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**The Monetary Policy
of the European Central Bank
(2002 to 2015)**

Stefano Micossi

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The Monetary Policy of the European Central Bank (2002-2015)

Stefano Micossi*

Abstract

This paper examines the policies pursued by the European Central Bank (ECB) since the inception of the euro. The ECB was originally set up to pursue price stability, with an eye also to economic growth and financial stability as subsidiary goals, once the primary goal was secured. The application of a single monetary policy to a diverse economic area has entailed a pronounced pro-cyclicality in its real economic effects on the eurozone periphery. Later, monetary policy became the main policy instrument to tackle financial instability elicited by the failure of Lehman Brothers and the sovereign debt crisis in the eurozone. In the process, the ECB emerged as the lender of last resort in the sovereign debt markets of participating countries. Persistent economic depression and deflation eventually brought the ECB into the uncharted waters of unconventional policies. That the ECB could legally perform all of these tasks bears witness to the flexibility of the TFEU and its Statute, but its tools and operating procedures were stretched to their limit. In the end, the place of the ECB amongst EU policy-making institutions has been greatly enhanced, but has entailed repeated intrusions into the broader domain of economic policies – not least because of its market intervention policies – whose consequences have yet to be ascertained.

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The Monetary Policy of the European Central Bank (2002-2015)

1. The single monetary policy and the ESCB

The Treaty of Maastricht instituted the euro as the currency of the Economic and Monetary Union (Article 3.4 Treaty on European Union), the single monetary policy for participating countries (the eurozone) and the eurozone monetary authority – comprising the National Central Banks (NCBs) of the European Union and, at its centre, the European Central Bank (ECB), together constituting the European System of Central Banks (ESCB). The Eurosystem is made up of the ECB and the (currently 19) NCBs whose currency is the euro. The ECB coordinates operations and the NCBs execute the transactions, such as providing funds to banks, settling cross-border transactions and managing foreign exchange reserves. The ECB must be consulted, and may submit opinions, on any matter in its field of competence (Article 127.4 Treaty on the Functioning of the European Union, TFEU).

Article 127.2 TFEU further specifies the tasks of the ESCB, that is: to define and implement the monetary policy of the Union, conduct foreign exchange operations, hold and manage the foreign exchange reserves of the member states, and promote the smooth operation of the payment system. Furthermore, Article 127.6 TFEU allows the Council, acting by regulation, after consulting the European Parliament and the ECB, to confer upon the ECB specific tasks for the prudential supervision of credit institutions and other financial institutions (excluding insurance companies). This provision has been used to establish the Single Supervisory Mechanism (SSM),¹ composed of the ECB and the national supervisory authorities. The system is open to countries not participating in the euro, which may join by signing a special agreement with the ECB.

The construction was based on two strong premises. First, the single monetary policy by means of the common currency should be freed of any political interference – by the member states and the European institutions – and specifically of any connection to budgetary policies, thus eliminating all risks of monetisation of public sector deficits. Second, its primary goal would be “to maintain price stability” (Article 127.1 TFEU). Other policy goals typically associated with central banks, such as supporting employment and growth and preserving financial stability, would only come into play once the primary goal was secured.

¹ Article 6 of Council Regulation (EU) No. 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions.

These premises stemmed from a widespread consensus, which had been building up over the previous decades among economists and policy-makers, whereby monetary policy could be seen as a ‘technical’ function of high complexity but ‘neutral’ for the real economy, once the risk of inflation was credibly eradicated from the economy by taking the money-printing press away from elected politicians (James, 2012).

Accordingly, the Treaty of Maastricht entrusted monetary policy to a separate entity possessing the required independence and technical expertise; its statute is an integral part of the Treaty, to which it is annexed as Protocol n. 4 (as from Article 129.2 TFEU). Since the Treaty can only be modified by unanimous consensus of the member states, under this institutional set-up central bank independence enjoys waterproof protection, even stronger than the Bundesbank under German law. All bonds with national fiscal policies were severed once and for all by moving the monetary policy function outside national borders, therefore making it utterly unreachable by national politicians. Absolute political independence and irreversible separation from national fiscal policy would offer private agents the credible institutions required to anchor inflation expectations.

Independence is further protected by the provision in Article 130 TFEU and Article 7 ESCB Statute whereby the ECB, the NCBs and the members of their decision-making bodies must not receive or seek instructions from Union institutions or national governments, by the long term of office (eight years non-renewable), and by the high personal and professional qualifications mandated for the members of the Executive Board.² National legislatures must ensure that NCBs enjoy similar independence, and that their governors are suitable persons appointed for at least five years.

Further safeguards against the risk of monetisation of sovereign debts were in the Treaty provisions prohibiting all types of monetary (‘overdraft’) financing of Union or government institutions by the ECB (Article 123 TFEU and Article 21 ESCB Statute); the ‘no-bailout’ clause (Article 125 TFEU) whereby Union institutions cannot take over the liabilities of any member state government and administrative body; and the excessive deficits procedure (Article 126 TFEU) for countries exceeding the twin limits on the public sector deficit (3% of GDP) and debt (60% of GDP).

As was mentioned, Article 127.1 TFEU and Article 2 ESCB Statute set price stability as the primary objective of monetary policy. They also provide that, without prejudice to this goal, the ESCB “shall support the general economic policies *in* [authors’ emphasis] the Union [and] shall act in accordance with the principle of an open market economy with free competition”.³ The definition of the inflation goal and the formulation of the monetary policy objectives and instruments of the single monetary policy of the eurozone belong to the Governing Council of the ECB, the main decision-making body of the Eurosystem.⁴

² Article 11 of the Statute of the ESCB. The Executive Board of the ECB includes the President, the Vice-President and four other members, appointed by the European Council acting by qualified majority.

³ The preposition “in” was inserted in the text by cautious negotiators before “the Union” to avoid reference to a common policy stance “of” the Union – which may eventually come into existence under Articles 119-121 TFEU and monetary policy might have to ‘support’. Cf. James (2012).

⁴ The Governing Council decides by simple majority (of the votes cast); each member of the Executive Board has one vote, and each national governor has one vote but the number of governors with voting rights cannot exceed 15. Since the member central banks exceed 15 (they are 19), a system of rotation has been established for the exercise of the vote by the governors, as required by Article 10.2 ESCB Statute.

Since monetary policy targets are determined with exclusive reference to domestic economic conditions, the exchange rate cannot be an explicit policy target, as this would undermine the stability-oriented stance of monetary policy.⁵ The exchange rate of the euro has become a residual variable, determined by the relative monetary stance expected to prevail *vis-à-vis* the main currency areas, notably the US dollar area.⁶

2. Monetary policy instruments

The implementation of the ECB monetary policy rests on two pillars (European Central Bank, 2011). The first pillar, the monetary policy strategy, determines the interest rate appropriate to achieving price stability. This is defined as a rate of inflation which over the medium term should remain “below but close to 2 per cent”.⁷ According to this definition, not only inflation above 2%, but also excessively low inflation or outright deflation (which is a self-sustaining fall in the Harmonized Index of Consumer Prices (HICP)), are incompatible with price stability. The target refers to the year-on-year increase in the HICP, an index – calculated by Eurostat in liaison with national statistical offices – that has been harmonised across the eurozone countries to closely approximate the price of a representative basket of consumer expenditure.

The ECB monetary strategy aims at firmly anchoring inflation expectations, based on a “consistent and systematic method for conducting monetary policy”⁸ with a medium-term reference time horizon, and clear and open communication to the public of its goals and the underlying analysis. However, while the inflation forecast is central in the policy analysis and discussions, both within the ECB governing bodies and public presentations, the ECB does not adhere to a formal inflation targeting strategy – entailing quasi-automatic reactions to deviations of forecast inflation from the target over a predetermined time horizon. Rather, it bases its actions on a more flexible strategy both as regards the economic variables taken into consideration and the relevant time horizon for responding to shocks in the economy. Thus, in assessing the appropriate response to a price shock or an emerging threat to price stability, the sources and the nature of the shock may entail different responses. In this context, the ECB has always included financial stability among the factors to be taken into consideration, owing to the potential impact of financial imbalances on output and price developments. Therefore, while there is no formal targeting of monetary aggregates, a

⁵ Under Article 219 TFEU, the Council – acting by unanimity on a recommendation of the ECB or the European Commission, in this case after consulting the ECB – may conclude formal agreements on an exchange rate system between the euro and other currencies. This, however, should never prejudice the ability of the ESCB to ensure price stability, and at all events does not appear as a likely occurrence under present international monetary and exchange arrangements.

⁶ An important motivation behind the common currency had been to eliminate once and for all exchange rate instability among its participants. In this regard, the breakdown of the European Monetary System (EMS) in 1993 was seen as conclusive proof that the new environment of high capital mobility and international financial integration was incompatible with a regime of stable but adjustable exchange rates, as had been the EMS.

⁷ The ECB Governing Council first announced the quantitative definition of the target for inflation in 1998, originally referring only to inflation “below 2 per cent”; the target was changed to “below but close to 2 per cent” by the Governing Council in November 2003. Cf. <https://www.ecb.europa.eu/mopo/strategy/pricestab/html/index.en.html>.

⁸ ECB (2011), p. 63.

monetary pillar in its strategy allows it to ‘lean against the wind’ of building imbalances, such as an excessive money and credit creation or asset price increases.⁹

The second pillar, the operational framework, is the set of instruments and procedures to achieve the desired interest rate. The ESCB Statute (Article 18) provides that, in order to carry out the tasks of the ESCB, the ECB and NCBs may:

- (i) buy and sell outright (spot and forward) or under repurchase agreements and lend or borrow any type of marketable instruments (therefore including sovereigns) in any currency as well as precious metals; and
- (ii) conduct credit operations with credit institutions and other market participants, with lending based on adequate collateral.

The credit institutions of the euro area are also required to maintain minimum reserves on their current accounts at the Eurosystem – currently, 1% of deposits and debt securities with maturity up to two years – with the twin purpose of stabilising money market interest rates¹⁰ and maintaining a ‘structural’ liquidity scarcity in the banks so as to strengthen the ECB’s ability to steer rates with open market operations.

The Governing Council may also decide, by a two-thirds majority of the votes cast, to use other operational methods of monetary policy “as it sees fit” (Article 20 ESCB Statute), while always respecting its primary goal of price stability. The decisions of the Governing Council on monetary policy instruments and procedures are formalised in the Guideline of the ECB, which is published in the Official Journal of the European Union.

In the Continental tradition of bank-based financial systems, the Eurosystem operations mainly consist of bank refinancing facilities, mostly in the form of *reverse* transactions granted against *eligible* collateral: up until the financial crisis, they comprised the short-term (MROs,¹¹ one week) and the long-term refinancing operations (LTROs, three months), fine tuning operations (non-standard duration, also including collection of fixed-term deposits and foreign exchange swaps), issuance of ECB debt certificates (to drain liquidity), and standing facilities at the disposal of banks to draw or deposit funds overnight to smooth liquidity (the marginal lending and deposit facility). Reverse transactions minimise the market and credit risks taken by the ECB. Once the financial crisis struck, special instruments and facilities were introduced, both for refinancing banks under stress for longer periods and for purchasing private and sovereign securities outright, as we shall see.

⁹ Under this approach, the ECB does not consider ‘pricking’ asset price bubbles as a viable strategy, but neither does it accept the view whereby central banks should stand aside and wait until an asset price bubble runs its course and then bursts (‘mopping after’), a strategy which can become a source of moral hazard and encourage excessive risk-taking by financial intermediaries and other leveraged investors. Cf. ECB (2011).

¹⁰ This is achieved by creating an incentive for institutions to smooth temporary liquidity fluctuations, thanks to the (daily) averaging provision for the calculation of the reserve requirements over the maintenance period. The averaging provision allows credit institutions to smooth out daily fluctuations in their liquidity since transitory deficiencies may be compensated by transitory excesses within the same maintenance period. This inter-temporal arbitrage possibility tends to equalise the shortest money market rates with their expected level at the end of the maintenance period. Maintenance periods are set by the ECB and currently last between six and seven weeks. Cf. https://www.ecb.europa.eu/press/pr/date/2014/html/pr140717_1.en.html.

¹¹ Main refinancing operations.

The MROs are the main monetary policy instrument, and the interest rate charged on these operations is the key official reference rate. The rate charged on marginal lending – available overnight for unlimited amounts (against adequate collateral) for eligible counterparties on their own initiative – and the rate paid on banks’ deposits in the standing deposit facility effectively set a ceiling and a floor, respectively, for the overnight money market rate, and hence the corridor within which this rate may fluctuate. The reference overnight market interest rate is the EONIA, or euro overnight index average of overnight rates in eurozone money markets, leaving room for other money market rates to adjust in response.

Eligible collateral is defined in a *single list* of assets, covering marketable and non-marketable instruments that fulfil uniform euro-wide criteria specified by the ECB (non-marketable instruments cannot be used for overnight operations). Eligible counterparties in the Eurosystem monetary operations are credit institutions subject to the system’s minimum reserve requirements and to supervision ‘of high quality’ by at least one national authority of a participating country.

The panoply of instruments is completed by the lines of Emergency Liquidity Assistance (ELA) established with the NCBs to assist individual banks facing temporary liquidity problems; therefore, these lines are in principle not available to insolvent banks – although distinguishing between illiquidity and insolvency may not be easy in the presence of a systemic shock to the banking system. Up until the inception of the SSM, the decision to intervene was left to the NCBs, except when there was a Troika assistance programme – in which case the ECB would also come in to assess the state of the banks. The collateral requirements were set by the NCBs, normally with less demanding standards than the ECB’s. These lending-of-last-resort functions were functionally related to the NCBs’ supervisory responsibilities, and as such not part of the single monetary policy. However, the ECB was to be fully and timely informed of their beneficiaries, size and timing; and the Governing Council could restrict these operations if it considered that they interfered with the monetary policy tasks of the Eurosystem (acting by a two-thirds majority of the votes cast).¹²

As may be seen, the Eurosystem possesses all the policy tools normally available to a central bank, with ample room for manoeuvre on how to deploy them. However, their actual use is subject to political constraints, reflecting the goals assigned to the Eurosystem by the Treaty. As we shall see, this became a source of serious difficulty when the Eurosystem had to confront the need to intervene as lender of last resort in the government bonds markets.

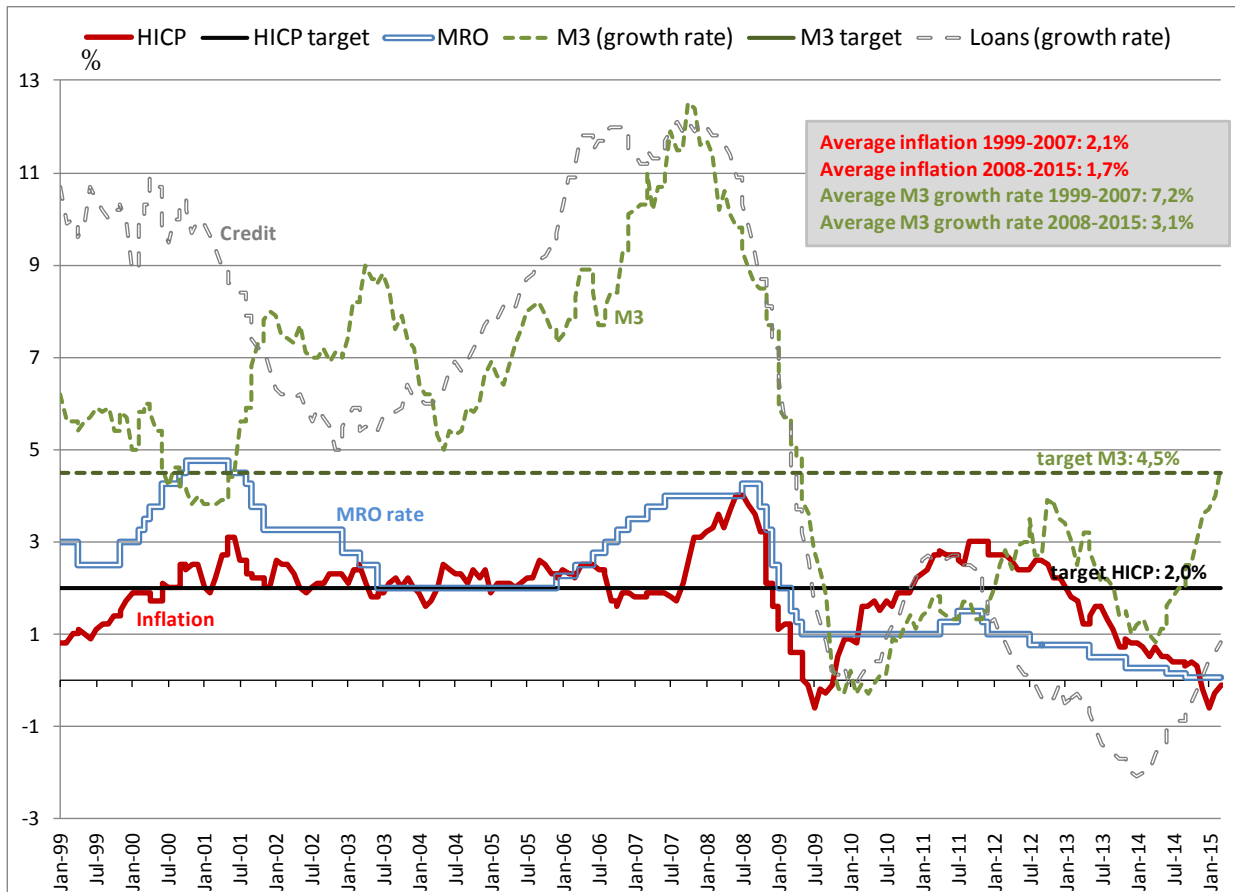
3. Overview of monetary policy in 2002-12

In its early years the ECB was fairly reactive to economic and financial developments (Figure 1). After an initial decrease, between November 1999 and October 2000 its MROs reference rate was raised in steps by 225 basis points, to a peak of 4.75%, as inflation increased from below 1% (in early 1999) to above 2% (and to over 3% in May 2001), in a world environment of accelerating growth and commodity prices. Then, in the early 2000s, large shocks hit the world economy, i.e. the dot.com stock market crash and the September 11 terrorist attacks in the US, throwing the world economy into recession. The ECB monetary stance became quite

¹² https://www.ecb.europa.eu/pub/pdf/other/201402_elaprocedures.en.pdf?e716d1d560392b10142724f50c6bf66a.

expansionary till late in the decade. Between early 2001 and June 2003 the ECB lowered its reference rate by 275 basis points, bringing it down to 2%, despite a concomitant sharp acceleration in its main reference monetary aggregate, M3;¹³ official rates were then left unchanged till the end of 2005, as economic activity was recovering slowly.

Figure 1. Inflation, MRO rate, money (M3) and credit growth



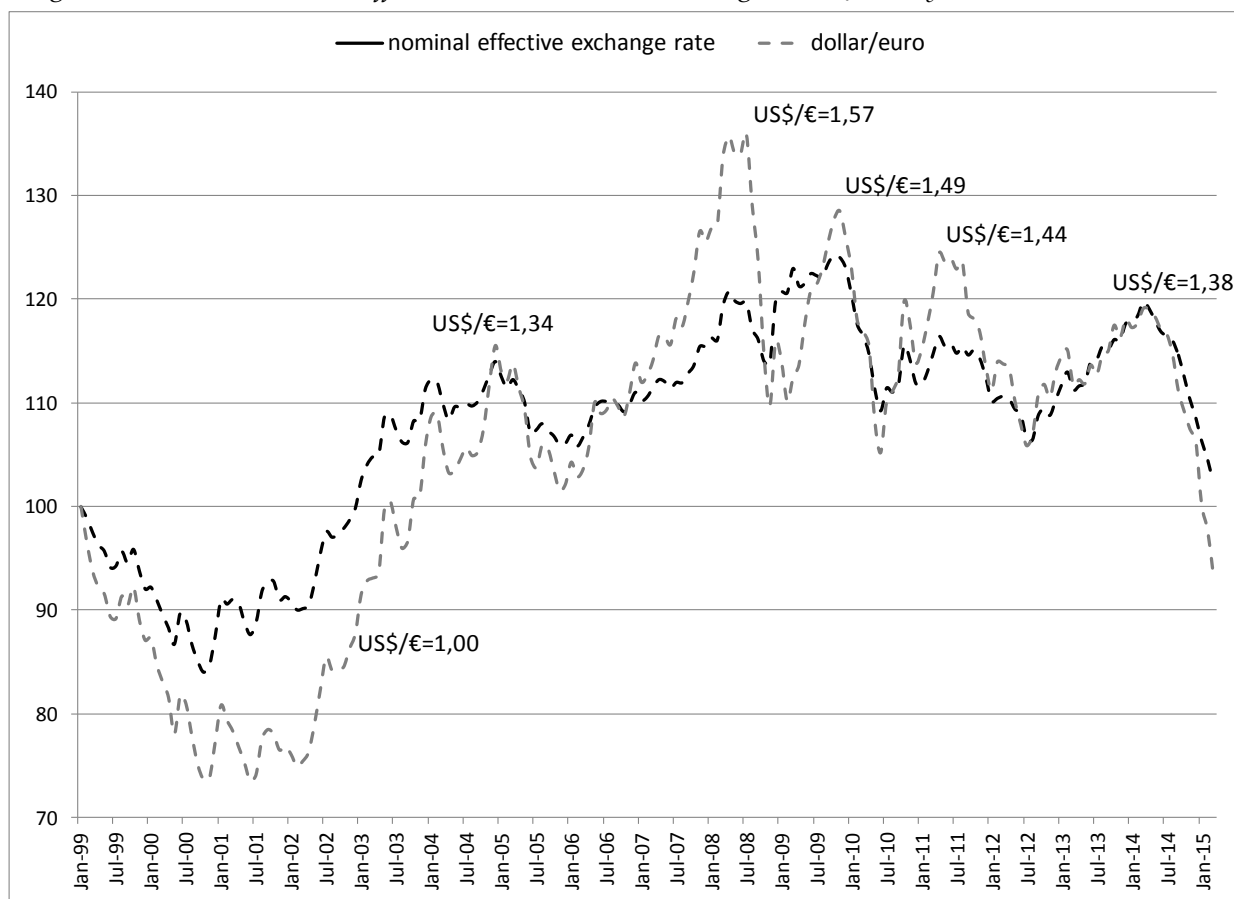
Source: ECB, Monthly data. Credit is defined by the ECB as lending by monetary financial institutions (central banks, banks, money market funds, and other intermediaries) to the private sector, adjusted for loan sales and securitisation.

All in all, until the summer of 2006 the monetary conditions were fairly lax: inflation tended to exceed the medium-term target of 2% and M3 growth remained on average well above the 4.5% indicative target announced by the ECB. On the other hand, beginning in April 2002 the euro appreciated – recovering to around parity (an exchange rate of one) with the dollar in the last quarter of 2002 (Figure 2) – hovering in the \$1.20-1.40 range from early 2004 to summer 2007, and then rising to close to \$1.60 in the ensuing three quarters. Meanwhile, GDP growth and wage inflation remained subdued. It would thus appear that the ECB was willing to condone ample liquidity, brisk money and credit growth, as long as the price stability target did not seem threatened, thanks also to the strong euro; easy money would

¹³ This acceleration was initially seen as mainly reflecting an increased liquidity preference by investors, achieved by reducing exposure to capital markets by means of asset sales, and not an emerging excess supply of money – as seemed confirmed by the concomitant deceleration of credit to the private sector, an aggregate closely watched by the ECB.

help the economic recovery and avoid adding steam to the euro appreciation. One is tempted to conclude that the TFEU provision whereby, once price stability is assured, the ESCB “shall support the general economic policies in the Union” (Article 127 TFEU) did not fall on deaf ears – which was fully in line with the Deutsche Bundesbank’s tradition.

Figure 2. Eurozone nominal effective and dollar/euro exchange rates (January 1999=100)



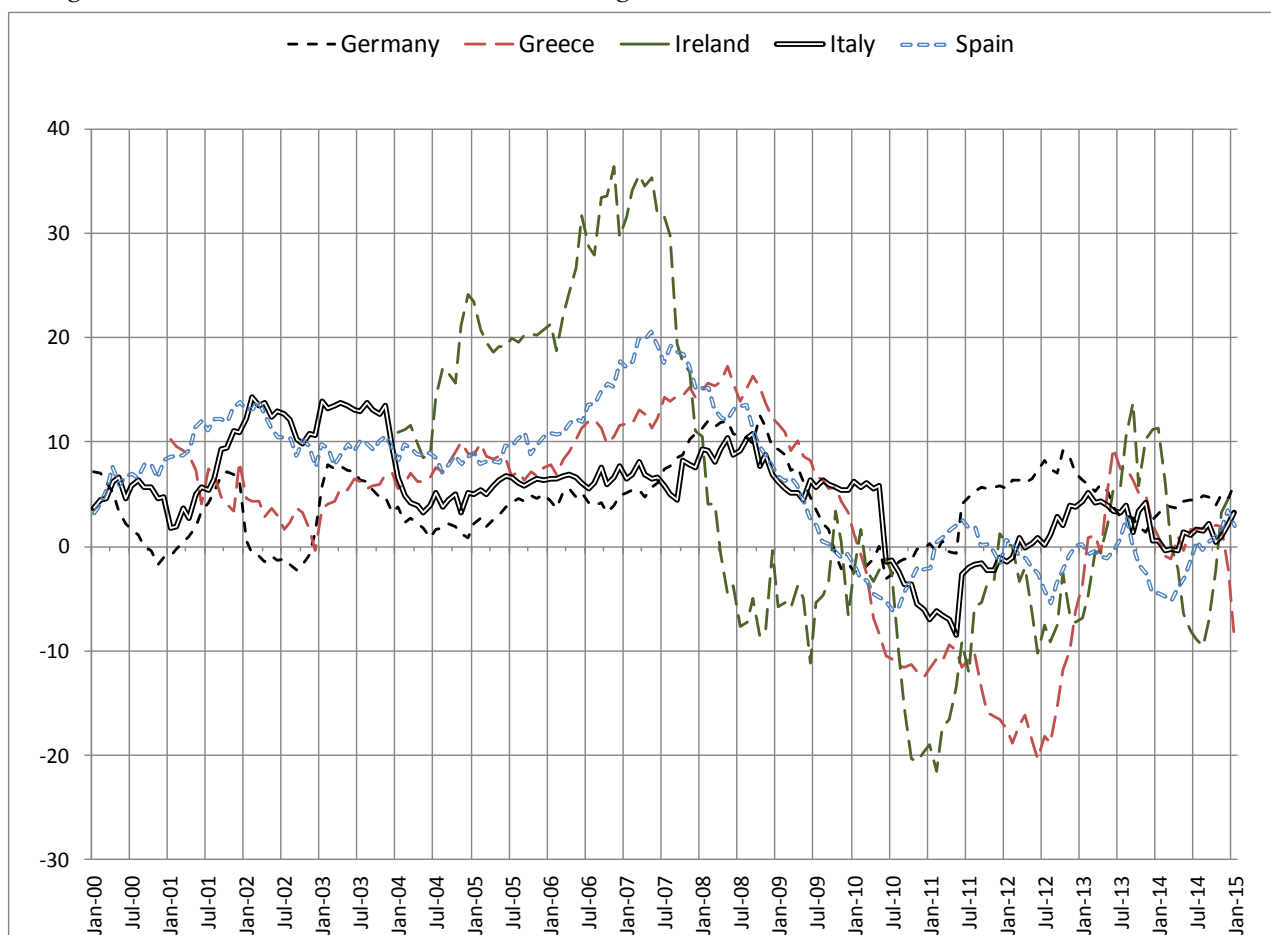
Source: Eurostat and ECB, monthly data.

A new round of rate increases was only undertaken around the end of 2005; between December of that year and July 2008, the main official reference rate was raised in total by 225 basis points, bringing it up to 4.25%. While money and credit growth slumped in the first half of 2008, the ECB was concerned by the pickup in headline inflation, which briefly surpassed 4%, mainly pushed by the increase in international oil and food prices, before falling rapidly with economic activity. This turn to increasing restriction – very much in line with the Federal Reserve on the other side of the Atlantic – was well under way when the Lehman Brothers failure hit the world financial system (September 2008), leading to a new turnaround in official rates, which by mid-2009 were brought down to 1%.¹⁴

¹⁴ In August 2007 the first sparks of tension to come from the emerging sub-prime crisis in US markets hit European financial markets, when French retailing giant BNP-Paribas announced the suspension of three of its funds (Parvest Dynamic ABS, ABS Euribor and ABS Eonia). The ECB reacted promptly by – for the first time – supplying ample liquidity (some €95 billion overnight in a few operations) on a fixed rate and full allotment basis, where demand of eligible counterparties was fully met.

An important feature worth stressing in these developments is the different evolution of monetary conditions in the core and the periphery of the eurozone. The national contributions to aggregate M3 growth in the eurozone, shown in Figure 3, display great variation. M3 was growing more rapidly in the periphery than in the core in the early years of the Eurosystem, and then fell more steeply after the inception of the financial crisis. In Ireland and Spain there was a real credit-driven boom that lasted till summer 2007, and then a steep fall lasting through 2012; in Greece buoyant growth of M3 lasted till September 2008, the ensuing contraction through summer 2012. In all these cases, the Greek crisis prompted a 'double-dip' recession more or less lasting till mid-2012. In Italy the impact of the initial 'Lehman shock' on M3 was moderate, but then there was a larger double-dip decline in 2011, as the country became entangled in the sovereign debt crisis. In Germany, on the other hand, the initial shock on M3 growth, while not negligible, was considerably less intense than in the periphery, and positive rates of growth returned already in mid-2010. Some deceleration is observed during the most acute phase of the sovereign debt crisis, from the second half of 2011 to the first half of 2012, but even then M3 growth always stayed positive.

Figure 3. National contributions to M3 (annual growth rates, %)



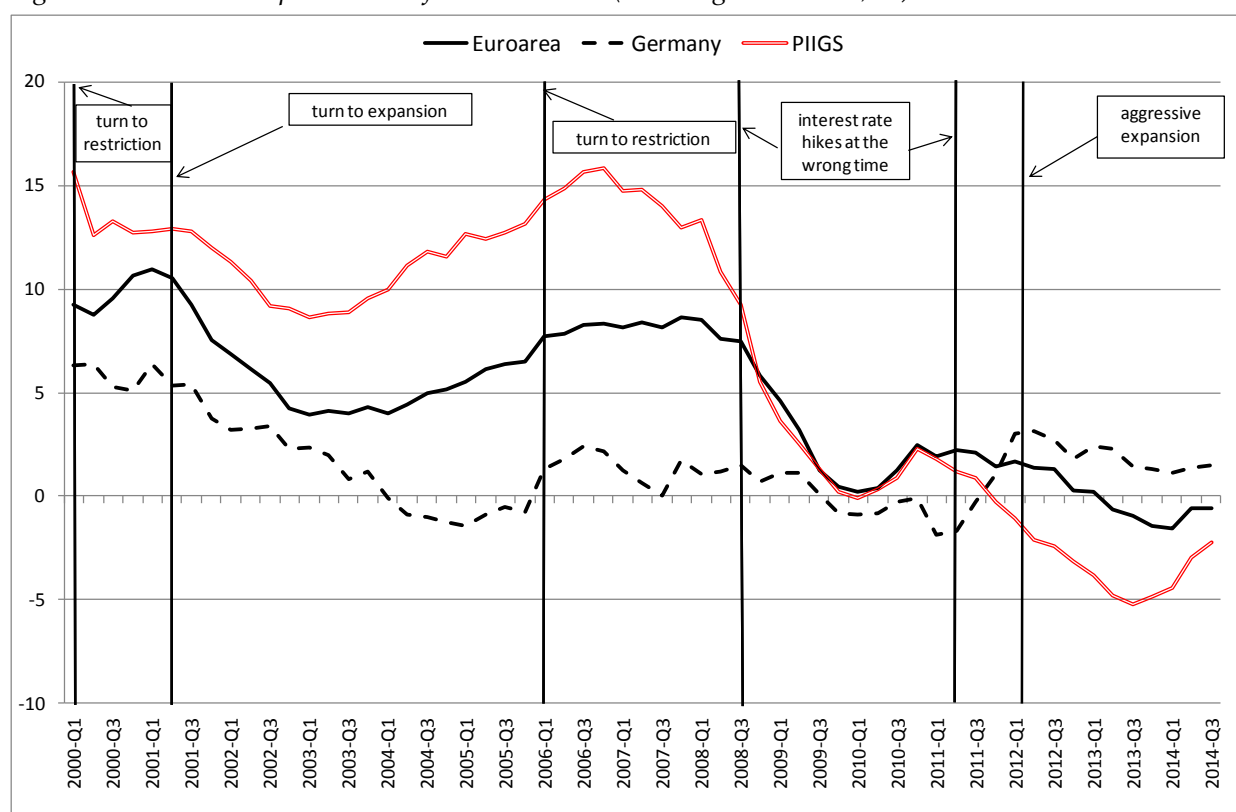
Source: National Central Banks, monthly data.

In Figure 4 we show aggregated credit growth data for the eurozone and the PIIGS,¹⁵ together with Germany. Credit is important, as the ECB monitors this aggregate very closely,

¹⁵ 'PIIGS' are Portugal, Ireland, Italy, Greece and Spain.

as an indicator of the underlying forces driving monetary growth. As could be expected, the PIIGS curve displays much larger variations than the German curve in 2003-07 (expansion) and 2008-09 (contraction), and then a double-dip fall after the explosion of the Greek crisis. Figure 4 confirms that in 2003-05 the monetary stance was lax for the PIIGS, but probably consistent with the need to tackle the subdued recovery in the German economy, well reflected in the weak demand for credit in that country (but in Germany and France many complained that real interest rates were too high). In turn, the Greek crisis had only a limited impact on credit growth in Germany, which came back into positive ground already in 2011 and stayed well above the eurozone average in 2012. We have highlighted in the figure the main turning points in the ECB policy stance, which clearly respond to monetary development in the centre, but on occasion seem less felicitous in view of the periphery economic conditions. For instance, the turn to restriction in 2006 does not arrive till credit accelerates in Germany, but probably too late to slow excessive credit growth in the periphery. In two instances, in 2008 and 2011, the ECB raised interest rates at the wrong time, in view of rapidly falling credit growth in the periphery, but probably consistent with developments in Germany. Similarly, the decline in interest rates in 2011 and 2012 was less aggressive than would have been justified by plummeting credit growth in the periphery.

Figure 4. Credit to the private non-financial sector (annual growth rates, %)



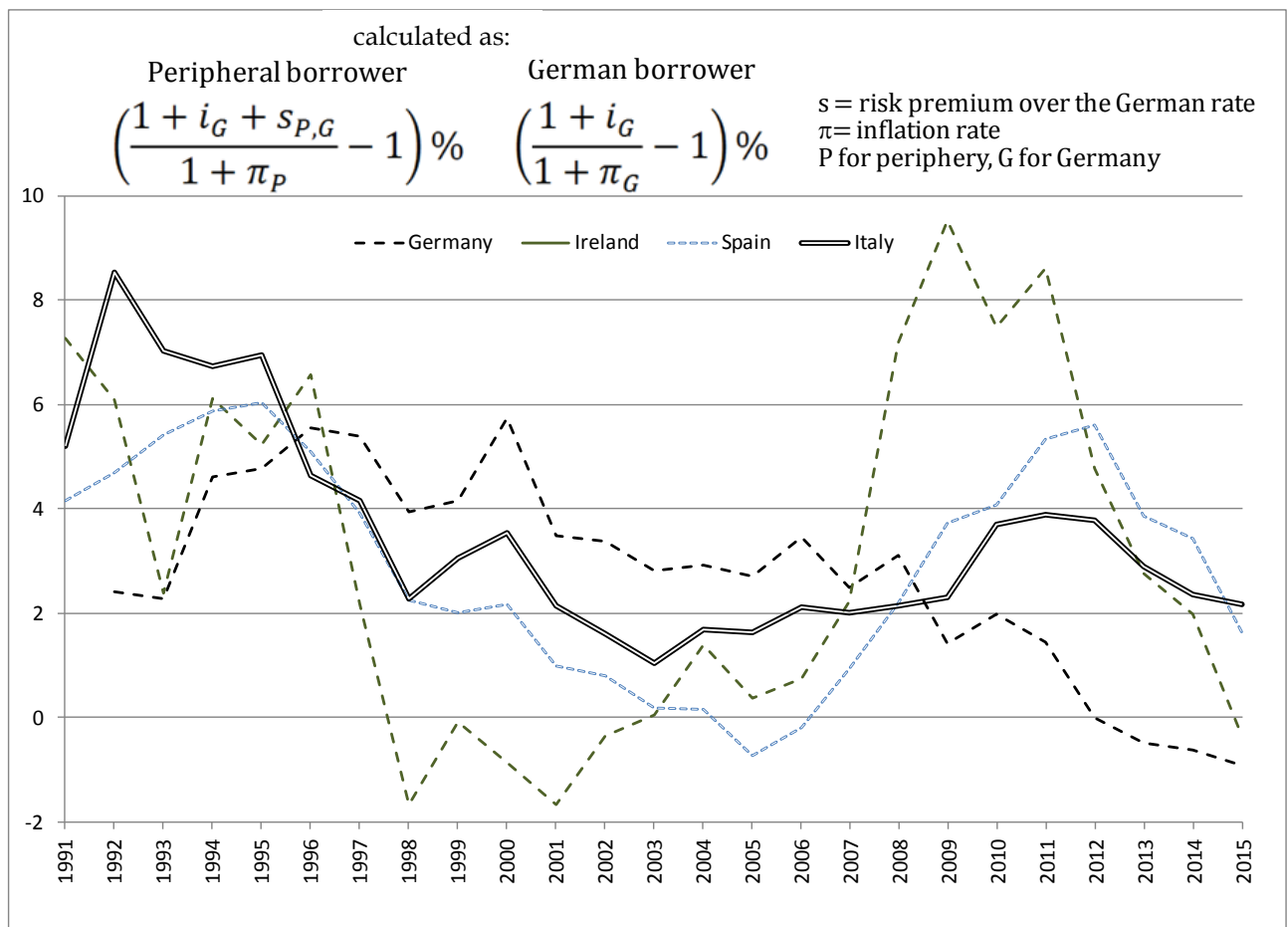
Source: BIS, quarterly data. Credit is defined as total credit from all lending sectors to non-financial corporations, households and non-profit institutions serving households. The PIIGS aggregate is calculated based on country shares in total GDP.

These developments highlight the difficulty of managing diverse economies with one monetary policy. The eurozone economy is segmented along national lines by market rigidities of various sorts that lead to persistently divergent inflation rates; rather than bringing them more in line with one another, in its early years the single monetary policy has

accommodated and fuelled the divergence (Goodhart, 2014). But then, after market sentiment turned around and financial investors started to doubt the sustainability of sovereign debts of certain eurozone members, monetary and financial conditions in the periphery became overly restrictive and combined with budgetary austerity in aggravating the fall in economic activity.

This divergence is highlighted by the evolution of real interest rates on long-term (10-year) government bonds (Figure 5), which is determined by three components: the level of (nominal) German interest rates – the nominal anchor – a risk premium reflecting investors’ assessment of the future evolution of government budgets and economic fundamentals in the other (peripheral) eurozone members, and national inflation rates. The paramount role in determining real interest rates was in practice played by the risk premium, which at some point for some peripheral countries came to incorporate the risk of sovereign default *cum* ‘redenomination’ of national debts, i.e. of exit from the euro.

Figure 5. Real long-term interest rates (%)



Source: Ameco and OECD, annual data.

As may be seen, real interest rates in the periphery fell below the German interest rate already in the late 1990s, as the risk premium fell abruptly in anticipation of the inception of the euro – which initially removed as if by a stroke of a pen the risk of exchange rate depreciation and possibly also, in investors’ eyes, of peripheral sovereign debts. A further contribution to the decline in real interest rates in the periphery came from the acceleration

of relative inflation, earlier on more strongly in Ireland, then in Spain (the housing boom) and in Italy (due to wage inflation and decelerating productivity). In Ireland (already since the late 1990s and up until 2004) and in Spain (in the mid-2000s) real interest rates fell below zero.

Then market sentiment turned around. In Ireland and Spain, where real and financial imbalances had been building up intensely, they started to rise steeply even before the Lehman crisis, in Italy mostly after the inception of the Greek crisis. In all instances, the reassessment of the risk of investing in the peripheral countries was dramatic, bringing about much higher real interest rates at the very time when the economy started to plunge and fiscal policies turned increasingly restrictive. Cross-border interbank funding and wholesale money markets seized up, basically impairing the functioning of banking and securities markets in a number of peripheral countries and aggravating the credit crunch. The transmission mechanism of monetary policy all but ceased to operate.

In Germany, on the other hand, real interest rates came down gently to support economic activity in the mid-1990s, went down even more as the economy weakened after the Lehman shock, and then even moved into negative territory, indicating strong monetary stimulus, to counter persistent recessionary and deflationary forces taking hold of the economy.

Thus, in view of prevailing economic conditions, it appears that monetary policy was about right in the core of the eurozone during much of the past decade but was strongly procyclical in the periphery, where it accommodated and indeed fed the build-up of imbalances up until the mid-2000s, and then amplified deflationary forces after the inception of the financial crisis. Of course, the fact that on average the monetary stance reflected largely developments in the core countries is neither surprising nor unreasonable, given their weight in the eurozone total economy (about 70%), but it does entail some unpleasant consequences for monetary and financial stability within the eurozone.

As has been shown, the divergence in monetary conditions was driven by the risk premium demanded by investors to hold the sovereign debt of the periphery – too little up until 2007, too large after the inception of the Greek sovereign crisis in 2010. The reasons have been well explained by De Grauwe (2011a and 2011b). In a monetary union without fiscal union, such as the eurozone, national governments issue bonds, as it were, in a ‘foreign’ currency, since individually they have no control over its availability to counter a liquidity crisis in their sovereign debt market. The absence of such a guarantee makes sovereign bond markets prone to liquidity crises and contagion, very much like banking systems lacking a lender of last resort.

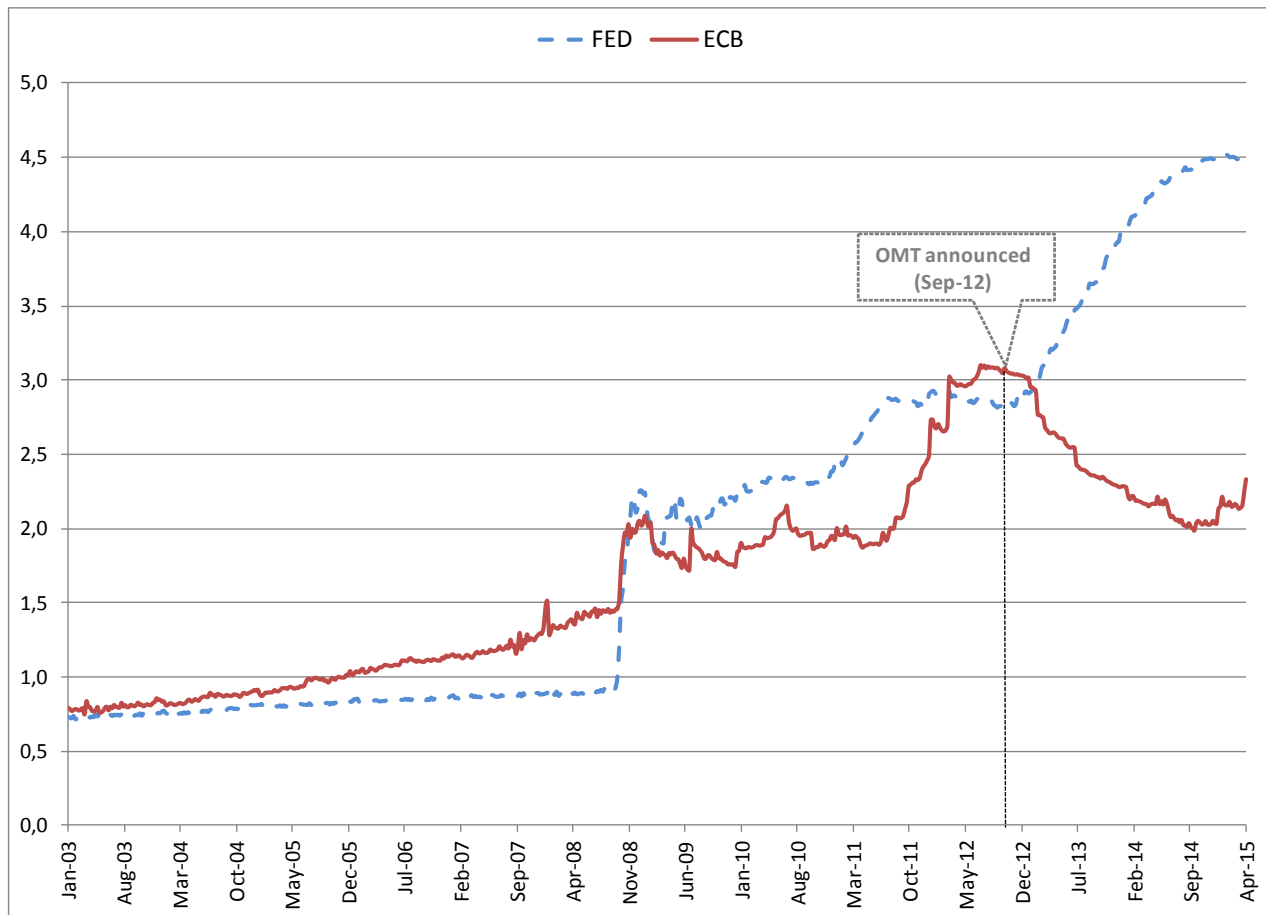
When the Greek sovereign debt crisis surfaced in spring 2010, investors started to fear that other sovereigns might have difficulties in serving their debt. Investors’ apprehensions were dramatically aggravated by a new policy – announced in Deauville in October 2010 by Chancellor Merkel and President Sarkozy – requiring the involvement of the private sector (PSI) in any sovereign restructurings. The new policy was first implemented on the occasion of the second Greek rescue package (summer-fall 2011), leading to large losses by private investors. As investors fled sovereign debt markets and contagion spread to other peripheral countries, interest rates on some sovereigns rose to levels such that their solvency was called into question. This ‘bad equilibrium’ was not the result of a sudden deterioration of peripheral governments’ budgetary positions, but simply of a perverse turn of investors’ expectations driven by fears that the ECB might not be able or willing to intervene to restore

orderly liquidity conditions in distressed markets. The question of the ECB role as lender of last resort in sovereign debt markets had come to occupy centre stage.

4. The ECB responses to financial shocks

There were two distinct phases in the financial crisis in the Eurozone. In 2008-09 the post-Lehman shock emanating from US capital markets was met without special strains in internal cohesion – as reflected in only mildly widening spreads between Eurozone markets (Figure 5). Just like the Federal Reserve and the other main central banks, the ECB reacted by lowering interest rates and massively expanded its refinancing operations for the banking system. Its lending of last resort operations with the banking system were massive and effective, with little disagreement within the Governing Council.

Figure 6. The balance sheet of the Federal Reserve and the ECB (2003-15; trillions of dollars or euros)



Source: ECB and FRED (Economic Data, St. Louis FED), weekly data.

Between October 2008 and May 2009 the ECB cut its main refinancing rate by 325 basis points, down to 1%. It also adopted a number of *credit enhancement* measures to mitigate the impact of collapsing wholesale and interbank markets. Starting in October 2008, the MROs and LTROs were granted on a full allotment and fixed rate basis, so that all demand for liquidity would be satisfied at a stable cost as long as adequate collateral was available. The maximum maturity of LTROs was raised first to six and then (May 2009) to 12 months (three LTROs, taken up for over €500 billion). The ECB also launched its first Covered Bond Purchase Programme (CBPP1) in order to revive a market normally representing a primary source of funding for European banks, which had dried up in terms both of liquidity and issuance; under the programme it purchased some €60 billion of securities. Collateral requirements were repeatedly eased by lowering the minimum acceptable rating and extending the list of eligible paper. The balance of the ECB shot-up to over €2 trillion (Figure 6).

Financial tensions then started to ease until, early in 2010, the Greek sovereign debt crisis unsettled market conditions by raising increasing doubts among investors as to whether the country, and possibly other highly indebted countries, would be pushed into default and perhaps out of the euro.

In order to tame extreme market turbulence, in May 2010 the ECB launched its Securities Market Programme (SMP) – its first foray into distressed sovereign bonds markets – under which it would buy unspecified amounts of sovereign bonds in secondary markets “whose depth and liquidity were impaired” (Eser & Schwaab, 2013); the interventions were to be sterilised by offsetting sales of interest-bearing deposits to the banking system so that the monetary policy stance would not be affected.¹⁶ The ECB did not disclose the total amount that would be spent, a time frame for the purchases, and the set of securities to be targeted, which in all likelihood much weakened their market impact.

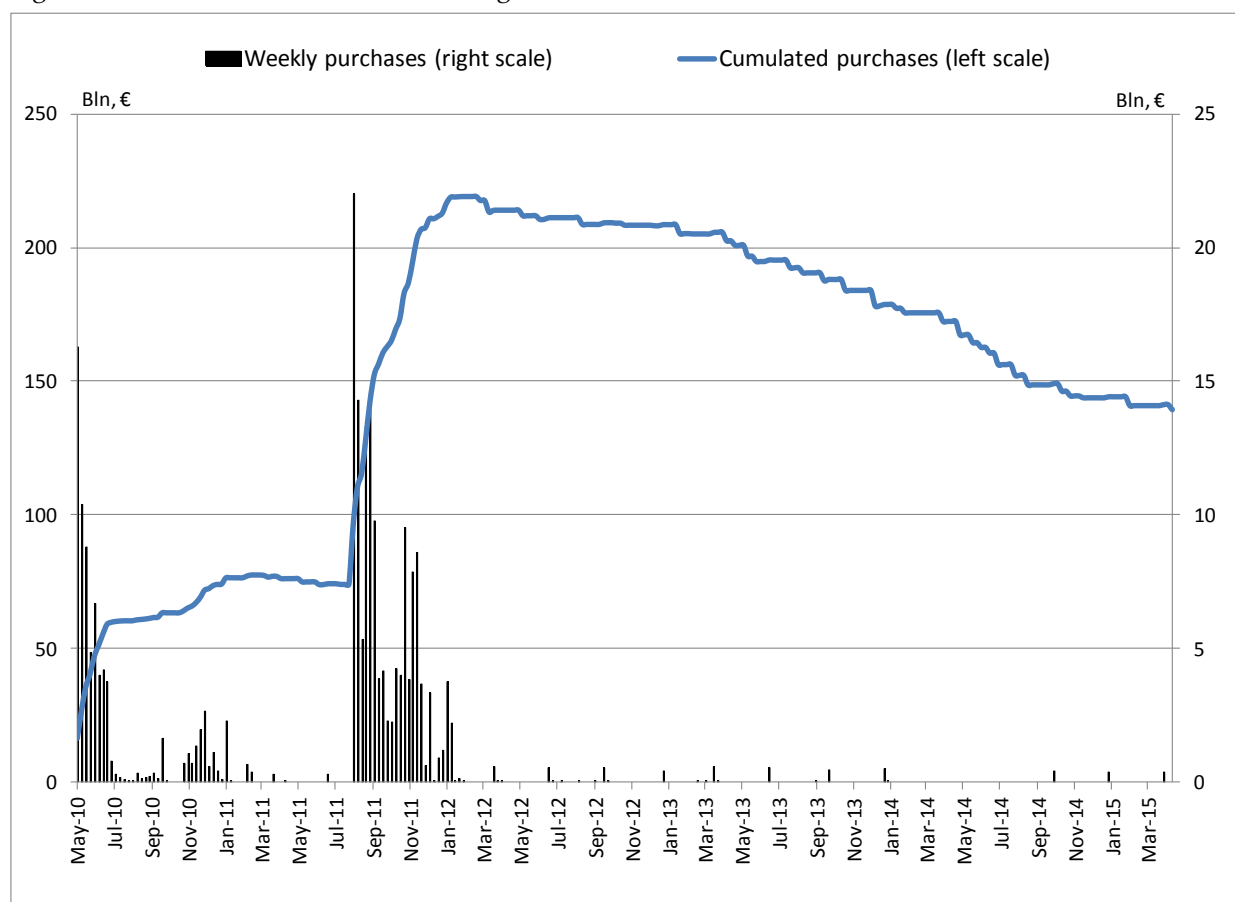
The purchases under the programme were by and large concentrated in May-June 2010 and August-November 2011, and the programme was inactive for long stretches of time (Figure 7).¹⁷ It was interrupted in March 2011, apparently in retaliation after the European Council failed to agree on granting the nascent European Stability Mechanism (ESM) the power to intervene in the sovereign bond secondary markets, to the utter dismay of the ECB (Bastasin, 2015).

It was resumed in August, with sizeable purchases of Italian and Spanish sovereigns, with some positive effects on spreads in unsettled market conditions, but was again suspended for Italian sovereigns as it became clear that the Berlusconi government was not delivering on its promised economic reforms. In September 2012 the programme was discontinued and was substituted by the Outright Monetary Transaction (OMT). Under the SMP, the ECB came to hold a maximum of €220 billion of securities, which were gradually reduced as tension eased (to €138 billion as of May 2015). In October 2011, at the height of tensions on Italian and Spanish sovereign markets, the ECB also announced that it would buy an additional €40 billion of covered bonds (CBPP2).

¹⁶ Cf. 5 October 2010 ECB press release (www.ecb.europa.eu/press/pr/date/2010/html/pr100510.en.html).

¹⁷ See Eser & Schwaab (2013) and Fawley & Neely (2013).

Figure 7. The ECB Securities Market Programme



Source: ECB.

In fall 2011, as a predictable reaction to the Greek PSI, the sovereign crisis started to mutate into a banking crisis, as investors eyed the potential repercussions of a sovereign default on the solvency of banking institutions with large exposures to sovereign risks; the emerging banking crisis in turn worsened the market assessments of sovereign solvency, as investors factored in the prospect of further capital injections by governments into the banking system to keep banks afloat. The *doom loop* between sovereign and banking crises had set in. Soon the major agencies started to downgrade in parallel the ratings of sovereigns and banks, adding to market strains; interbank and wholesale money market funding to banks in the periphery seized up. The crunch was aggravated by the ill-timed decision by the EU Heads of State and Government (in October 2011, acting on a proposal by the EBA) to require banks to raise their capital to a 9% regulatory ratio,¹⁸ entailing increased capital requirements of about €100 billion.

In a rapidly deteriorating environment, the ECB rushed to accommodate the funding needs of banks. The minimum reserve requirement was lowered from 2% to 1%. In addition, the ECB launched two 'very-long-term' refinancing operations (VLTROs) – in December 2011 and February 2012 – with a maturity of three years; the amount drawn totalled over €1

¹⁸ Cf. Statement of EU Heads of State or Government, Brussels, 26 October 2011 (www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/125621.pdf).

trillion, with the largest share going to Italian and Spanish banks (which in turn used it to some extent to expand their portfolios of national sovereigns, thus earning the large spreads between ECB financing and distressed sovereigns). The balance sheet of the ECB shot up (Figure 6).

The state of distress and mutual mistrust within the banking system was reflected in Eurosystem banks parking close to €600 billion with the ECB to maintain a cushion of liquidity rather than lend it. New measures were also adopted to relax the constraints on eligible collateral, in response to the progressive reduction of sovereign ratings to non-investment grade (sovereign paper plays a crucial role in providing the banks with collateral when they borrow from their NCBs).¹⁹

At this very time when the crisis was heating up, in spring and summer 2011, the ECB twice raised its reference rate (altogether by 50 basis points) to counter accelerating inflation and rapid credit growth in Germany and other core countries. The infelicitous move was reversed before the year's end.

Rather than subsiding after the large injections of liquidity by the ECB, tensions continued to build in the first semester of 2012. Government bond yields in a number of eurozone countries reached new heights, increasingly incorporating a 'redenomination' risk premium, i.e. the possibility of some participants being forced to leave the euro. Eventually, the prospect of collapse of the entire eurozone led the European Council and the Euro-summit in June 2012 to launch the banking union project, designed to break the bank-sovereign doom loop; while the German government let it be known that the exit of Greece from the eurozone was no longer an option.

Against this background, on 26 July ECB President Mario Draghi stated in a speech to investors at Lancaster House, in London, that the ECB was "ready to do whatever it takes to preserve the euro".²⁰ This was followed, early in September, by the announcement of the OMT programme, under which the ECB and NCBs would be prepared to intervene for unlimited amounts in secondary sovereign-bond markets of specific eurozone members, with no pre-specified time limit. With this announcement, *de facto*, the ECB set itself as the lender of last resort standing behind eurozone sovereigns in case of large idiosyncratic financial shocks. These interventions, however, would only be initiated after the country concerned had signed up to an economic programme with the European Financial Stability Facility (EFSF) or the ESM, entailing "strict and effective conditionality".²¹

¹⁹ The ECB Governing Council reacted initially by exempting the government bonds and the private sector securities guaranteed by those governments from the minimum rating requirements on a case by case basis; then, in May 2013, the ECB generalised these exemptions by waiving the rating requirement for countries supported by, and compliant with, an EU-IMF adjustment programme. Rating requirements for ABS, which had not been touched in the first wave of collateral enhancement in 2008, were lowered from Triple A to Single A (December 2011), and then to Triple B (one notch above non-investment grade, June 2012) for a broad range of securities backed by residential and commercial mortgages, loans to SMEs, car loans, leasing and consumer loans. In December 2011 the ECB also adopted an Additional Credit Claims Framework under which individual NCBs were allowed to accept, at their own risk, credit claims of even lower quality, provided they specified their own eligibility criteria and had them approved by the ECB. Seven NCBs made use of this option, notably including the Bank of France and the Bank of Italy.

²⁰ www.ecb.europa.eu/press/key/date/2012/html/sp120726.en.html.

²¹ M. Draghi (2012), Introductory statement to the press conference, Frankfurt am Main, 6 September (www.ecb.europa.eu/press/pressconf/2012/html/is120906.en.html).

This can take the form of a full macroeconomic adjustment programme or, under certain conditions, of a ‘precautionary’ programme; in either case it must include the possibility of primary market debt purchases by the EFSF/ESM.²² Some analysts have considered that this clause may cast a shadow over the credibility of OMT, as it could be difficult to activate it in practice, e.g. in the presence of a banking crisis requiring swift action (De Grauwe, 2013; Wyplosz, 2013). The possibility of a precautionary programme may offer a way out, but requires the government’s willingness to sign up to a memorandum of understanding on adjustment measures with the ESM well before the country has its back against the wall – something only far-sighted politicians may be willing to do. Fortunately, the programme implementation was never tested and financial markets took the ECB announcement at face value.

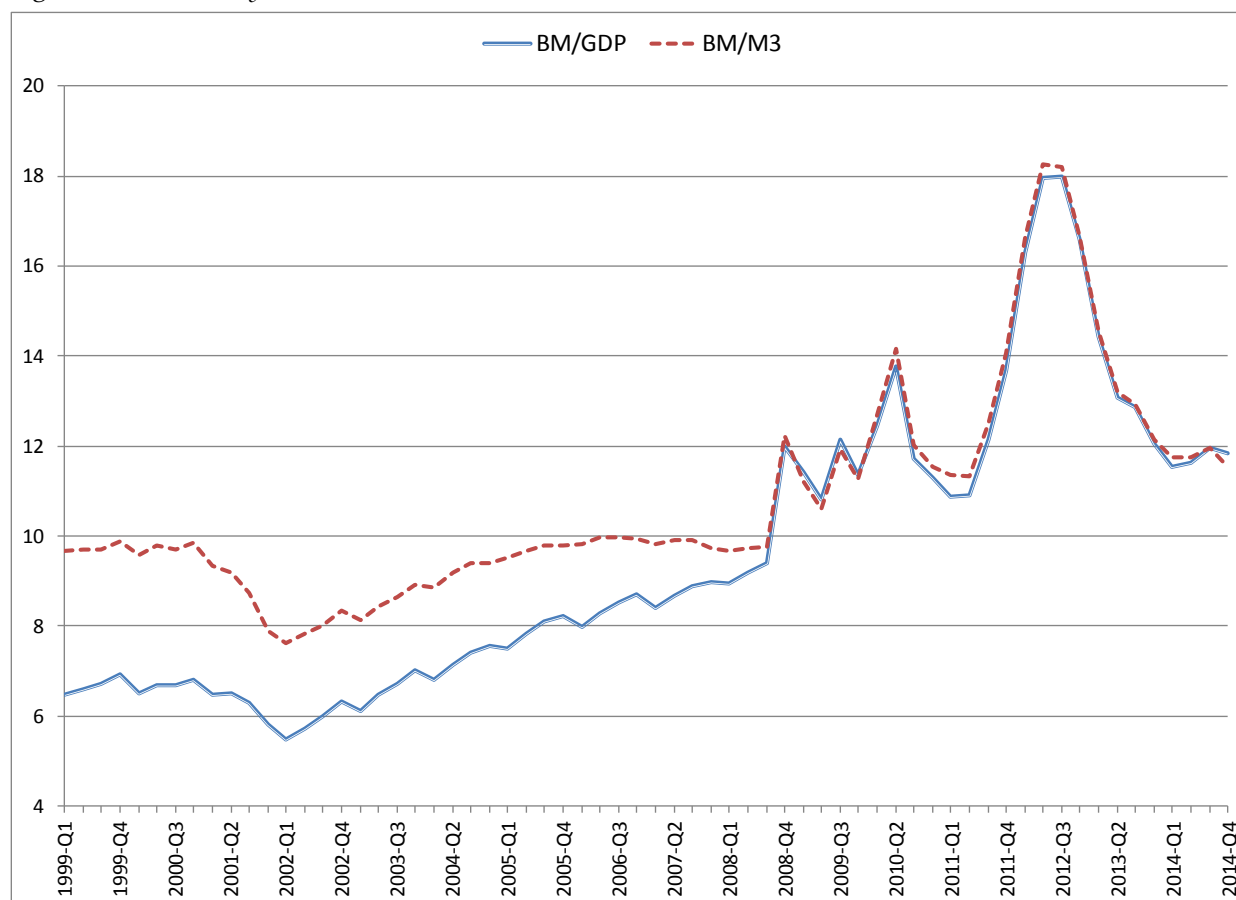
Gradually, spreads on distressed sovereigns started to come down and the cross-border funding flows for peripheral banks came back to life. Thus, the OMT really marked a turning point in the eurozone sovereign debt crisis – confirming beyond all doubt that the sovereign and banking crisis post-2010 really had been the product of ill-designed monetary institutions, rather than reckless budgetary policies of some member states.

Financial fragmentation started to recede, but not entirely owing to lingering doubts about the strength of banks’ balance sheets and the legacy of non-performing assets left by the crisis. This problem was to be further addressed by the banking union, legally in force since the end of 2014, and its attendant comprehensive review of the balance sheets and business models of the banks to be supervised by the ECB.

Figure 8 can shed some light on the impact of the ECB extraordinary measures to beef up the system’s liquidity and their impact on monetary base. In the early years of the euro the ratios of base money to GDP increased, probably reflecting the large increase in financial intermediation (*financialisation*), while the ratio between base money and M3 was stable (with some cyclical changes early in the decade). With the crisis, the two curves fluctuated in tandem, while the underlying ratio between M3 and GDP stayed fairly stable (see also Goodhart, 2014). Since the ECB was passively accommodating banks’ demand for liquid reserves (with the adoption of the fixed rate-full allotment system in MROs), the swings in the two curves must reflect swings in banks’ liquidity preference, and therefore do not entail much change in monetary conditions. As may be seen, the swings in banks’ demand for monetary base were much larger in 2010-12, when interbank and cross-border funding almost dried up in the periphery, than in 2008-10 (the post-Lehman shock), highlighting the intensity of the confidence crisis engendered by the Greek sovereign debt crisis and the critical role of the ECB extraordinary measures in avoiding a financial meltdown.

²² As may be recalled, precautionary financial assistance by the ESM is meant to support sound policies and prevent crisis situations by intervening before the member state faces difficulties in accessing capital markets.

Figure 8. Base money (BM): ratios to GDP and M3 (%)



Source: ECB.

Some important developments also worth mentioning concern ELA, the emergency support lines available to NCBs to individual banks confronting a temporary liquidity crisis (but deemed to be solvent). As already mentioned, this support is decided by NCBs, but requires an ECB authorisation, which may be denied or limited when the Governing Council considers that such financing may affect the conduct of monetary policy. Absent official statistics, private estimates indicate substantial recourse to ELA in 2010-12 by Greece and Ireland (and to a lesser extent by Belgium and later by Cyprus), but in the main this stayed consistent with the statutory goal of supporting individual banks (albeit perhaps of dubious solvency).²³

A different scenario has unfolded in 2015 when, in the context of difficult negotiations between the newly elected Greek government led by the radical leftist party Syriza, the suspension of the bail-out programme obliged the ECB to exclude Greek sovereigns from the list of securities acceptable as collateral. The ECB had no alternative, since the general waiver on sovereign collateral that it may grant when there is an economic adjustment programme could no longer apply. As a result, central bank funding for Greek banks could be made available only under ELA; and access was permitted only up to a tight cap decided by the Governing Council and modified on a weekly basis. Thus, *de facto*, the ELA facility has

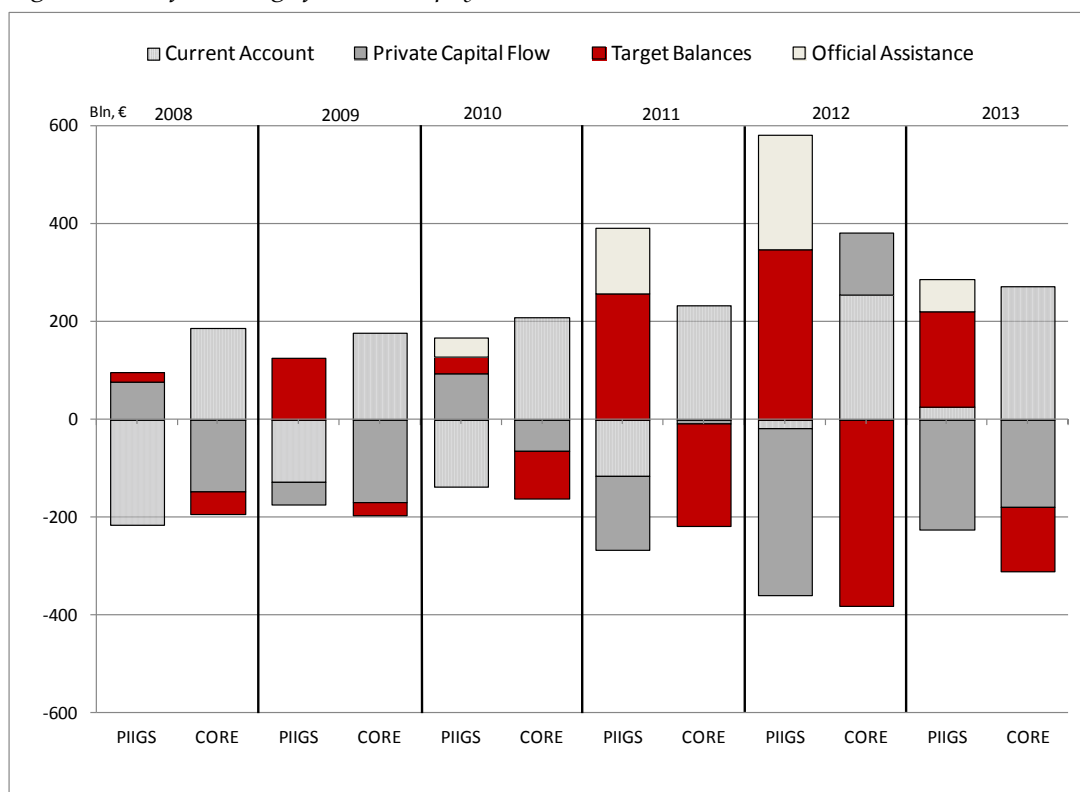
²³ Wolff (2014).

become an *aggregate* emergency funding facility, with the ECB maintaining a tight lid on access in light of evolving negotiations on corrective economic policy measures between Greece and European institutions.

A final feature worth stressing in the institutional set-up of the Eurosystem made visible by the crisis has been the emergence of large net creditor and debtor positions of NCBs *vis-à-vis* the ECB, i.e. the so-called 'Target' balances. Target is the settlement system for euro transactions between the banks of the eurozone, which are channelled through the NCBs and therefore give rise to net creditor and debtor positions of the NCBs at the ECB (Sinn, 2014). When the sovereign debt crisis struck, and private cross-border financial flows to the eurozone periphery came to a halt, to an extent Target became the compensating financing item in the external accounts of eurozone peripheral members with current payment deficits, buying time for their reduction and relaxing the credit constraint, as may be seen in Figure 9. In 2011 and 2012, Target provided much of the financing of balance of payments disequilibria, together with official assistance by the EFSF and the IMF.

The counterpart to these financial flows were large increases in creditor balances of Germany and other core countries, which in the meantime were experiencing large surpluses in both the current and the private capital accounts. In 2013 intra-eurozone current imbalances basically disappeared, but peripheral countries still had to confront substantial net private capital outflows; Target financing and official assistance continued to fill the gap. With the sole exception of Greece, resort to Target and official assistance by peripheral countries subsided in 2014, as financial market conditions normalised after the introduction of OMT.

Figure 9. The financing of eurozone payments imbalances (2008-13)



Note: Core countries are Germany, Luxembourg, Netherlands and Finland.

Source: CESiFo database for Target 2 and Eurostat for current account; IMF, EFSF/ESM for official assistance programmes; net private capital flows are calculated as in Merler & Pisani-Ferri (2012).

Two remarks are in order. First, when a eurozone member comes under attack, private capital may flow out through the Target channel without penalty, as long as national banks do not run out of eligible collateral to bring to their NCBs, or the country introduces capital controls (as in the Cyprus crisis). This is the channel through which private creditors of Irish, Greek, Portuguese and Spanish banks managed to get out largely unscathed even after private channels of intermediation had effectively closed.

Second, as a result of the developments that have been described, creditor countries found themselves with large claims on the ECB, over €1 trillion, almost exactly corresponding to the debt accumulated with the ECB by the struggling periphery (Sinn, 2014). Later on, as the current external deficits were eliminated and private financial flows cross-border resumed, the accumulated Target imbalances came down but have not been fully reabsorbed; to an extent their reduction has reflected the disbursement of financial assistance under the EFSF/ESM adjustment programmes, rather than the reversal of underlying financing flows.

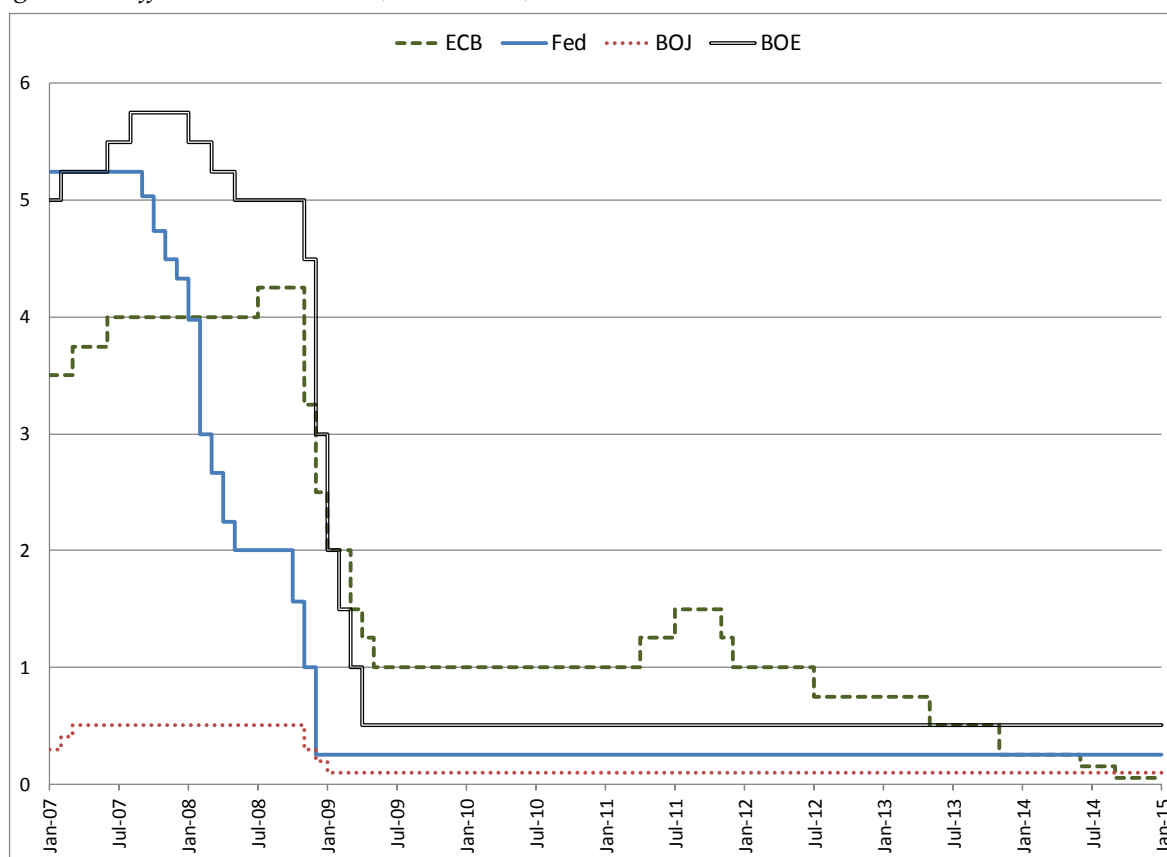
In fact, once they have been accumulated, Target balances remain open and there is no settlement mechanism; for the sake of comparison, it may be recalled that in the US system, Target-like balances in the payment system must be settled at least annually. As a consequence, Target entails a measure of risk-sharing, since in case of the default of a eurozone member, the losses will be borne by the remaining members through their share in the ECB capital (Sinn, 2014).

5. Setting the stage for unconventional policies

The speech by President Draghi at the Central Bank Symposium in Jackson Hole in August 2014²⁴ marked a new turn in ECB policies, one could say from passive monetary accommodation of the gyrations in the demand for liquidity by the banking system to active expansionary push, a development not only unprecedented in the short history of the institution, but also unthinkable under the orthodox view nurtured in the Bundesbank. Resistance to active expansion within the ECB Governing Council had been strong all along, and it is well reflected in the systematically slower pace of official interest rate reductions relative to the other main central banks from 2009 almost to the end of 2013 (Figure 10) – sending out a signal of persistent *relative* monetary restriction that in all likelihood played an important role in keeping the euro exchange rate unreasonably high ever since the inception of the financial crisis. Indeed, when its balance sheet started to shrink after the OMT announcement, this was seen by the ECB as a sign of welcome normalisation of financial conditions, but the negative impact of high interest rates on the demand for liquidity by the banking system was overlooked – and monetary policy remained too tight.

²⁴ <https://www.ecb.europa.eu/press/key/date/2014/html/sp140822.en.html>.

Figure 10. Official interest rates (2007-15, %)



Source: FED, ECB, BoJ and BoE.

In his speech, Draghi said that expansionary “demand side policies are not only justified by the significant cyclical component in unemployment...[but also to] help ensure against the risk that a weak economy is contributing to hysteresis effects”. And, he added, “[T]he risks of doing too little – i.e. that cyclical unemployment becomes structural – outweigh those of doing too much – that is, excessive upward wage and price pressures”. He went on to say that monetary policy would have to play a central role in supporting demand, “which currently means an accommodative monetary policy for an extended period of time” – while also calling for appropriately supportive fiscal and structural policies.

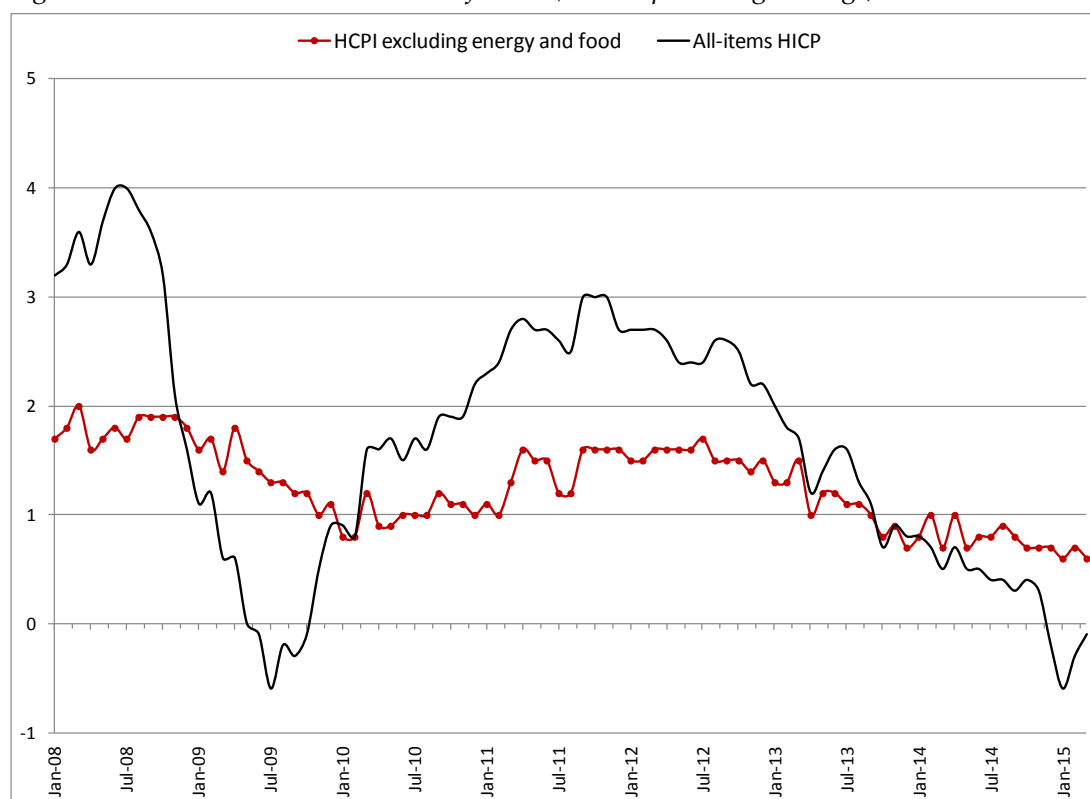
A number of carefully crafted official statements prepared the ground for the new monetary policy measures by explaining at length the rationale behind them and the measures that would be resorted to under different circumstances. Most revealing is the speech delivered by Draghi in Amsterdam in April 2014,²⁵ where he explained that “when central banks come up against the effective lower [zero] bound [for short-term interest rates], the possibility disappears to use current changes in the short rate to signal the policy response to a changing inflation outlook...Thus, it becomes more important to communicate directly about future interest rate changes...i.e. to give forward guidance. Second...to accurately steer

²⁵ M. Draghi (2014), “Monetary policy communication in turbulent times”, Speech at the Conference De Nederlandsche Bank 200 years: Central banking in the next two decades, Amsterdam, 24 April (<https://www.ecb.europa.eu/press/key/date/2014/html/sp140424.en.html>).

expectations across a wide array of measures, more active communication on our reaction function is needed". Accordingly, "an unwarranted tightening of monetary policy stance (from developments in [financial] or foreign exchange markets)... could be tackled through more conventional measures", while a further impairment in the transmission channels of monetary policy could be met by a targeted LTROs (TLTROs) or ABS purchase programme, and a worsening of the medium term outlook for inflation "would warrant a more broad-based asset purchase programme".

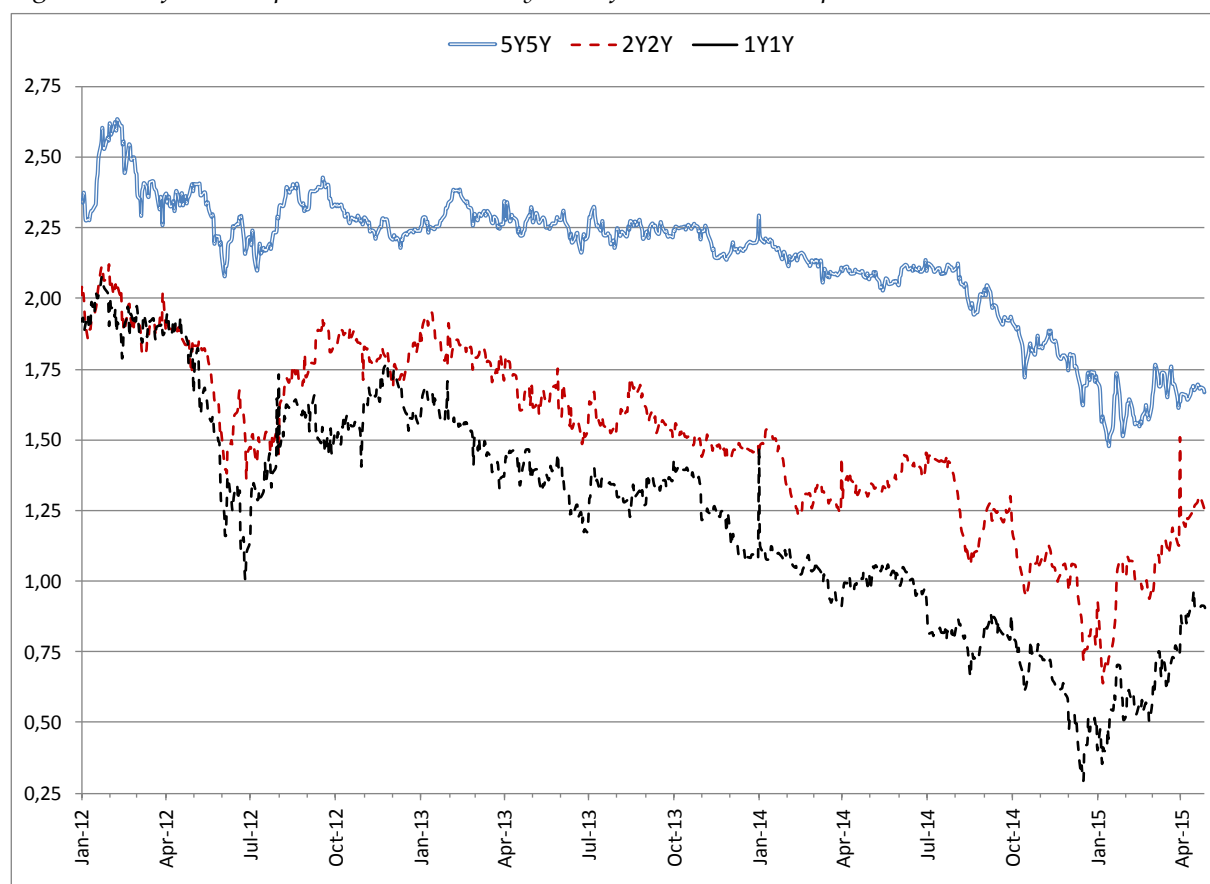
In the second and third quarter of 2014 the eurozone economy unexpectedly stalled, with some peripheral countries falling again in recession. Headline inflation rates continued to creep downward, with negative rates spreading to more countries and fuelling fears of price deflation. Growing current external surpluses in Germany – which had stayed above 6% of GDP already since 2012 and were increasingly translating into eurozone surpluses as peripheral external deficits were eliminated by domestic deflation – were adding to upward pressures on the euro, whose dollar exchange in the first quarter of 2014 rose to almost \$1.40. In turn, this was exacerbating the deceleration in domestic prices via their import component, just at the time when oil and other commodity prices were nose-diving (Figure 11): indeed, as may be seen, the 'core' component (excluding energy and food imports) of the HCPI remained above 1% until the third quarter of 2013, and never fell below 0.5% even in 2014 and early 2015. However, the ECB was worried about the potential knock-on effects on wage and price setting. Furthermore, already in April the closely watched indicator of inflation expectations – the five years on five years (5y-on-5y) inflation-linked swap rate – had fallen below 2% (Figure 12), indicating to the ECB that medium-term inflation expectations were no longer 'anchored' at the medium-term price stability target.

Figure 11. HCPI headline and 'core' inflation (annual percentage change)



Source: Eurostat, monthly data.

Figure 12. Inflation expectation measured by the inflation linked swap rates



Source: Our calculations on Bloomberg, Daily data.

The decisions of the ECB in the ensuing months closely followed the Amsterdam announcement.²⁶ Over summer 2014, the interest rates on MROs and on the deposit facility were lowered by 20 basis points, respectively to 0.05% and to -0.20%, while the rate on the marginal lending facility was reduced by 45 basis points, to 0.30%, in line with the Governing Council's forward guidance.²⁷ A new series of TLTROs were announced in June, with ECB funding tied to the provision of credit to the real economy. This funding was made available through two windows, in September and December, to be followed by further windows between March 2015 and June 2016. It was provided for up to four years, initially with a small surcharge over the MROs rate (10 basis points), which was subsequently eliminated (in January 2015).

However, the take-up of the lines was less than full (altogether, about €212 billion), while the total liquidity provided by the ECB to the banking system actually declined in the last quarter of 2014 – a clear indication of continuing weakness in the demand for credit by the economy and, at the same time, of the gradual normalisation of bank funding conditions in capital markets. The contrast with the VLTROs offered at the end of 2011 and beginning of 2012 could not be starker: in that case demand topped €1 trillion, as interbank funding

²⁶ Cf. ECB (2015).

²⁷ Cf. the box "The Governing Council forward guidance on the key ECB interest rates", *ECB Monthly Bulletin*, July 2013.

channels were seizing up; the new VLTROs, on the other hand, were rather used to substitute existing financing lines at more favourable conditions, while net resort by the banks to the ECB was actually falling. The ECB was ‘pushing on a string’, the celebrated expression used by Keynes to describe his ‘liquidity trap’: a situation in which the interest elasticity of banks’ demand for liquidity is infinity, in the vicinity of the interest rate lower bound, and therefore increasing the supply of banks’ reserves has no effect.²⁸

In fall 2014 the ECB also launched two private sector asset purchase programmes, an asset-backed securities purchase programme (ABSPP, starting in November) and a new covered bond purchase programme (CBPP3, starting in October), both expected to last for at least two years. In both cases, the purpose was to encourage greater lending to the private sector by strengthening the incentive to supply loans that could be securitised at attractive conditions (in markets still largely impaired) and by facilitating bank funding at comparable terms. The amounts involved were initially rather small (altogether, about €32 billion by end-2014), but the purchases were to continue at a stable rate of €10 billion per month.

Eventually, the continued weakness of the economy and the repeated downward revisions in the HCPI rate of increase, which in December 2014 turned negative for the eurozone average, catalysed a broad consensus in the ECB Governing Council to take the plunge into quantitative easing (QE). On 22 January 2015, they announced the decision to launch an expanded asset purchase programme (EAPP) under which the ESCB would purchase every month €60 billion of private and government securities assets – thus including the two programmes already started the previous fall – for a period beginning in March 2015 and ending in September 2016. Before describing in detail the new measures, it seems useful to discuss briefly what precisely is meant by unconventional monetary policies and how they are expected to work.

6. What unconventional policies?

The definition of unconventional monetary policy measures has varied considerably across the central banks undertaking them and over time. Initially, in the wake of the Lehman failure and, in the eurozone, of the exploding sovereign debt crisis (starting in 2010), the unconventional measures undertaken by the central banks were mainly aimed at stabilising specific segments of financial systems, which had been impaired; they are sometimes referred to as ‘credit easing’ (Bini Smaghi, 2009). Notable examples are the SMP and VLTROs programmes, and similarly the backup facilities established by the Federal Reserve for the commercial paper market and money market mutual funds in the wake of the Lehman failure. These interventions were undertaken well before short rates hit their lower bound and may be seen as an extension of the lending of last resort function of central banks. Later on, the focus shifted to stimulating real growth and combating deflation, as short interest rates descended to the lower bound. In these circumstances, the discussion about unconventional monetary policies has focused on how best to overcome the lower interest rate bound and effectively stimulate the economy.²⁹

²⁸ The expression “pushing on a string” was first used by Congressman T. Alan Goldsborough in March 1935 during a hearing of the Federal Reserve Chairman Marriner Eccles on the 1935 Banking Act. Cf. Wood (2006).

²⁹ A detailed description of measures undertaken by the main four central banks – in the US, the UK, the eurozone and Japan – to overcome the financial crisis is provided by Fawley & Neely (2013); however, they fail

Normally, monetary policy acts by setting a target for the interest rate in the overnight interbank or money market rate, and then adjusting the supply of central bank money to achieve that target. The US Federal Reserve and the Bank of England mainly operate through sales and purchases of securities in the money market, while the ECB and the Bank of Japan mainly operate through bank refinancing operations. Therefore, the central bank is not engaged in lending to the government or the private sector. However, once an extraordinary shock has brought short-term interest rates close to zero, there is no further room to lower short rates (since the alternative to hold cash rather than negative-yield deposits is readily available to the public), and therefore the normal transmission mechanism from lower interest rates to higher aggregate demand for consumption and investment is muted.

In these circumstances the central bank may still try to stir up the economy and inflation by pushing down long-term interest rates, which typically remain positive even after short rates have fallen to zero. Two different transmission channels may be identified in this regard (Bernanke, 2012; Rajan, 2013). The central bank may seek to influence interest rate expectations by committing to a protracted period of low policy rates (*forward guidance*); or it may aim at directly altering the price of long-term securities by purchasing them outright and thus setting in motion a sequence of asset substitutions in private portfolios (*portfolio balance effect*). The two transmission channels are not mutually exclusive and in practice complement each other; in both cases there would be a flattening of the yield curve. To this end, the supply of central bank money – the overall size of the central bank’s balance sheet – must greatly increase, which is why these policies are commonly referred to as quantitative easing (QE). A large increase in supply of base money has thus become the characterising feature of unconventional policies, whose operational targets are commonly announced as planned asset purchases over set time horizons, together with the resulting expansion of the central bank balance sheet.

Both the interest rate expectation and the portfolio balance effects are predicated on the existence of some market imperfection. The former effect may come about to the extent that long-term interest rates are kept higher than the equilibrium rate by private roll-over investment strategies based on higher-than-equilibrium expected short-term rates. The central bank may then convince private agents to lower their expected path of short rates by committing to hold policy rates lower for a longer period than implied by policy rules developed for normal times, e.g. the Taylor rule.³⁰ In a sense, for this announcement effect to work, the central bank must publicly commit to being ‘irresponsible’ (Fawley & Neely, 2013). The problem with forward guidance is that it is time inconsistent, which may lower its credibility: once the employment or inflation prospects start to improve, the central bank may find itself under strong pressure to abandon its previous commitment. In this connection there has been some discussion in the literature on economic incentives that might help to tie down the central bank to its promises, such as the fear of losing money on

to establish a clear distinction between monetary policies to meet the post-Lehman emergency and monetary policies to overcome the lower bound on interest rates.

³⁰ The Taylor rule for optimal monetary policy was proposed in 1993 by Prof. John Taylor of Stanford University, as follows: $i_t = \pi_t + r_t^* + a_\pi(\pi_t - \pi_t^*) + a_y(y_t - \bar{y}_t)$ where i_t is the target short-term nominal interest rate, e.g. the federal funds rate in the US, π_t is the rate of inflation as measured by the GDP deflator, π_t^* is the desired rate of inflation, r_t^* is the assumed equilibrium real interest rate, y_t is the logarithm of real GDP, and \bar{y}_t is the logarithm of potential output, as determined by a linear trend. Cf. Taylor (1993).

its securities portfolio if it tried to unwind its securities portfolio too early. However, large losses on its portfolio could equally well be brought about by spreading expectations of runaway inflation. One way out of this conundrum was seen in taking as a policy target a real economic variable, such as the rate of unemployment; this was eventually the approach taken by the Federal Reserve in 2012 and by the Bank of England in 2013.

The other transmission channel, the portfolio balance effect,³¹ assumes that long-term interest rates incorporate a term premium, due to an imperfect substitutability of securities in private investors' portfolios along the term structure of interest rates. This may be due to such factors as idiosyncratic private preferences ('preferred habitat'), market structural features (high transaction or hedging costs of certain securities), and regulatory restrictions on the type of securities that may be held by certain investors, e.g. pension funds. Imperfect substitutability in turn implies that changes in the supply of assets available to private investors will affect their price and yield. In the main, the real economic effects may be plausibly expected to derive from a shift of private portfolios to stocks (in general, to riskier securities), real estate and foreign assets – this last shift also bringing about a depreciation of the exchange rate with attendant increase in net foreign demand for domestic goods, services and real assets.

The effectiveness of unconventional monetary policy in lowering interest rates and changing investors' portfolio allocation in favour of stocks has now been established by extensive empirical research; the inception of unconventional policies has also been normally accompanied by large exchange rate depreciations – a source of significant frictions with other currency areas³² – which were later reversed when the economy started to recover, e.g. the US dollar in 2014. Figure 13, drawn from the 2015 Spring Global Financial Stability Report (GFSR), summarises the latest IMF estimates of the impact of QE on long interest rates, stock prices and the exchange rate in the US, Japan and the eurozone. Estimates for UK markets are provided by Christensen & Rudebusch (2012)³³ and Joyce et al. (2011). Long interest rates came down on average by around 100 basis points in the US and UK markets (where the Bank of England engineered a quadrupling of the money base in 2008-09),³⁴ and even more in the eurozone; in the latter area, the effect has been larger in countries where long rates had been higher, leading to a substantial reduction in interest rate spreads over the German bonds. In Japan the decline of long interest rates since the announcement of QE in April 2013 has been minimal.

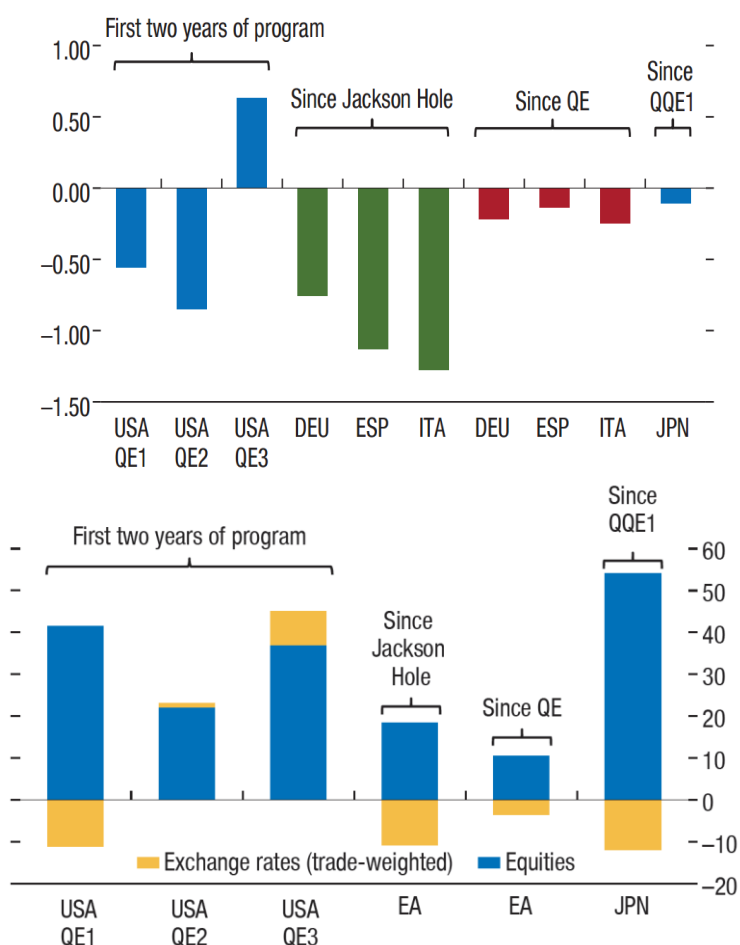
³¹ The classical reference for this mechanism is Tobin (1969). The portfolio balance effect would be muted in the frictionless worlds of Modigliani-Miller and full internalisation by private investors of the government's balance sheet (Ricardian equivalence). The plausibility of these characterisations of investors' behaviour in financial markets was always open to question, and has been undermined by the events leading to the financial crisis.

³² Just on the eve of the Federal Reserve announcement of a second wave of QE (QE2), the G20 meeting in mid-October 2010 actually sanctioned that emerging countries flooded by inward capital flows could resort to capital controls.

³³ The authors also provide estimates for the US.

³⁴ Cf. Fawley & Neely (2013).

Figure 13. The QE effect on sovereign interest rates (10-year yields, left panel), equities and exchange rate indexes (right panel)



Source: International Monetary Fund (2015a).

In general, most of the effects on interest and exchange rates materialised in the early phases of the purchases. In the US, where between the end of 2008 and fall 2014 the Federal Reserve ran three waves of QE, interest rates declined under QE1 and QE2 but went into reverse with QE3, reflecting spreading expectations that QE was coming to an end.³⁵ In the UK, most of the impact on long rates, i.e. 75 basis points out of a total around 100 basis points, came about shortly after the announcement of the first QE operation (Joyce et al., 2011). In the eurozone, as will be shown, the exchange rate had started to fall long before the adoption of QE, reflecting the combination of expected tightening by the Federal Reserve and expected easing by the ECB; long rates started to decline rather steeply in step with ECB announcements since late 2014, even before the ECB spent a single euro. An important role in enhancing the effectiveness of the ECB's unconventional policies lies in the combination of QE with negative rates on bank deposits at the ECB, which strengthen the incentive for banks to look for other alternatives in the deployment of their liquidity.

³⁵ After share prices fell sharply in June 2011, in September the Federal Reserve responded with "Operation Twist", under which it sold \$400 billion in short government bonds and bought an equivalent amount of long bonds to further lower the long-term interest rate (which was already below 2%), initially with little effect on share prices.

The real economic impact of QE, on the other hand, remains controversial. Much ammunition was provided to the sceptics by the experience of Japan, whose early experiments with QE, in the early 1990s and the early 2000s, failed to revive economic activity. On this, Ito & Mishkin (2006) suggested that bungled announcements by the Bank of Japan and visible disagreements among top policy-makers in the bank and the government on the desirability of QE may have dramatically weakened the credibility of the unconventional measures. Even more troublesome seems the fact that in the US and the UK the economy continued to show little response. In the US, GDP started to increase steadily after the third quarter of 2011 while in the UK in January 2013.

The answer to the puzzle, however, may lie elsewhere, as has been argued by Koo (2008 and 2015).³⁶ He points out that prolonged depression was the result of the private sector's efforts to deleverage in order to repair balance sheets deeply impaired by the collapse of real estate and financial asset prices. The resulting sharp rise in saving rates, amounting to several percentage points of GDP, was initially offset by expansionary budgetary policies as the economy started to fall into recession, but the fiscal stimulus then subsided and failed to fill the hole in aggregate demand created by the fall in private spending. In such an environment, Koo argues that monetary policy can't do much to revive private demand, due to the lack of willing borrowers, and reads the observed (large) increase in stock prices already in 2012 as a new asset price bubble, disconnected from the underlying future returns. Recent research by Borio et al. (2015) over 143 years of historical data (1870-2013) and 38 countries confirms the important role of asset price (equity and real estate prices) in explaining large and persistent falls in output.³⁷

While this analysis is revealing, its conclusions may underestimate the positive effects of unconventional policies in facilitating and accelerating deleveraging, and hence in creating over time the conditions for a return of private spending. The April 2015 GFSR (International Monetary Fund, 2015a) and the World Economic Outlook (WEO, International Monetary Fund, 2015b) provide detailed analysis of the reduction in household and corporate debt (over GDP) in the US and the UK between 2007 and 2014 as a result of low nominal interest rates.³⁸ It has also by now been established as a fact that the prolonged stagnation of the Japanese economy in the 1990s and 2000s is largely explained by its inability to restructure bad loans in the belly of the banking system;³⁹ and indeed the IMF data show no reduction in leverage ratios for households and corporate in 2007-14. In the eurozone, the jury is still out, since QE has just started and deleveraging has not run its full course, with banks still encumbered by large non-performing loans in some peripheral countries, e.g. Italy.

Figure 14 highlights, in this regard, the success of the Federal Reserve and the Bank of England in pushing nominal 10-year interest rates below the nominal growth of GDP early in the aftermath of the Lehman failure. Specific measures to ease the predicaments of highly indebted households accelerated the deleveraging process. This was clearly not the case in Japan, where nominal GDP growth stayed below nominal interest rates through much of the

³⁶ See also Wolf (2014) for a masterly presentation of the same line of reasoning, together with compelling empirical evidence on the evolution of sectoral net savings balances country by country.

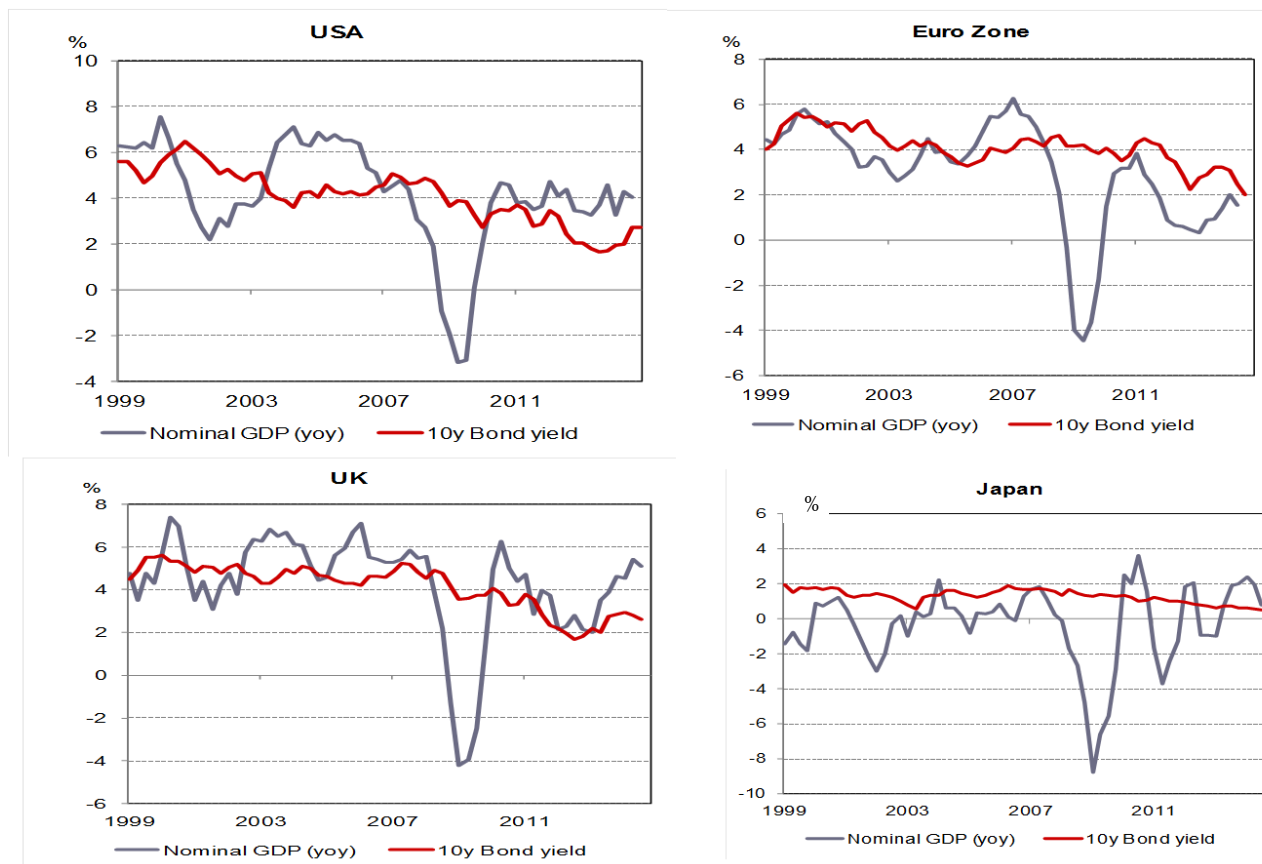
³⁷ Over their full sample, they estimate that cumulative growth is about 10 percentage points lower after five years from peak prices.

³⁸ Cf. IMF (2015a), Tables 1.1 and 1.2, pp. 13-14, and IMF (2015b), pp. 9-12.

³⁹ Koo (2008).

2000s, including intermittently also after the launch in 2013 of the new QE programme by the Bank of Japan. In the eurozone, on the other hand, financial policies did not help reduce the interest burden, as long-term interest rates hovered well above nominal GDP growth rates through much of 2014.

Figure 14. Nominal GDP growth and 10-year government bond yield



Source: Bini Smaghi (2014).

In sum, one cannot underestimate the importance of balance sheet repair and deleveraging in explaining the apparent slow response of the economy to monetary easing – notably in the banking system, where the stricter capital rules decided in Basel have combined with the need to clean up balance sheets in restraining the supply of credit. It does provide some support for the conclusion that “central bank securities purchases have provided meaningful support to the economic recovery while mitigating deflationary risks” (Bernanke, 2012).⁴⁰

The benefits for QE policies must also be weighed against the potential costs, on which a full picture will not be available for quite some time. The list of potential drawbacks includes the

⁴⁰ An entirely different question, which cannot be tackled here, is whether the economies of advanced countries will revert to their pre-crisis growth path, or more broadly what their long-term growth path is expected to be. On this, the spring 2015 WEO (International Monetary Fund, 2015b: Chapter 3) finds that potential output may have been permanently reduced by the crisis, mainly due to the sharp fall in investment in recent years. The responsiveness of wages to falling unemployment seems also to have declined, possibly weakening the impact of expansionary monetary policy on inflation. On this, cf. *The Economist*, “When what comes down doesn’t go up”, 2 May 2015.

possible distortions in financial markets as a result of the central bank becoming a major security holder, which could reduce the depth and breadth of the relevant markets; the risk that QE might again encourage excessive risk-taking by private investors, in their search for returns; and the difficulty of reabsorbing the excess liquidity injected into the economy, due also to the potential instability that may derive from the unwinding of substantial holdings of fixed-rate securities of very long duration accumulated by private investors.

This last aspect remains worrisome. In order to assuage investors' fears, central banks have announced that they intend to keep their securities to maturity; thus the issue arises of how to reabsorb the substantial excess liquidity injected into the economy, once the abnormal demand for liquidity recedes. To this end, the ECB may resort to large issuances of term deposits; in case it didn't succeed, this could endanger price stability and unleash inflation expectations, with great damage to central bank credibility.

On the other hand, the US experience shows the potential for instability associated with the end of QE. When Chairman Bernanke announced, in June 2013, that the Federal Reserve might scale back its asset purchases, long rates shot up, generating waves of instability across domestic and international markets. Leveraged private investment in long-term securities carrying ultra-low fixed interest rates could compound the instability. The next perilous step is the first rise in official interest rates – which has been repeatedly pushed forward for fear of the consequences on the economy. At all events, these difficulties are real and require careful management of expectations by the central bank, but should not be exaggerated; after all, 'tapering' of asset purchases by the Federal Reserve (completed in October 2014) has been eventually 'digested' by financial markets without major disruptions.

In sum, we can conclude that resort to QE was probably unavoidable in the presence of rising risks of deflation and balance sheet depression, and that it has helped the recovery; however, it may also entail a legacy of distortions and potential threats to financial stability that could come back to haunt world financial markets in a not-so-distant future.

7. The ECB turns the QE spigot on

On 22 January 2015 President Draghi announced the Governing Council's decision to step up monetary expansion by undertaking the EAPP, comprising the two securities purchase programmes already under way (the asset back securities and covered bond purchase programmes) and a new public sector bonds purchase programme (PSPP) under which the Eurosystem will purchase monthly €50 billion of securities in the secondary market over the period from March 2015 to September 2016. The ECB has also undertaken to continue its purchases under the programme thereafter in case the rate of increase of the HCPI did not show by then "a sustained adjustment in the path of inflation which is consistent with our aim of achieving inflation rates below, but close to, 2% over the medium term".⁴¹ The overall value of securities to be purchased would thus be *at least* €1.14 trillion, or 11% of eurozone GDP, bringing the ECB balance sheet back to where it has been at the crisis peak, early in 2012 (see Figure 6).

The public sector securities purchases will amount to €950 billion and will include bonds issued by the member states and certain national agencies (€836 billion) and by certain

⁴¹ M. Draghi (2015), Introductory statement to the press conference, Frankfurt am Main, 22 January (<https://www.ecb.europa.eu/press/pressconf/2015/html/is150122.en.html>).

European institutions (€114 billion). National agencies and institutions whose bonds will be eligible for Eurosystem purchases are included in a list published by the ECB on its website, which may be amended “on the basis of monetary policy considerations and duly reflecting risk management issues”.⁴² The securities will be purchased by NCBs, under the coordination of the ECB Governing Council, which has retained full control over the programme design. Out of the total additional purchases under the PSPP, 8% of sovereigns (€4 billion) and 12% of securities of European institutions (€6 billion) will be held by the ECB on its own accounts and therefore will be subject to full risk-sharing; the national public securities (€40 billion per month) to be purchased by NCBs will be allocated to individual central banks on the basis of their shares in the ECB’s capital key and will not be subject to loss sharing. Table 1 summarises the main figures of the EAPP and their risk sharing arrangements.⁴³

Table 1. The allocation of monthly asset purchases by the Eurosystem

Bonds	Bondholder	Monthly purchases	Total purchases	Notes
ABS & covered bonds	ECB	€10 bn	€190 bn	Risk on ECB
European institutions	ECB	€6 bn (12% of 50)	€114 bn	Risk on ECB
Euro area central governments and agencies	ECB	€4 bn (8% of 50)	€76 bn	Risk on ECB
Euro area central governments and agencies	NCBs securities purchases allocated according to the ECB’s capital key	€40 bn (80% of 50)	€760 bn	Risk on NCBs; purchases to be limited to 25% of new issues and 33% of total outstanding debt
Total		€60 bn	€1.14 tr	

The compromise reached on risk-sharing was probably unavoidable in order to build a broad consensus on QE within the Governing Council; it leaves the eventual losses of a sovereign default squarely on the NCBs. By diminishing risk spreads and market fragmentation, QE will reduce the likelihood of such an event, and therefore the issue may not be relevant in practice; however, should serious distress like that experienced in 2011-12 reemerge within the eurozone, the Eurosystem might be exposed to a new ‘diabolical loop’ between national central banks and their governments, which would not only negate the separation between monetary and fiscal policy mandated by the EU Treaty but could truly break the monetary union (Gros & Kopf, 2015).⁴⁴

⁴² Cf. ECB, “Implementation aspects of the PSPP”, as updated on 15 April 2015 (<https://www.ecb.europa.eu/mopo/implement/omt/html/pspp.en.html>).

⁴³ In case the envisaged amounts cannot be purchased in a jurisdiction, NCBs will conduct substitute purchases in bonds issued by international organisations and multilateral development banks located in the euro area.

⁴⁴ D. Gros and C. Kopf (2015), “There is no QE without risk sharing”, *Reuters*, 20 January.

The ECB will purchase public securities with maturity between 2 and 30 years, with remaining maturity above two years and return higher than -20 basis points (the rate currently paid by the ECB in its deposit facility). The securities purchases can never exceed one-third of a country's debt issuance, or 25% of any given issue. The rationale of these provisions is both economic and legal. The economic rationale is to minimise the impact on market functioning, notably with a view to preserve the price discovery mechanism, and avoid impairing market liquidity. A specific issue arising in this context is that of ensuring that the ECB purchases do not reduce the effective supply of collateral available to market participants; to this end, PSPP securities will be made available through a securities lending facility (as already done by other central banks, e.g. the Bank of England).

The legal rationale is twofold. On one hand, the ECB does not want to have a blocking vote on the possible decision by creditors to activate a collective action clause (CAC)⁴⁵ on one or some of the bonds held by the Eurosystem, which could be seen as monetary financing of the debtor. Moreover, there is an important case pending before the European Court of Justice, following a reference for preliminary ruling by the German Federal Constitutional Court on the legality of the 2012 OMT programme,⁴⁶ which may also be relevant for QE purchases. While the decision of the Court is yet unknown, the Opinion of the Advocate General Cruz Villalón, published on 14 January 2015, takes as its starting point that the OMT must be considered an unconventional monetary policy measure, not *per se* extraneous to the ECB mandate, but to be subject to special precautions in order not to trespass the separating line between monetary policy (the domain of the ECB) and economic policy (the domain of governments, where the ECB must not intervene). The specific point in the Opinion relevant here is that "the OMT programme will, in the event of its being activated, have to be implemented in such a way that a market price can form in respect of the government bonds concerned, so that there continues to be a real difference between a purchase of bonds on the primary market and a purchase on the secondary market".⁴⁷ As may be seen, these legal aspects are crucial for the ECB interventions not to be open to the objection of violating the prohibition of monetary financing of public deficits as of Article 123 TFEU. They will insure, more broadly, against objections coming from German and Nordic quarters whereby the ECB market interventions trespass the line between monetary operations and economic policies. In this regard, special care has been devoted to respecting the prohibition of monetary financing of governments.

The provisions that have been described entail a sizeable reduction in the public securities effectively available for Eurosystem purchases, which has raised fears of a possible scarcity of securities. In this regard, one may note that, although an increasing share of Eurozone public bond issues carries negative returns, notably in the core and Nordic countries, for the time being the minimum return requirement (-20 basis points) is not binding, and therefore has no impact on eligible securities. On the other hand, in some cases the expected net issuance of public bonds is small relative to expected purchases (Table 2); while the highest

⁴⁵ The ESM Treaty mandates the inclusion of CACs in all new euro area government securities with maturity above one year as of 1 January 2013. CACs were expected to facilitate the coordination of investors in case of a debt default or restructuring.

⁴⁶ Case C-62/14.

⁴⁷ Cf. Court of Justice of the European Union (2015), *Advocate General's Opinion in Case C-62/14, Peter Gauweiler and Others v Deutscher Bundestag*, Press Release No 2/15 Luxembourg, 14 January (<http://curia.europa.eu/jcms/upload/docs/application/pdf/2015-01/cp150002en.pdf>).

quality sovereigns loom large in the portfolios of central banks, sovereign funds and other institutional investors which may be reluctant to sell them in view of statutory limitations on their portfolio composition (Pradhan, 2015).

Table 2. Public debt, expected issuance and QE purchases for selected participants to the Eurosystem (bln €)

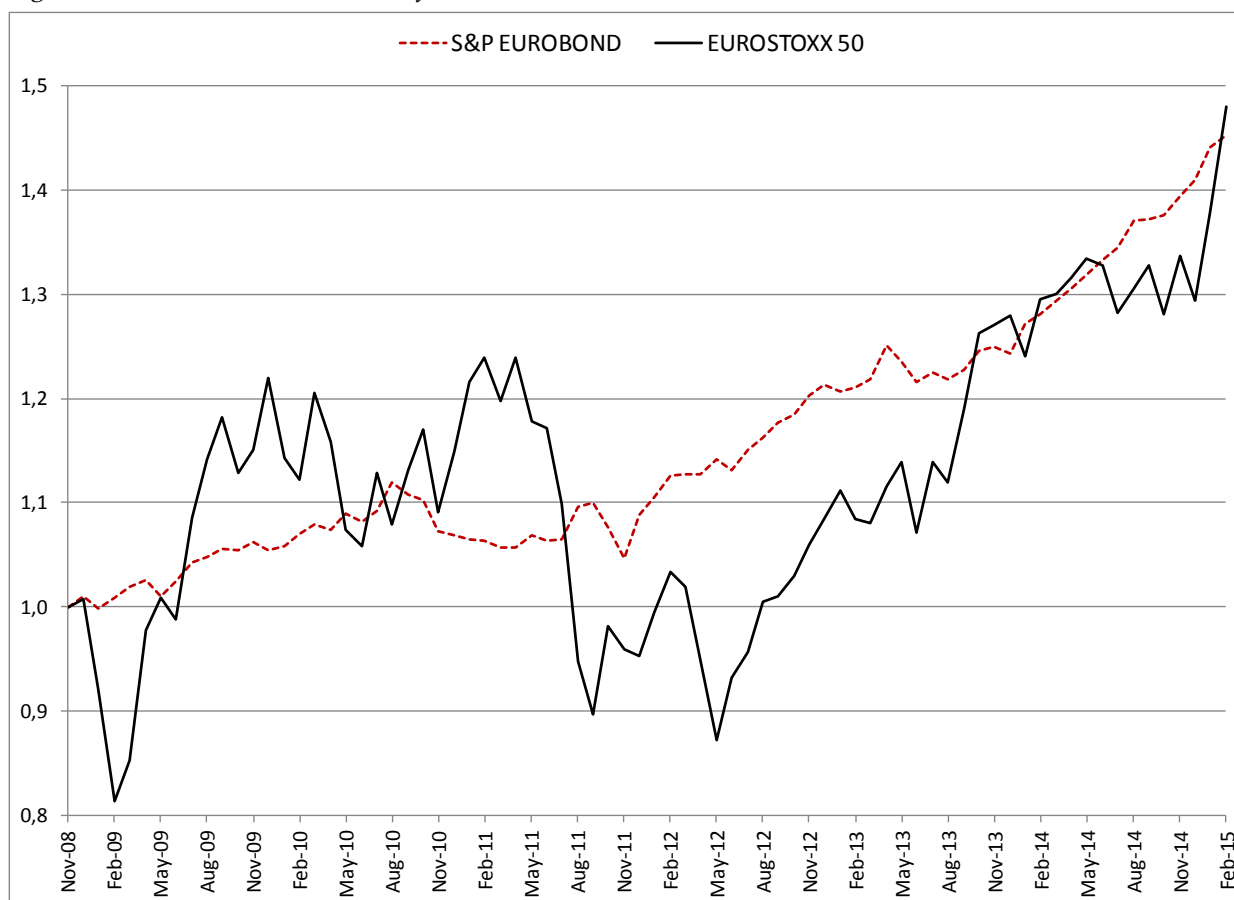
	Total public debt outstanding as of Dec 2014	Legacy holdings by the ECB	2-30 yearly issuance	Expected QE purchases Mar. 2015-Sep. 2016
Belgium	428	4.6	33	29.4
France	2038	42.2	187	168.4
Germany	2170	4.4	159	213.7
Greece	317	19.8	0.0	1.2
Ireland	203	37	14	13.8
Italy	2135	197.9	260	146.2
Netherlands	451	0.0	48	47.5
Spain	1034	65.3	142	105

Source: Eurostat and Claeys et al. (2015).

Be that as it may, it is yet too early to judge. For the time being, what is important is that long-term rates went down significantly in all eurozone markets, together with spreads between German rates and rates elsewhere in the eurozone, while stock market prices shot up (Figure 15). The euro has weakened significantly against the main currencies (Figure 2), creating breathing space for exporters, notably in the low productivity periphery. This evolution of bond prices and the exchange rate has been largely driven by expectations: one may note, for instance, that the descent of the euro was triggered already in the spring of 2014 when the 5y-on-5y inflation-linked swap rate slid below 2%, signalling that medium-term inflation expectations were becoming 'un-anchored'. The announcement of QE last January also led to an immediate bounce-back of inflation expectations on short- and medium-term maturities (as may be seen back to Figure 12).

This highlights once again the delicate balancing acts that the ECB will have to perform in managing private agents' expectations of supporting the recovery of inflation and economic activity in a very uncertain environment, in which central banks have indeed become the main anchor for private expectations.

Figure 15. Stock and bond indexes for eurozone (November 2008=1)



Source: Euro STOXX and S&P.

8. Conclusions

This paper has reviewed the ECB monetary policy since the inception of the euro in 2002. Over this time span, the ECB has managed to build the reputation of a strong, competent and independent institution. It has emerged as the only institution capable of timely and effective action to tackle the financial crisis following the Lehman failure and the sovereign debt crisis, and is again today the principal policy player in the quest for reviving growth in the eurozone economy. The events unfolding over the past 14 years have also highlighted some serious shortcomings of the original institutional design and the policy concepts that had guided the establishment of the ECB. Among these, two stand out.

The first one, less than fully recognised, is that monetary union without consistent fiscal and economic policies may create an unstable policy combination, when divergences in prices, wages and productivity persist. The reason is that, far from bringing steady market discipline to bear on divergent countries, the single currency may accommodate economic divergences for quite some time – as it happened in 2002-07 – leading to massive economic imbalances that at some stage were bound to explode. When that happens, financial markets may overshoot in the opposite direction, to the point of threatening the very solvency of some participants in the common currency. All in all, it has emerged that one currency

cannot fit all unless the member countries move swiftly to address the underlying causes of economic divergence.

The second shortcoming is that the mandate of the ECB, while not excluding extensive powers to intervene as lender of last resort of the banking system, did not include the power to stabilise the sovereign debt markets of its member states in case of systemic shocks endangering financial stability. When the shocks did come, it became clear beyond all doubt that, without such a backstop, the monetary union remains exposed to destabilising capital flows and attendant balance of payments crises that, if left unchecked, can break the currency. Fortunately, making full use of its powers and tools in order to stabilise unsettled financial markets was not forbidden under the TFEU and the ESCB Statute; thus President Draghi could manage sufficient consensus within the Governing Council to undertake OMT and, later on, also QE. The conditions under which these interventions were undertaken have been designed so as to respect the legal limit between monetary policy interventions and economic policies, notably in respect of the prohibition of monetary financing of governments. This was a hard lesson, learnt amidst acute turmoil; and yet, staunch opposition within the Governing Council, and in some member states, has not been overcome and may still come back to haunt the ECB – especially with the coming review of the legality of OMT by the Court of Karlsruhe.

Which brings us to a final remark on the impact of the crisis on the ECB institutional place and role within the eurozone policy-making. As was mentioned, the ECB has emerged as the only policy player capable of acting decisively at times of stress, and has been able to do so by stretching the scope of its instruments and operations well beyond what had been envisaged by the Maastricht Treaty. Moreover, more often than not the ECB could only come to the rescue after the system has been driven close to breakdown (Eichengreen, 2015).

Resistance by some members of the Governing Council was one reason: they considered it improper for the ECB to counter financial instability in sovereign securities markets, as this would weaken the pressure to reform on distressed countries. The behaviour of the Berlusconi government in September and October 2011 confirmed their worst fears: as soon as Eurosystem sovereign purchases brought about immediate and visible relief in market strains, Italian structural reforms stalled.

However, there are drawbacks to using the ECB monetary policy to combat moral hazard. For one thing, what the ECB needs to do to combat market instability may run counter to what may be required in order to discipline unruly national governments. In a properly designed system, the task to combat moral hazard and discipline budgetary and economic policies in general should not fall on the shoulders of the central bank.

Another reason was the strategy game underway between the ECB and the European Council. The ECB felt strongly that it was for the Council to set up adequate defences against idiosyncratic shocks hitting some members of the eurozone (Bastasin, 2015; Henning, 2015). But the Council proved repeatedly unable to deliver, owing to disagreements among its members on the appropriate responses to the crisis. We have recalled that in March 2011 the ECB did not hesitate to interrupt the SMP to signal its dissatisfaction with the European Council resistance to endowing the ESM with adequate powers. In winter 2011-12, the ECB was an outspoken advocate of tighter fiscal rules, including the so-called ‘Fiscal Compact’. It staunchly opposed the European Council policy on debt restructuring. Between the end of 2010 and summer 2011, the ECB wrote letters to the Irish, Portuguese, Spanish and Italian authorities, telling them what to do to restore financial viability, not always fully in line with

the Council and the Commission. The latest step has been the use of ELA as a negotiating lever to keep the rope tight around the neck of the Greek economy, as the new government struggles to find a policy course acceptable to its creditors, on one hand, and its electors, on the other.

In all these circumstances the ECB acted with the motivation of preserving the integrity of the eurozone financial system and the euro itself; repeatedly, it was obliged to fill gaps created by the European Council's inability to come to timely agreements on required changes in policies and institutions. And yet, one cannot avoid the conclusion that in the process the ECB has become a full player in economic policy-making, with consequences yet to be reckoned with.

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