CDS, started declining at this point (mid-2013).

But despite the improvement in financial market conditions, the macroeconomic situation remained stagnant and inflation commenced a persistent decline (Figure 10 and 11). The behaviour of longer-term interest rates in Germany reflects this decline in nominal growth rates (Figure 3). The ECB implemented a series of refi rate cuts (July 2012, May 2013, June 2014 and September 2014), introduced a negative rate on its deposit facility, launched new targeted LTROs and announced a purchase programme for ABS and covered bonds.

Moreover, in his August 2014 speech at Jackson Hole, Mr. Draghi proposed initiatives to improve the institutional context for monetary policy: more emphasis on developing an appropriate monetary / fiscal policy mix at the area-wide level and greater commitment and European governance of structural reform.

### *5.2 Discussion*

One way of characterizing ECB policy in this most recent phase is as an attempt to find a balance between two extreme positions: one emphasizing a strict interpretation of the "no monetary financing" prohibition; and another calling on the ECB to act as a backstop in a debt crisis (De Grauwe, 2012; Krugman, 2014), disregarding moral hazard problems or concerns about the potential fiscal consequences of this action.

For example, the promise of potentially unlimited liquidity support subject to conditionality under the OMT can be seen as steering a middle way: recognition that a bad equilibrium resulting from self-fulfilling crisis is possible, but also containing moral hazard so as to avoid unsustainability and insolvency. In turn, this acts as a mechanism to manage a tradeoff between risks to price stability (stemming from the moral hazard and threat to central bank credibility) and risks to financial instability (stemming from destabilizing self-fulfilling market dynamics).

Following the OMT, we have seen a further refinement in this direction. Mr. Draghi's speech in June 2014 in London called for a euro area framework to coordinate and monitor structural reforms. His Jackson Hole speech in August 2014 argued for greater coordination of monetary and fiscal policy to change the stance of fiscal policy at the euro area wide level. These initiatives can be seen as attempts to create a broader area-wide institutional set-up in the euro area, which overcomes some of the lacunae that the crisis identified in the Maastricht framework.

## 6. Concluding remarks

Our assessment is as follows.

The ECB was effective in the initial banking crisis of 2007-09, since it was largely called upon to address liquidity issues that fall squarely in the normal realm of central banking. But since the underlying, more fundamental solvency problems in sovereign and bank balance sheets were not addressed adequately by the responsible fiscal and regulatory authorities, in the subsequent Euro area-specific crisis of 2010-12 the ECB was forced to act outside its natural domain and address solvency issues. Perhaps unsurprisingly, in this context it was found wanting.

In particular, the ECB attempted to pursue a middle path between two approaches. Fearing contagion and financial collapse, it was unwilling to enforce the 'monetary dominance' embodied in the Maastricht Treaty, which foresaw default as the solution to fiscal unsustainability. Yet understandably wary of a political backlash in creditor countries and naturally concerned about its own credibility, the ECB was equally unwilling to accept full 'fiscal dominance' and purchase the debt of troubled sovereigns in potentially unlimited amounts.

The resulting middle course was a pragmatic and perhaps inevitable response to the substantial challenges facing the ECB in the circumstances of the time. But it has failed to offer a genuine solution to the underlying solvency issues, while permitting (or even creating) a damaging set of dislocations, notably a fragmentation of Euro financial markets, which weighed heavily on the real economy especially in the stressed countries of the periphery.

Since Mr. Draghi's famous pledge to do "whatever it takes" to sustain the euro in July 2012, the ECB has attempted to construct a new institutional framework that will allow it to manage the middle course more successfully. Although there are promising developments in some areas such as banking union, without a “new bargain” on how to deal with the debt overhang which is the legacy of the crisis, the euro area is under threat.

**Table 1: Timeline of events - Phase 1: The banking crisis**

| | |
|---|---|
| 12-Sep-07 | Money market funding problems prompt Northern Rock to ask the BoE for liquidity support |
| 12-Dec-07 | The ECB, Fed and SNB announce temporary reciprocal currency agreements (swap lines). The Fed will provide up to $20 billion and $4 billion to the ECB and SNB, respectively, for up to 6 months |
| 17-Feb-08 | Northern Rock is nationalised |
| 28-Mar-08 | ECB offers refinancing operations with longer maturities |
| 2-Jul-08 | ECB increases interest rates by 25bps to 4.25 percent |
| 16-Sep-08 | Lehman Brothers files for Chapter 11 bankruptcy protection |
| 29-Sep-08 | The ECB announces and conducts on the same day a special term refinancing operation with no pre-set amount at variable rate |
| 8-Oct-08 | The ECB cuts refi rate by 50bps to 3.75% and reduces the corridor from 200bps to 100bps around the rate of the main refinancing operation |
| 8-Oct-08 | The ECB announces that the weekly main refinancing operation will be conducted through a fixed rate tender procedure with full allotment (FRFA) |
| 15-Oct-08 | The ECB announces a further expansion of the collateral framework. |
| 15-Oct-08 | The ECB announces an enhancement of the provision of longer-term refinancing with 1-, 3- and 6-month operations |
| 6-Nov-08 | The ECB cuts the refi rate by 50bps to 3.25% |
| 4-Dec-08 | The ECB cuts the refi rate by 75bps to 2.50% |
| 18-Dec-08 | The ECB restores the corridor of standing facility rates to 200bps |
| 15-Jan-09 | The ECB cuts the refi rate by 50bps to 2.00% |
| 15-Mar-09 | The ECB cuts the refi rate by 50bps to 1.50% |
| 2-Apr-09 | The ECB cuts the refi rate by 25bps to 1.25% |
| 7-May-09 | The ECB cuts the refi rate by 25bps to 1.00% |
| 7-May-09 | The ECB announces that it will conduct one-year longer-term refinancing operations (LTROs) in June, September and December 2009, on FRFA basis. |
| 4-Jun-09 | The ECB launches its Covered Bond Purchase Programme (CBPP) with a maximum amount of EUR60 billion |
| 3-Dec-09 | The ECB decides that its main refinancing operation will continue on FRFA basis for as long as needed |
| 27-Jan-10 | The ECB announces that it will discontinue the temporary swaps line |

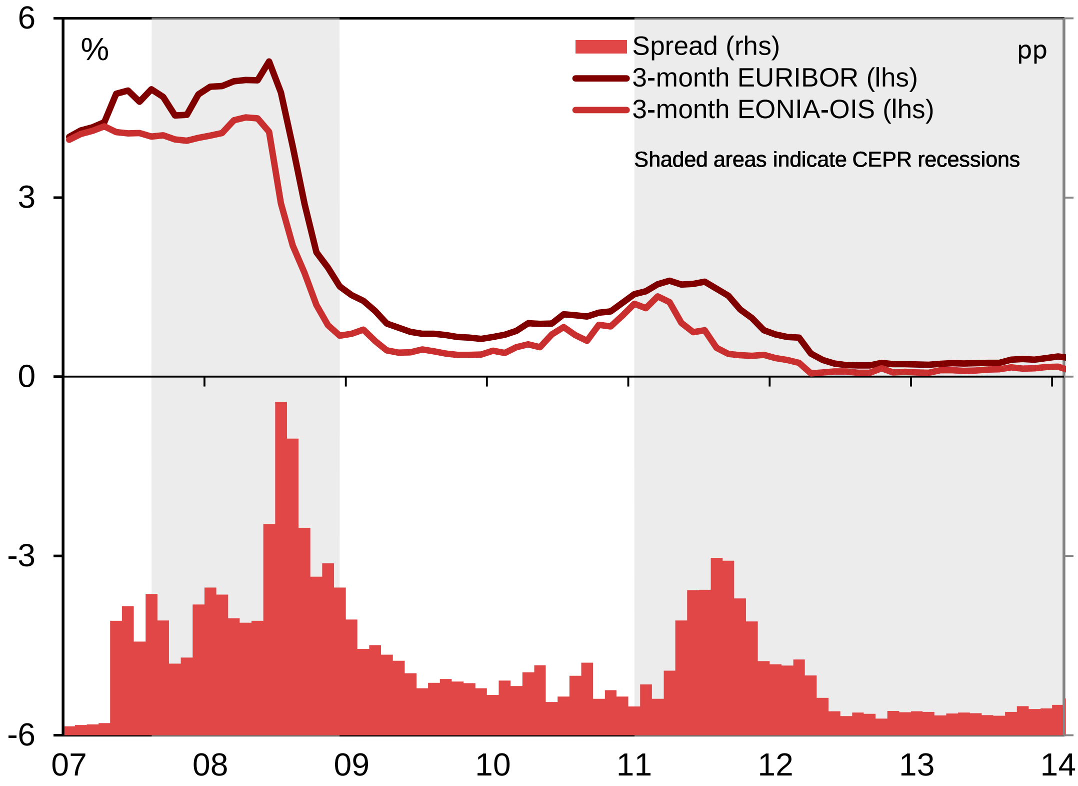
**Table 2: Timeline of events - Phase 2: The sovereign crisis**

| | |
|---|---|
| 10-May10 | The ECB resumes the temporary swaps line with the Fed |
| 10-May10 | The ECB announces the creation of the Security Market Programme, for interventions in euro area public and private debt securities |
| 10-May10 | The ECB announces that it will adopt FRFA in the regular 3-month longer-term refinancing operations (LTRO) to be allotted on 26 May and 30 June |
| 30-June10 | The ECB ends its Covered Bond Purchase Programme |
| 28-July-10 | The ECB announces stricter rules on collateral |
| 28-Oct-10 | EU leaders agree to strengthen the Stability and Growth Pact, and to establish a permanent crisis mechanism |
| 21-Nov-10 | Ireland seeks financial support |
| 17-Dec-10 | ECB and BoE agree to extend swaps lines |
| 21-Dec-10 | US dollar/euro swap lines prolonged |
| 1-Jan-11 | The European Banking Authority created |
| 18-Mar-11 | The European Banking Authority publishes details of the EU-wide banking stress tests |
| 6-Apr-11 | Portugal requests activation of aid mechanism |
| 7-Apr-11 | The ECB raises refi rate by 25bps to 1.25% |
| 9-Jun-11 | The ECB announces that main refinancing operations will continue as FRFA for as long as necessary and at least until the end of the ninth maintenance period of 2011. |
| 29-Jun-11 | US dollar/euro swap lines prolonged |
| 13-July - 11 | The ECB increases refi rate by .25bps to 1.5% |
| 25-Aug-11 | Swap line with the Bank of England prolonged |
| 15-Sep-11 | Additional US dollar liquidity-providing operations |
| 6-Oct-11 | 2 one-year LTROs conducted in October 2011 and December 2011, FRFA<br>Second Covered Bond Purchase Programme for a maximum amount of EUR 40 billion |
| 1-Nov-11 | Mr Draghi becomes President of the ECB |
| 3-Nov-11 | The ECB cuts refi rate by 25bps to 1.25% |
| 8-Dec-11 | The ECB cuts refi rate by 25bps to 1.00% |
| 8-Dec-11 | Two 3-year LTROs, conducted as FRFA |
| 8-Dec-11 | Reserve ratio reduced from 2% to 1% |
| 8-Dec-11 | Increased collateral availability, accepting single-A rated ABS |
| 9-Feb-12 | Eligibility criteria for additional credit claims for seven national central banks |
| 28-Feb-12 | Greek bonds no longer accepted as collateral for ECB refinancing operations |
| 8-Mar-12 | Greek bonds accepted as collateral, due to activation of the buy-back scheme backed by the EFSF |
| 7-Aug-11 | Statement by Mr. Trichet on Italy and Spain. ECB will actively implement its Securities Market Programme |

**Table 3: Timeline of events - Phase 3: The beginning of a new framework?**

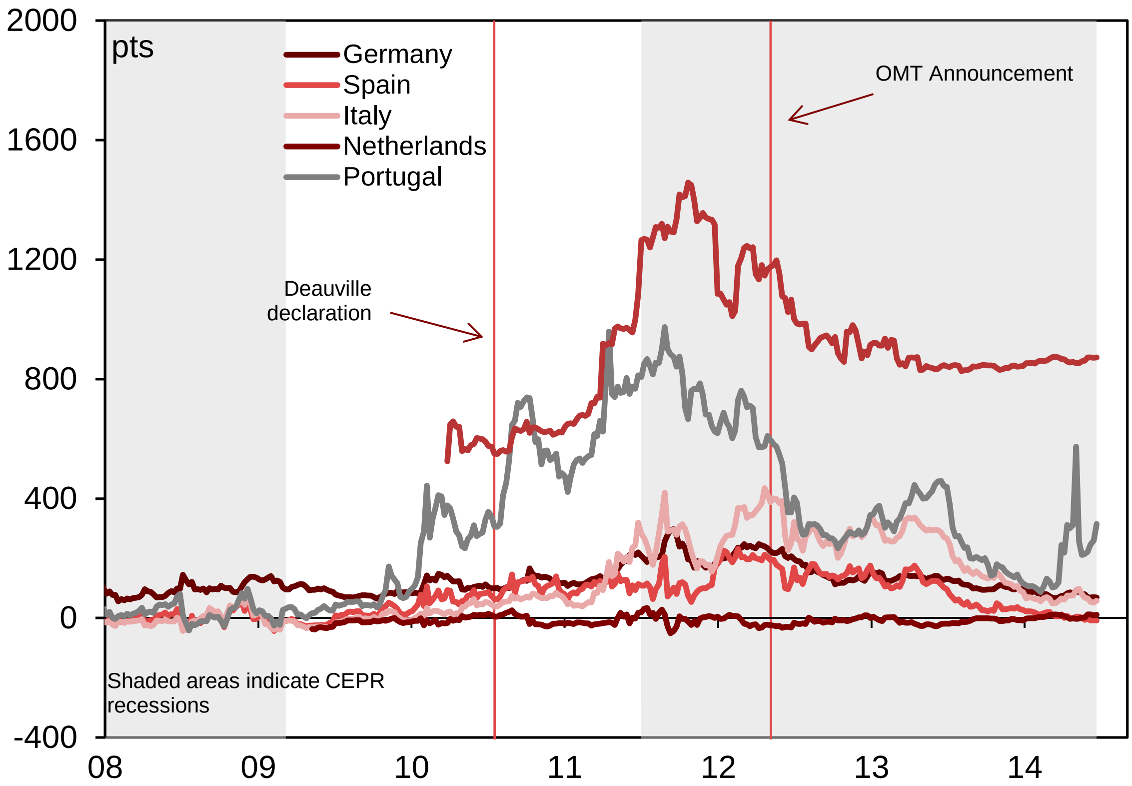
| | |
|---|---|
| 27-Jun-12 | Spain seeks financial support |
| 29-Jun-12 | EU leaders agree to create the Banking Union and the SSM |
| 5-Jul-12 | The ECB cuts refi rate by 25bps to 0.75% |
| 20-Jul-12 | ECB stops accepting Greek bonds as collateral, as buy-back scheme ends on 25 July 2012 |
| 20-Jul-12 | Eurogroup grants financial assistance to Spain's banking sector |
| 26-Jul-12 | Mr. Draghi pledges to do "whatever it takes to preserve the euro" |
| 6-Sep-12 | ECB announces technical features of OMTs |
| 19-Dec-12 | ECB reinstates Greek bonds as collateral |
| 21-Mar-13 | ECB maintains the current level of Emergency Liquidity Assistance (ELA) until 25 March 2013 |
| 2-May-13 | The ECB cuts refi rate by 25bps to 0.50% |
| 28-Jun-13 | ECB stops accepting Cypriot bonds as collateral |
| 4-Jul-13 | ECB introduces forward guidance |
| 5-Jul-13 | ECB reinstates Cypriot bonds as collateral |
| 23-Nov-13 | ECB starts comprehensive assessment ahead of supervisory role |
| 16-Dec-13 | Daniele Nouy appointed as Chair of the Supervisory Board |
| 3-Feb-14 | ECB collects the first set of data on comprehensive assessment. Stress tests will incorporate results of the AQR |
| 25-Apr-14 | ECB publishes SSM Framework regulation |
| 5-Jun-14 | ECB cuts refi rate by 10bps to 0.15%, bringing the interest rate on deposit facility to -0.10%, below zero for the first time |
| 5-Jun-14 | FRFA to continue as long as needed, and at least until December 2016 |
| 5-Jun-14 | ECB suspends sterilization of the liquidity injected under the SMP |
| 5-Jun-14 | ECB introduces a series of T-LTROs |
| 5-Jun-14 | Intensification of preparatory work on outright purchases of ABS |
| 17-Jun-14 | ECB to continue one-week US dollar liquidity-providing operations after 31 July 2014 until further notice |
| 17-Jul-14 | ECB publishes disclosure process for comprehensive assessment |
| 4-Sep-14 | ECB cuts refi rate by 10bps to 0.05% |
| 4-Sep-14 | ECB announces the creation of the ASB Purchase Programme, to begin in October 2014 |
| 4-Sep-14 | ECB announces a third covered bond purchase programme (CBPP3). |

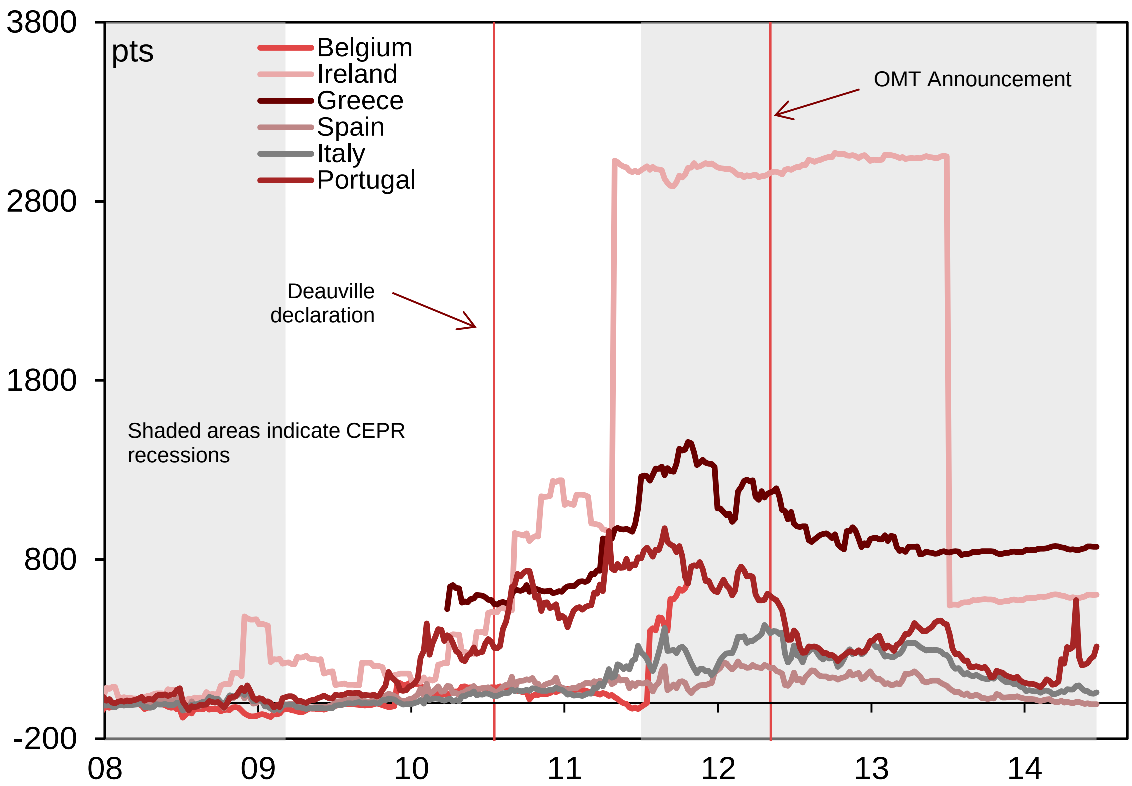
**Figure 1: Spread between secured and unsecured money market rates**




*Source: Bloomberg*

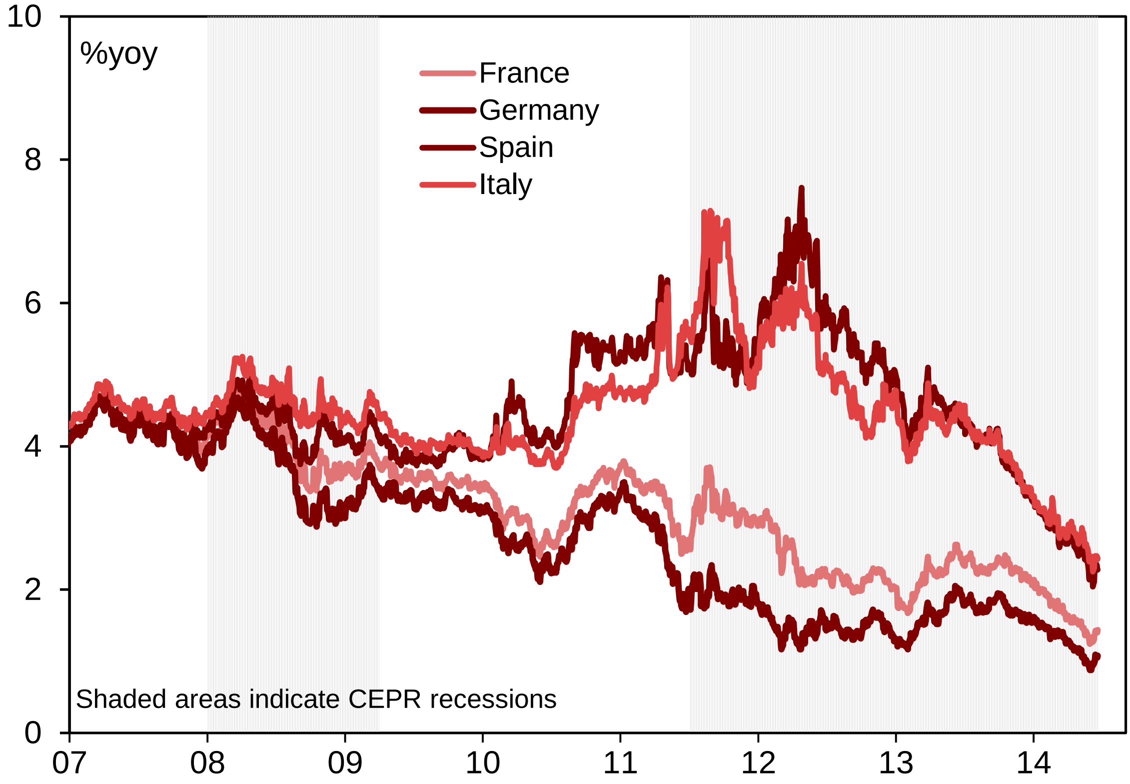
**Figure 2: Bank credit default swaps**



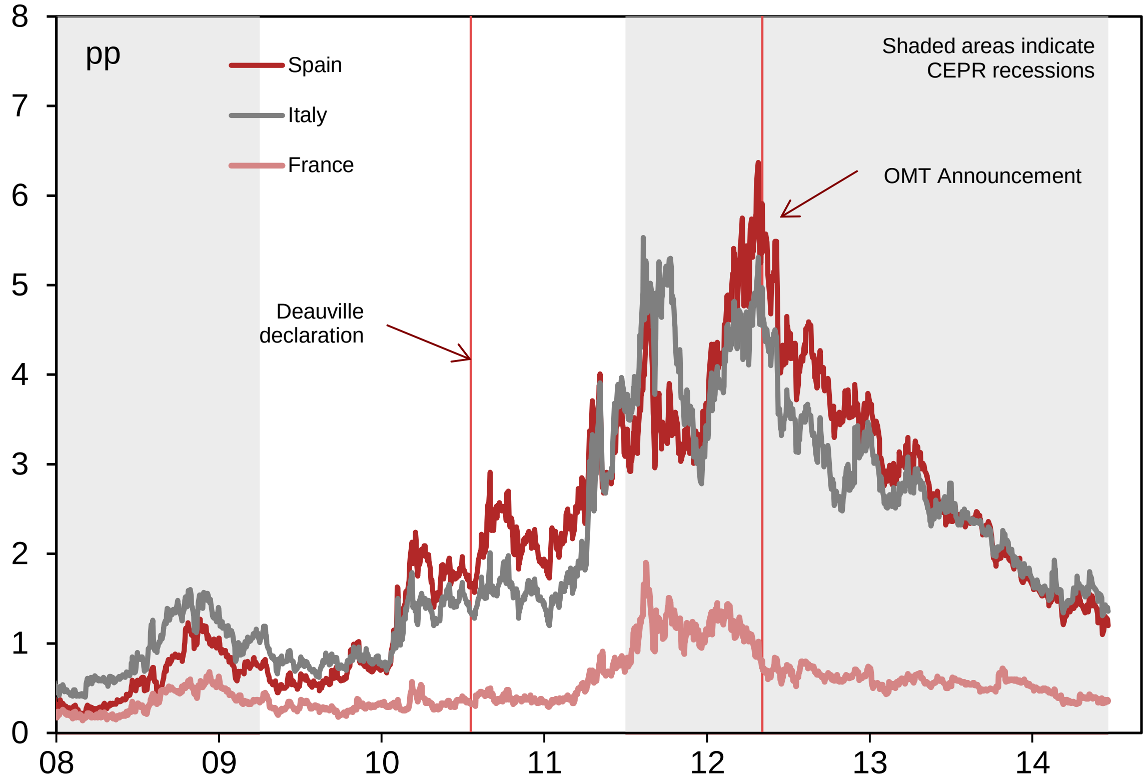

*Source: Bloomberg*

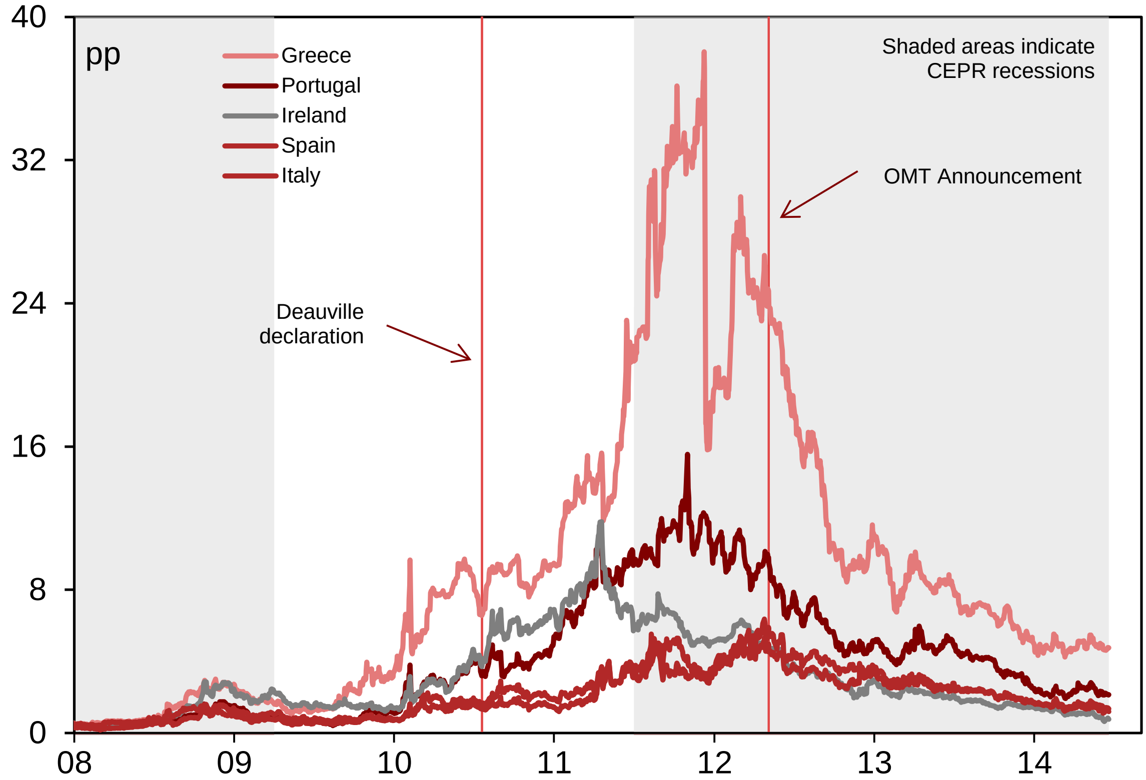
**Figure 3: 10-year government bond yields**




*Source: Bloomberg*

**Figure 4: Sovereign spreads over 10-year German Bund yields**




*Source: Bloomberg*

**Figure 5: Fragmentation of Euro financial markets**

**Pre-Lehman, Euro interbank markets were highly integrated**

(cross-border bank claims as a percentage of lending country quarterly GDP, 2008Q1

| | Lending to | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | GER | NETH | FRA | ITA | SPA | POR | IRE | GRE |
| GER | | 19.5 | 27.9 | 28.9 | 33.8 | 5.4 | 24.6 | 4.8 |
| NETH | 93.6 | | 85.7 | 70.2 | 57.7 | 7.2 | 22.0 | 9.8 |
| FRA | 40.3 | 22.1 | | 74.9 | 30.2 | 4.8 | 13.6 | 10.4 |
| ITA | 72.3 | 6.3 | 11.6 | | 5.4 | 1.4 | 5.6 | 1.5 |
| SPA | 14.0 | 15.7 | 15.5 | 11.1 | | 20.7 | 5.7 | 0.3 |
| POR | 11.5 | 7.9 | 9.8 | 8.3 | 49.5 | | 9.5 | 11.2 |
| IRE | 78.0 | 29.6 | 44.3 | 80.2 | 54.4 | 7.5 | | 14.7 |
| GRE | 2.0 | 1.2 | 1.8 | 0.5 | 0.2 | 0.1 | 0.5 | |

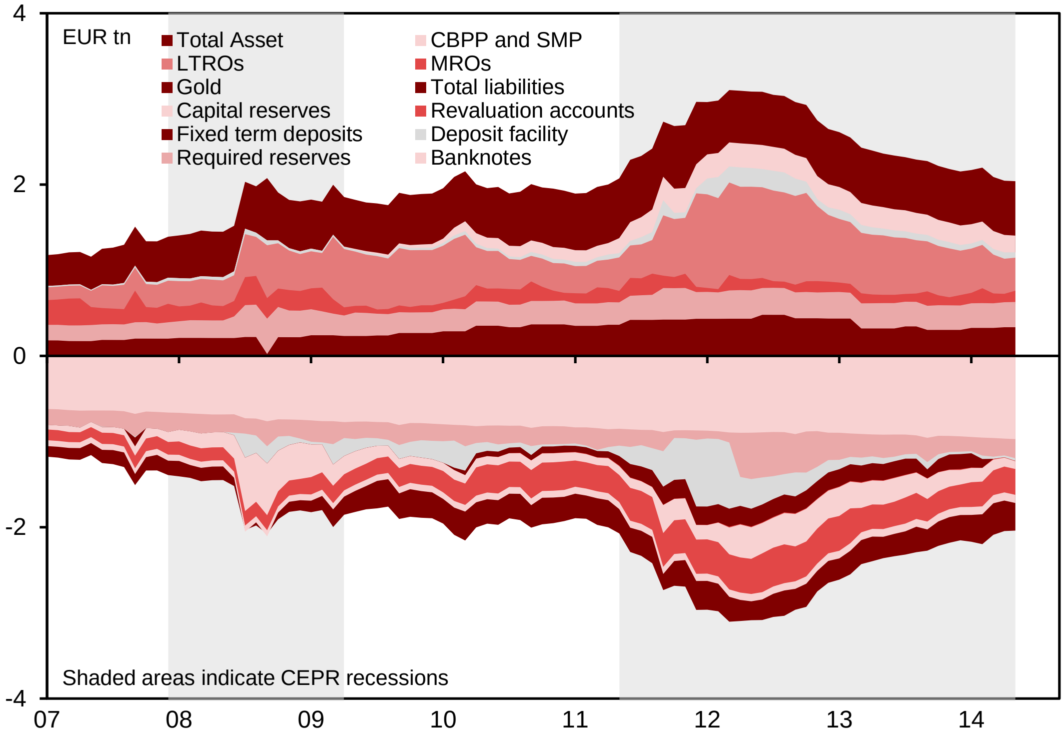
**With the financial crisis, segmentation has emerged**

(cross-border bank claims as a percentage of lending country quarterly GDP, 2013Q1

| | Lending to | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | GER | NETH | FRA | ITA | SPA | POR | IRE | GRE |
| GER | | 17.3 | 21.6 | 14.1 | 14.0 | 2.4 | 8.8 | 2.8 |
| NETH | 95.5 | | 41.4 | 16.5 | 26.2 | 2.2 | 7.4 | 1.2 |
| FRA | 28.0 | 22.7 | | 49.5 | 14.9 | 2.4 | 5.6 | 0.5 |
| ITA | 45.8 | 3.5 | 7.9 | | 3.8 | 0.3 | 2.0 | 0.2 |
| SPA | 16.6 | 5.9 | 10.6 | 8.0 | | 20.6 | 1.7 | 0.2 |
| POR | 2.4 | 16.0 | 10.6 | 6.3 | 42.4 | | 13.3 | 12.7 |
| IRE | 2.6 | 3.6 | 8.9 | 1.3 | 5.9 | 0.7 | | 0.2 |
| GRE | 4.7 | 1.2 | 2.1 | 0.7 | 0.5 | 0.0 | 0.8 | |

Source: BIS, Goldman Sachs Global Investment Research

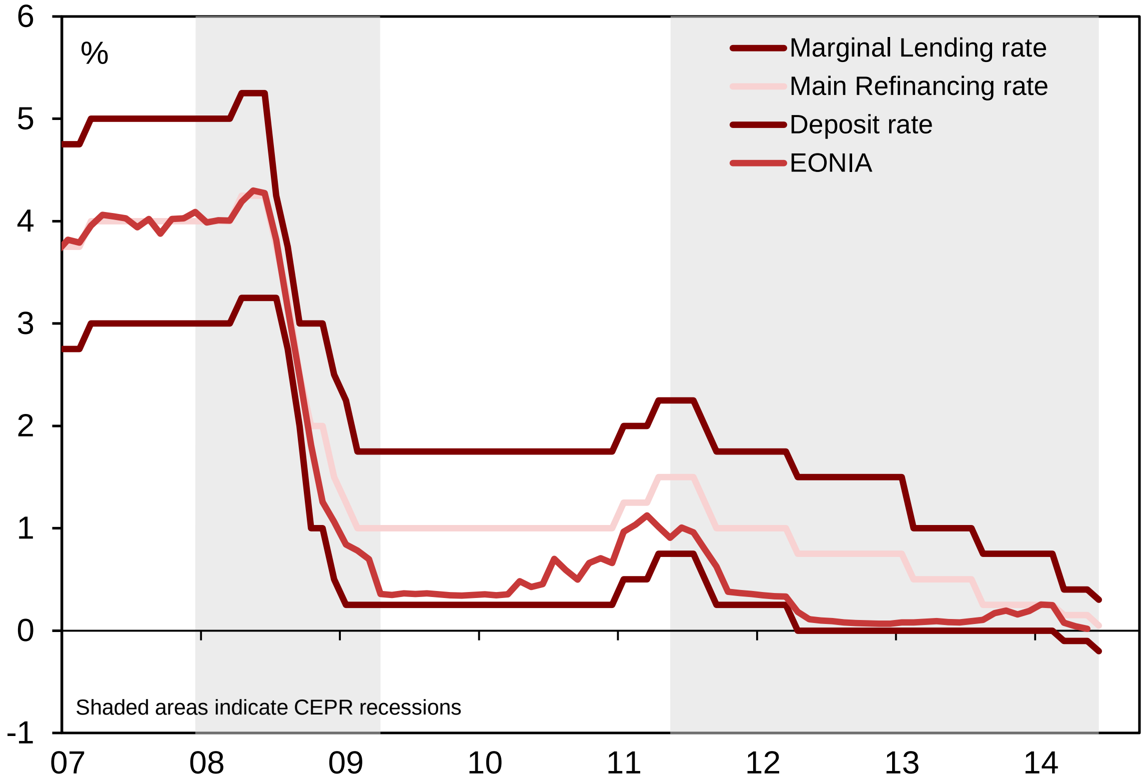
**Figure 6: ECB balance sheet**




Source: ECB, Haver Analytics, Goldman Sachs Global Investment Research

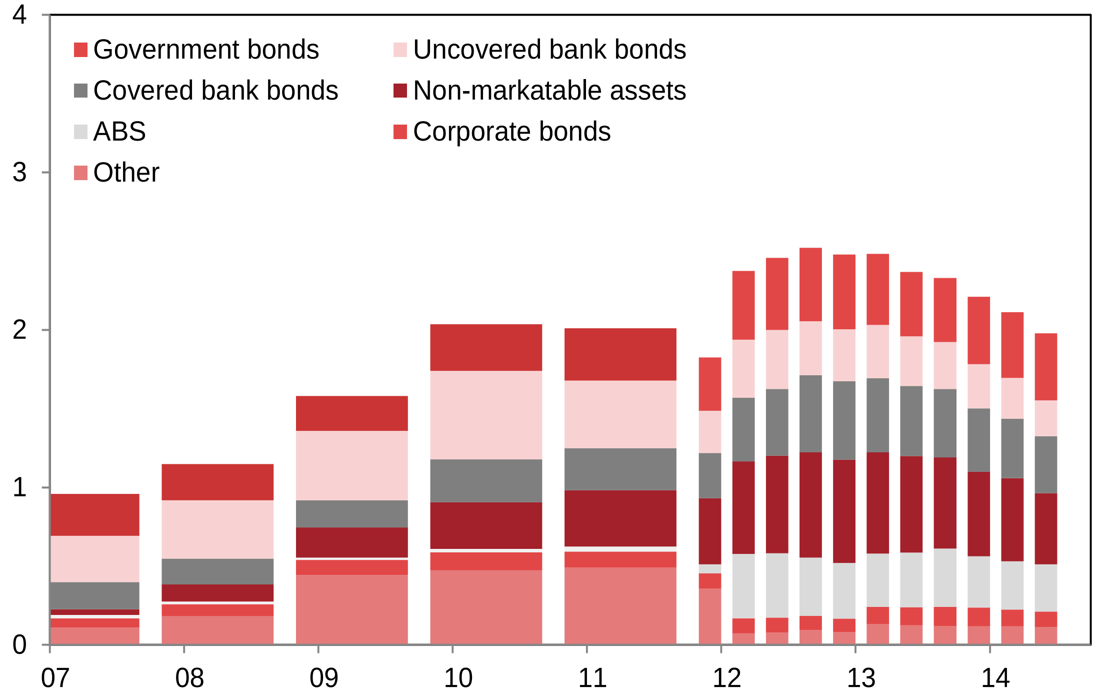
*Source: ECB*

**Figure 7: ECB policy rates and EONIA**



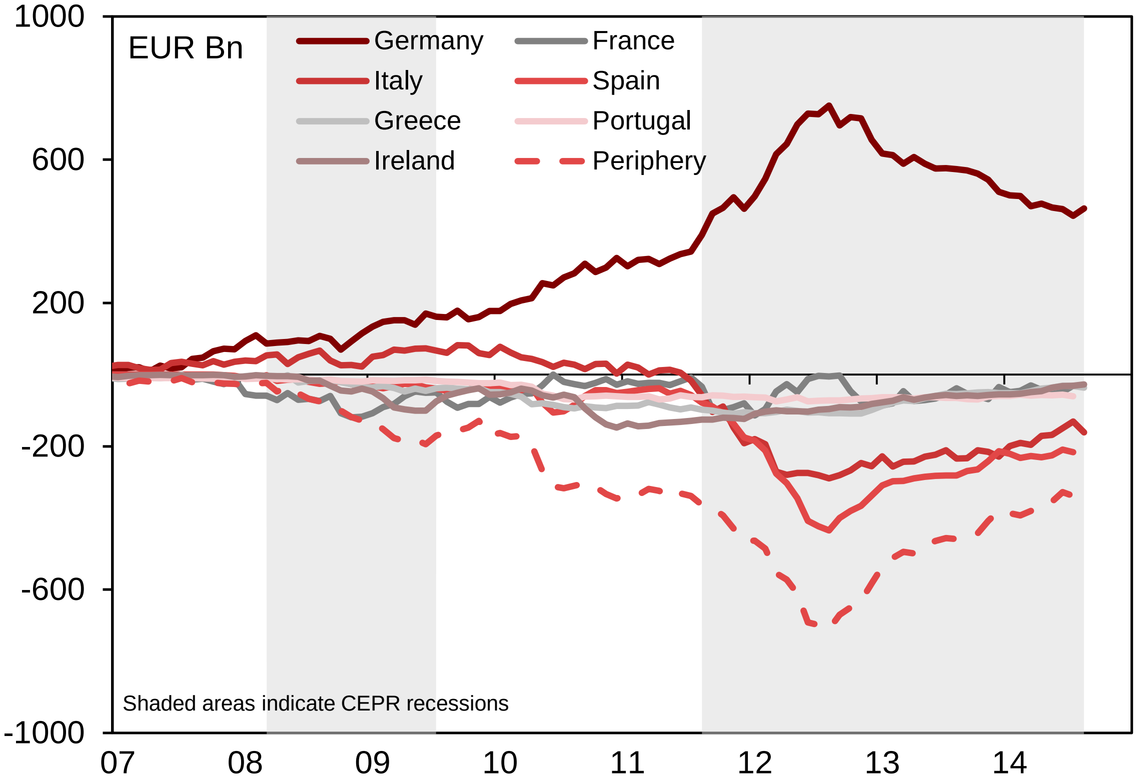

*Source: ECB*

**Figure 8: Collateral pledged at ECB monetary policy operations**



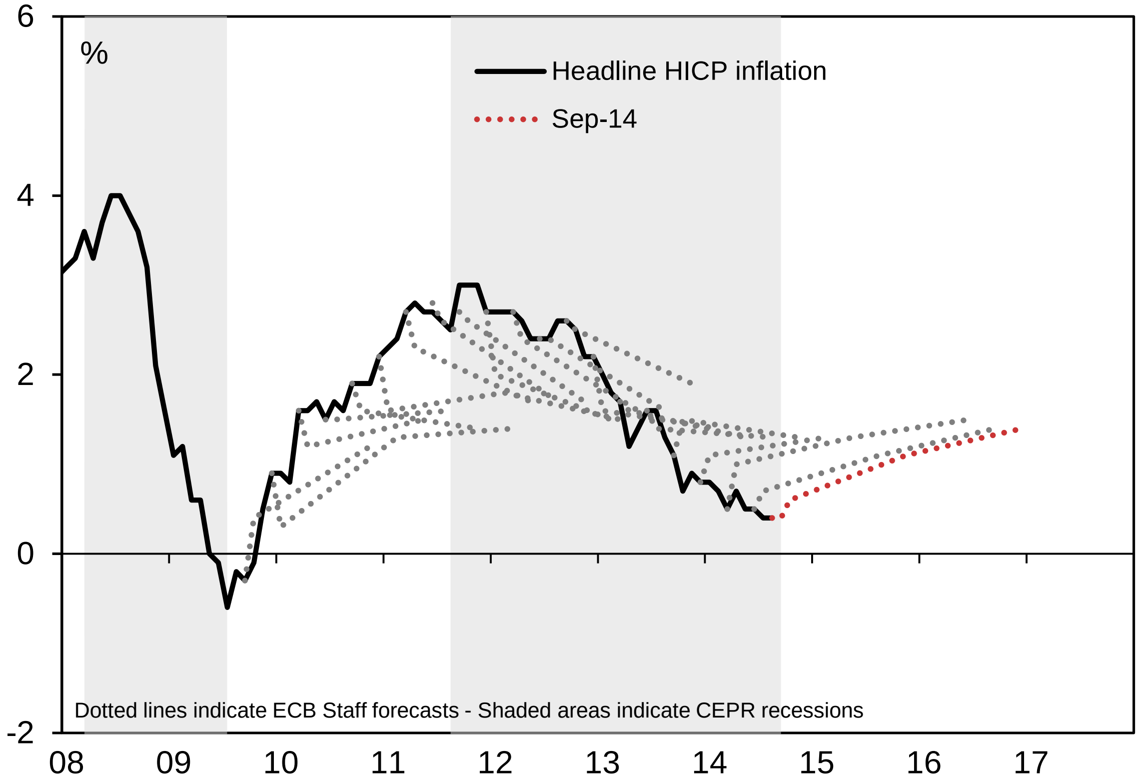

*Source: Bloomberg*

**Figure 9: TARGET 2 balances**



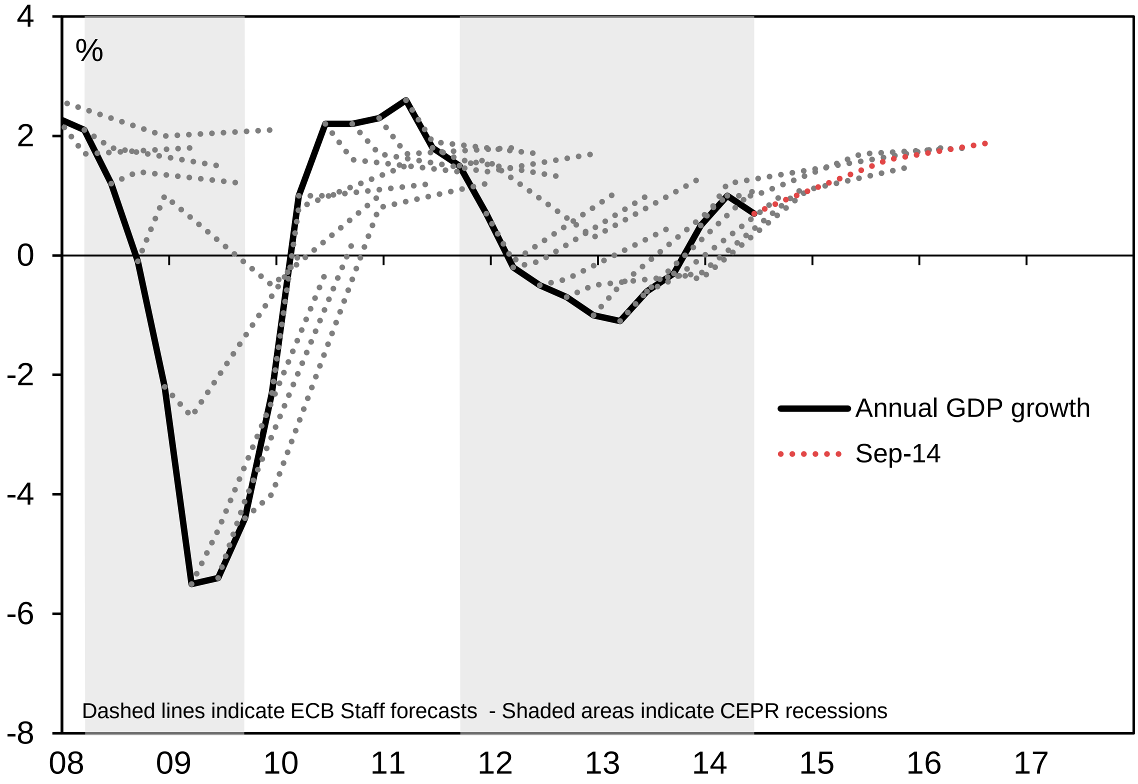

*Source: National central banks*

**Figure 10: Euro area HICP inflation and ECB staff forecast of inflation**



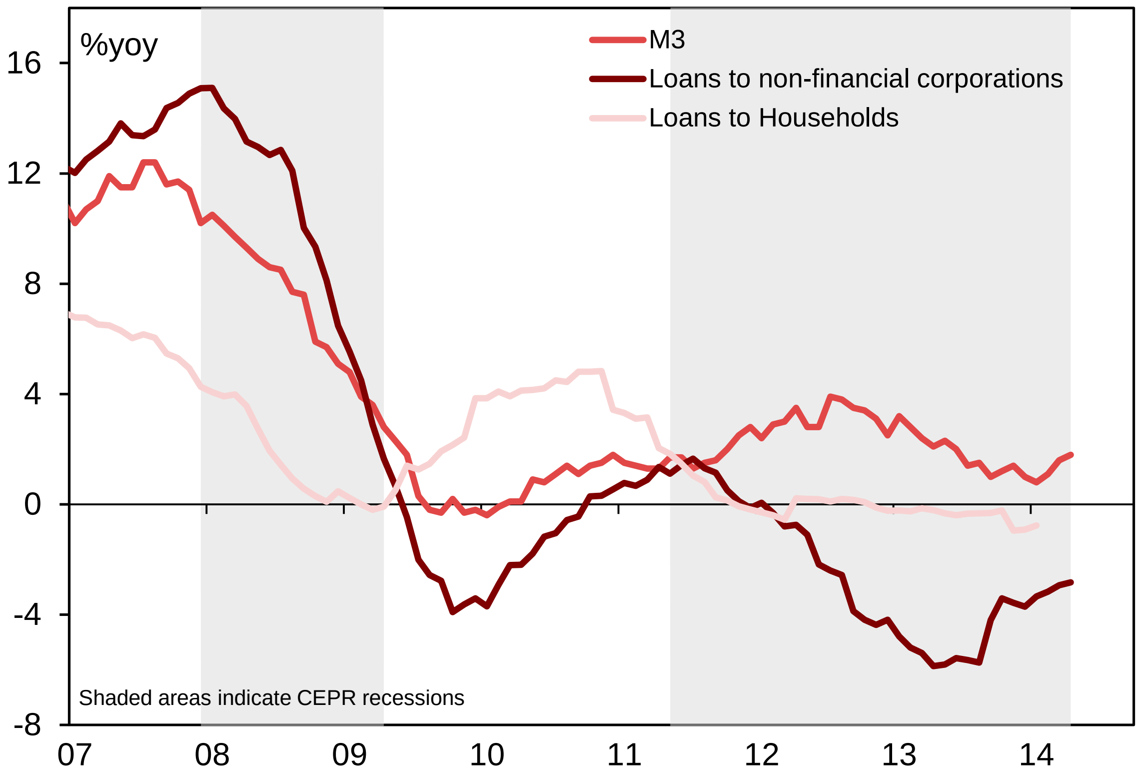

*Source: Eurostat, ECB*

**Figure 11: Euro area real GDP growth and ECB staff forecast of inflation**



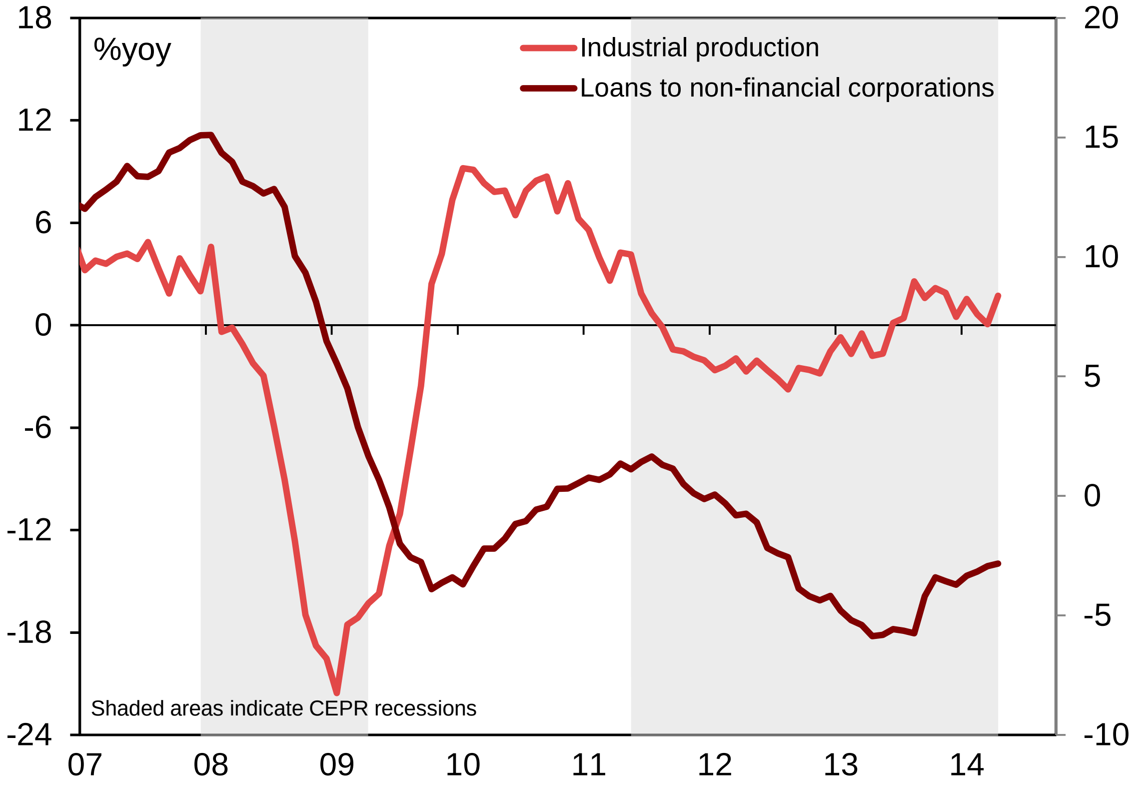

*Source: Eurostat, ECB*

**Figure 12: M3 and bank loans**



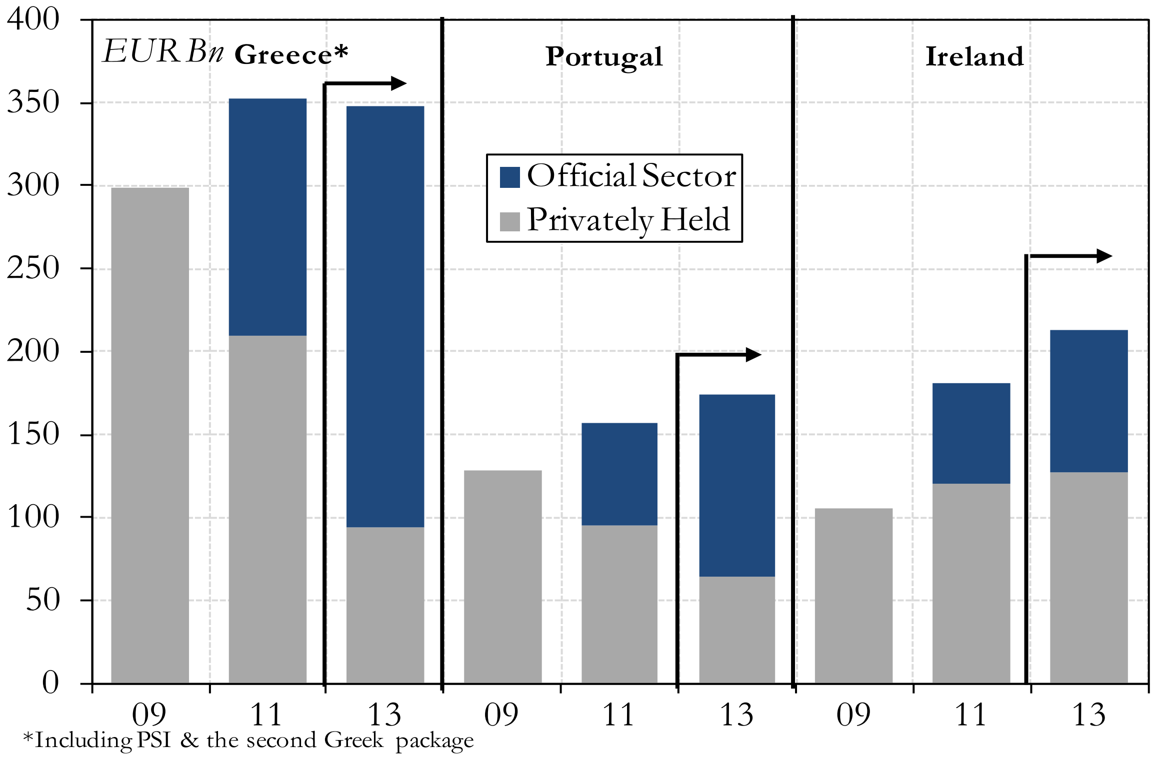

*Source: ECB*

**Figure 13: Industrial production and bank loans to non-financial corporations**




*Source: ECB*

**Figure 14: Warehousing peripheral sovereign debt on official balance sheets**




*Source: Goldman Sachs Global Investment Research*

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