DIRECTORATE GENERAL FOR INTERNAL POLICIES

POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

Non-Standard Monetary Policy Measures - An Update

Charles WYPLOSZ

NOTE

Abstract

There are many types of non-standard monetary policy measures, each with different objectives. Some are structural in nature, and they have been effective alleviating pressure on particular market segments. Other measures have been imagined to represent a new instrument when the interest rate is trapped at the zero lower bound. Their effectiveness remains in doubt.

The Eurosystem is facing a particularly daunting challenge as it faces a mix of macroeconomic and "sectoral" distress: it is sectoral in the sense that individual Member States with highly indebted governments face much higher interest rates than the other Member States. This does not just break the transmission mechanism down; it also imparts a powerful contractionary effect on the macroeconomies of the affected countries. Since it affects some countries and not others, this situation requires that the central bank transfer income across countries, exactly like it transfers resources from national taxpayers to national distressed sectors. Limited actions like the SMP and LTROs have failed to reduce the spreads. Potentially unlimited action like the OMT has succeeded but the spreads remain large and volatile.

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EXECUTIVE SUMMARY

There are many types of non-standard monetary policy measures, each with different objectives. Some are structural in nature: they are designed to alleviate pressure on particular market segments such as the mortgage market in the US or the convertible bond market in the euro area. They have been effective, because the resources of a central bank are effectively unbounded. Other measures have a macroeconomic objective; they are intended as a new instrument when the interest rate is trapped at the zero lower bound. Their effectiveness remains in doubt. In the US, they seem to have succeeded in lowering the long-term interest rates through a mix of forward guidance and massive securities acquisition.

The Eurosystem is facing a particularly daunting challenge as it has to deal with a mix of macroeconomic and "sectoral" distress. The macroeconomy is not growing, at least not enough to bring unemployment down and to stop the increase in non-performing loans that represents a growing threat of bank crisis. The challenge is also sectoral in the sense that individual member countries with highly indebted governments face much higher interest rates than the other member countries. As repeatedly noted by the ECB, this breaks the monetary policy transmission mechanism down, compounding the zero lower bound problem: the policy interest rate is nearly at its minimum and, yet, borrowing rates in the crisis countries are far too high. The result is that the very supportive stance of standard monetary policy is associated with a powerful contractionary effect on the macroeconomies of the affected countries.

Being structural, this situation can be treated by the central bank if it mobilises sufficient resources. But since some countries are affected and not others, this situation requires that the central bank transfer income across countries, exactly like it transfers resources from national taxpayers to national distressed sectors such as the US mortgage market of the convertible bond market in the euro area. Non-standard limited actions like the Securities Market Programme (SMP) and the Long Term Refinancing Operations (LTRO) have failed to reduce the spreads. Potentially unlimited action like the Outright Market Transactions (OMT) has succeeded but the spreads remain large and volatile. More has to be done.

It has been argued that these policies have potentially adverse effects. Large liquidity injections are seen as a source of inflation. Record low interest rates are predicted to generate asset price bubbles. Both concerns are misleading. They ignore what drives inflation. A key component of the reasoning is that bank credit grows excessively fast. Not only bank credit has been and remains anaemic throughout the euro area, but there exist powerful instruments to slow credit growth when and if it starts rising fast.

The most serious risk at this stage is the conditional nature of the OMT programme. A bank crisis requires immediate action and, for large countries, OMT action would be needed far too urgently to allow for an agreement on a EU-IMF programme.

1. INTRODUCTION

The last few years have seen central banks venture into unknown territory. Policy actions that would have been considered impossible and dangerous before 2008 have been promptly put in place in many developed countries. As any innovative experimentation, these actions are risky and raise suspicion, even vocal criticism. Yet, these are controlled experiments rooted in knowledge accumulated since the previous massive financial crisis that followed the 1929 Wall Street crash. This does not mean that risk is absent, but some of the criticism is outdated.

To start with, the expression "non-standard measures" cover several different actions, taken in response to different threats. Initially, these measures were directed at the financial system, for example the Troubled Asset Relief Program (TARP)[1] in the US and Covered Bonds Purchase Programme (CBPP)[2] in the euro area. In the wake of the financial crisis of September 2008, most banks had lost market access and were suffering from acute funding shortages. Lehman Brothers had fallen victim to acute illiquidity. TARP in the US and CBPP in the euro area were designed to provide immediate and abundant liquidity to banking systems. This was not particularly novel. The innovation of the CBPP was that the Eurosystem decided to buy collateralised bank debts instead of lending to banks against collateral, a small step from usual practice.

In order to cushion an unavoidable recession, central banks did the very traditional thing: they cut interest rates. What was new was the readiness to cut them to nearly zero. Once they had brought their policy interest rates down to the zero lower bound, of very close to it, the central banks of many developed countries found themselves with no standard instrument. A premature withdrawal of fiscal policy stimulus implied that growth would not resume soon or would be lethargic. The consequence would be lost incomes, rising unemployment and a continuous weakening of already fragile banking systems. Most central banks concluded that they should take it upon themselves to try and improve this gloomy, and dangerous, outlook. To that effect, central banks had to innovate. Here again, the innovations took different forms in different countries and over time, reflecting different primary policy objectives.

[1] TARP is a program of the US government to purchase assets and equity from financial institutions to strengthen its financial sector. TARP was adopted in October 2008 and was a component of the government's measures to address the subprime mortgage crisis. The TARP program originally authorised expenditures of USD 700 billion.

[2] CBPP is a programme of the ECB to purchase covered bonds from financial institutions, with a view to easing funding and lending conditions for credit institutions most affected by the financial crisis. The first CBPP with a targeted nominal amount of EUR 60 billion was launched in July 2009 and ended in June 2010. The second CBPP with a targeted nominal amount of EUR 40 billion was launched in November 2011 and ended in October 2012.

2. DIFFERENT OBJECTIVES; DIFFERENT TOOLS

2.1. The US experiment

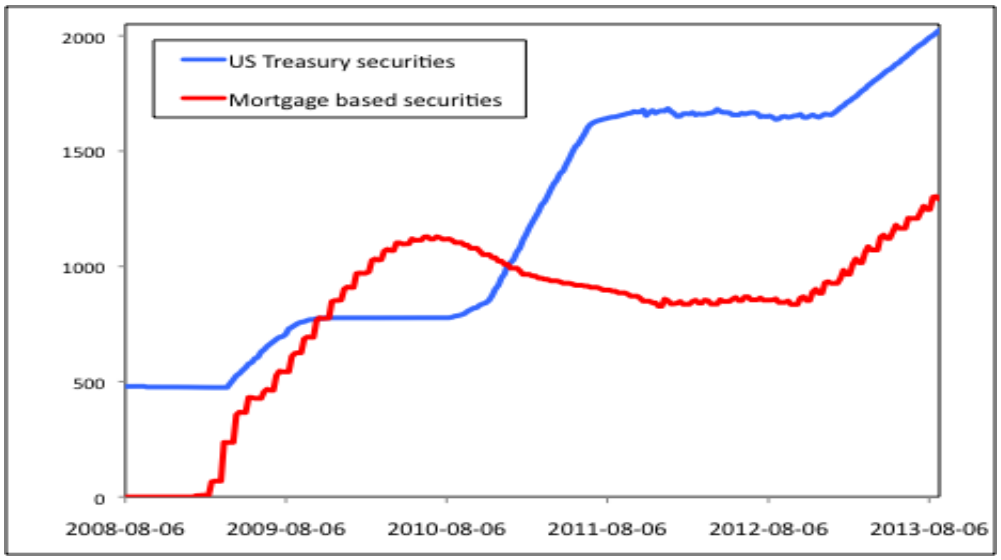
The US Federal Reserve was primarily concerned about growth and employment, as requested by its dual mandate. Its objective was to encourage more bank lending to support spending by households and firms. It adopted a three-pronged strategy.

First, in line with the observation that unhealthy – or over-leveraged – banks do not lend, in addition to direct lending to the private sector, the Fed encouraged a quick, bite-the-bullet restructuring of banks hit by the crisis. This involved buying impaired – a.k.a. toxic – assets and arranging for rigorous stress tests, followed by recapitalisation. By 2010, most US banks, big and small alike, were reasonably well capitalised.

Second, recognising that the interest rate that matters most for borrowers is not the very short-term policy interest rate, but medium and long-term rates, the Fed undertook two original measures. Because long-term interest rates are driven by market expectations of what the short-term policy rate will be over the longer run, the Fed sought to affect these expectations. What is now called "forward guidance" implied repeated statements that the policy rate would remain low for one or two years and then until the unemployment would decline enough. This marked a sharp change for a central bank that had long refused to appear committed to future actions. In effect, the Fed only made conditional commitments, making it clear that it could change its stance if conditions were to differ from prior expectations. Conditioning on the unemployment rate, the latest step to date, represents an important refinement.

Finally, the Fed departed from standard practice by attempting to directly lower longer-term interest rates. Until then, the standard view was that central banks can only affect the very short-term (overnight) interest rate because they have a monopoly on money creation, which is nearly the same as a very short-term loan. Private and public borrowers produce longer-term assets in such large amounts that, it was felt, the central bank is too small to really make a difference. Quantitative Easing (QE) represents a radical departure from this view. The Fed committed to acquire very large amounts of long-term assets. Figure 1 shows the three waves of action. QE1, which started in March 2009 and lasted about one year, involved large-scale acquisitions of both public and private securities, reflecting the Fed's objectives of both bringing long rates down and relieving banks by absorbing toxic assets. The Fed absorbed about USD 400 bn. of public debt and more than USD 1000 bn. of mortgage-based securities. Starting in September 2010, QE2 focused on the long-term interest rate ("Operation Twist") and only concerned public debt instruments. The intervention netted about USD 1000 bn. Finally, QE3, which started in September 2012 and is now about to end, was more like QE1. The nature and size of the exercise have no historical precedent.

Figure 1: Securities held by the Federal Reserve (USD billion)



Source: FRED Database, Federal Reserve Bank of Saint Louis.

2.2. The euro area experiment

The Eurosystem's first non-standard action started in July 2009 with CBPP1 and lasted exactly one year. By end June 2010, the Eurosystem had absorbed EUR 60 billion of covered bonds. In comparison with the US, the scale is very small and it concentrated on one narrow segment of the market that was perceived as most affected by the financial crisis. Importantly, covered bonds are more widely used in France and, specially, Germany.

Starting in December 2011, the Eurosystem innovated with the LTRO, expanding its money market interventions in three important ways. First, the maturity of the refinancing, which rarely exceeded one week before the crisis, was extended to three years. Second, the procedure "full allotment at fixed rate" meant that all valid requests for funding were accepted and that the interest rate was stated *ex ante*. Third, the amounts provided through LTRO were of a different order of magnitude than previous refinancing operations as the Eurosystem lent out about EUR 1 trillion in December 2011 and March 2012. This was a major breakthrough.

During that same period, the Eurosystem conducted another programme in support of covered bonds (CBPP2) but its size remained comparatively modest (some EUR 40 bn.), in line with the size of the corresponding market. In February 2012 the SMP was directed at the purchase of private and public debt instruments issued in the countries under market pressure. When it was terminated in September 2012, the SMP had absorbed some 220 bn. of debt securities, mostly issued in Southern Member States (Table 1). The innovation consisted in targeting crisis countries and in purchasing the debt instruments at market prices instead of using them as collateral for loans.

Table 1: SMP: Breakdown by Country

Ireland	14.2
Greece	33.9
Spain	44.3
Italy	102.8
Portugal	22.8
Total	218.0

Source: ECB.

Finally, the most innovative action is the Outright Market Transactions (OMT) programme announced in June 2012 and finalised in September. This programme in effects commits the Eurosystem to buy *unlimited* amounts of public debt securities of euro area Member States that face excessive interest rates. The commitment is both vague – when is the interest rate excessive? – and conditional as OMT are reserved for countries under a EU-IMF programme. Yet, it represents a massive innovation because of its *de facto* unlimited nature.

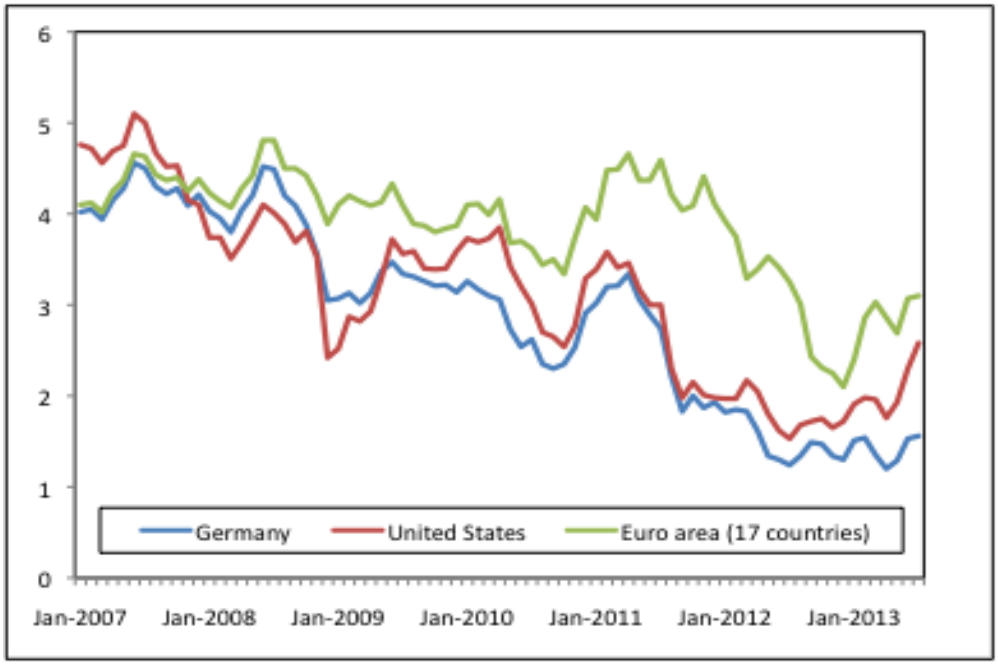
2.3. Comparison of the US and euro area policy actions

There are important differences between non-standard policies in the US and in the euro area. The first one is forward guidance, which was practiced fairly early on by the Fed while the ECB is only now gradually warming up to the idea. Second, the sizes of liquidity provision measures differ. The Fed absorbed some USD 2400 bn. of assets in comparison with EUR 1400 bn. for the Eurosystem. Third, The Fed explicitly tried to lower long-term interest rates, which the ECB did not. Fourth, the ECB insisted that its LTRO and SMP actions would be entirely sterilised, which the Fed did not do.

These differences reflect sharply different objectives. The Fed first wanted to support the financial system, hence QE1, but then shifted to try and adopt an expansionary stance while the interest rate was at the zero lower bound. The Eurosystem too wanted initially to support the financial system but never stated any intention of using non-standard measures to conduct an expansionary policy. Once the sovereign debt crisis started, all non-standard operations were motivated by the Eurosystem's desire to "safeguard an appropriate transmission mechanism" for its standard monetary policy, i.e. via the policy interest rate.

As is well known, with the emergence of the sovereign debt crisis national interest rates started to diverge within the euro area. This implied that the credit conditions that represent the traditional channel transmission of monetary policy became sharply different, as Figure 2 illustrates. The figure plots the average of euro area interest rates and the German interest rate on long-term (10Y) government bonds. It shows that the German interest rate declined in tandem with the US rate, but for the euro area as a whole the interest rate remained significantly higher. Obviously, the ECB was right to focus on the spread, which indeed hampered a proper transmission of its policy. It did so by increasingly focusing its non-standard actions on the crisis countries through the LTRO and SMP. The OMT was the last and most successful step.

Figure 2: Long-term (10 years) interest rates



Source: *Economic Outlook*, OECD on line.

Focusing on German rates, Figure 2 also suggests that the systematic sterilisation of its liquidity provision measures did not hamper the Eurosystem's ability to bring long-term rates down.

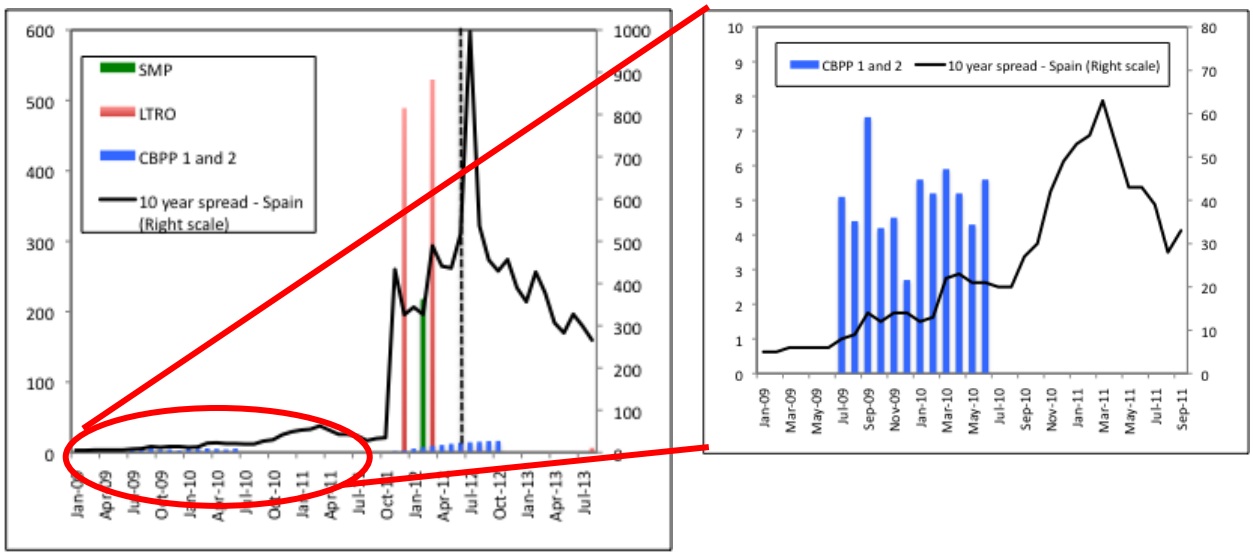
3. EURO AREA ISSUES

3.1. Which measures worked?

Like other central banks, the ECB has experimented with different types of non-standard measures as described in Section 2.2. These actions are shown in Figure 3. Also shown is the spread of Spanish 10-year bonds over the German 10-year bonds. Spanish bonds are used to represent the deterioration of the crisis; using other spreads would not invalidate the following discussion.

The figure shows that the CBPP interventions were trivially small. They may have improved a small segment of financial markets but, clearly, they were irrelevant as far as the sovereign debt crisis is concerned. The right hand-side chart, which displays the early period using a different scale, confirms that CBPP1 was ineffective outside the narrow confines of a particular – and not very important – market segment. The SMP and LTRO were on a different scale, actually comparable to the Fed's actions. Yet, their impact on the spreads were at best temporary; if the objective was to durably restore the channel of monetary transmission, these measures did not deliver. The OMT programme was announced informally in June 2012 and formally presented in September. The spread peaked in July and started to decline rapidly in August. So far at least, the OMT has worked.

Figure 3: Non-standard policy measures en their effect on the Spanish spread



Notes: The bars represent the amounts of liquidity, in EUR billion, injected by the Eurosystem in its non-standard operations. The curve describes the evolution of the spread of Spanish 10-year bonds over the corresponding German bonds, in basis points. The dotted line corresponds to June 2012, when the first indication of OMT was given.
Sources: Non-standard measures: ECB; Spreads: Financial Times.

It might seem illogical that EUR 1,400 bn. of liquidity injections failed where a mere statement by the ECB succeeded, without any expenditure so far. As argued in my Note of December 2011 (Wyplosz, 2011), this was entirely predictable (and desirable). The explanation lies in one word: unlimited. In conducting its LTRO and SMP actions, the ECB had always taken great care to indicate that they were exceptional and limited. The reactions of the financial markets were easy to anticipate: they would retreat temporarily in the face of purchases of debt securities that were large enough to move the market, but because limited actions are always smaller than the stocks of debts, it was only a matter of

time until the crisis would become acute again. On the other hand, the OMT announcement meant that the Eurosystem was determined to backstop *all* of the existing debt instruments, under some conditions as noted earlier. Given the unique ability of a central bank to buy whatever amount of securities that it wishes, the announcement was credible. In contrast, the previous insistence of the ECB that its actions were limited effectively undermined what the central bank was intending to achieve.

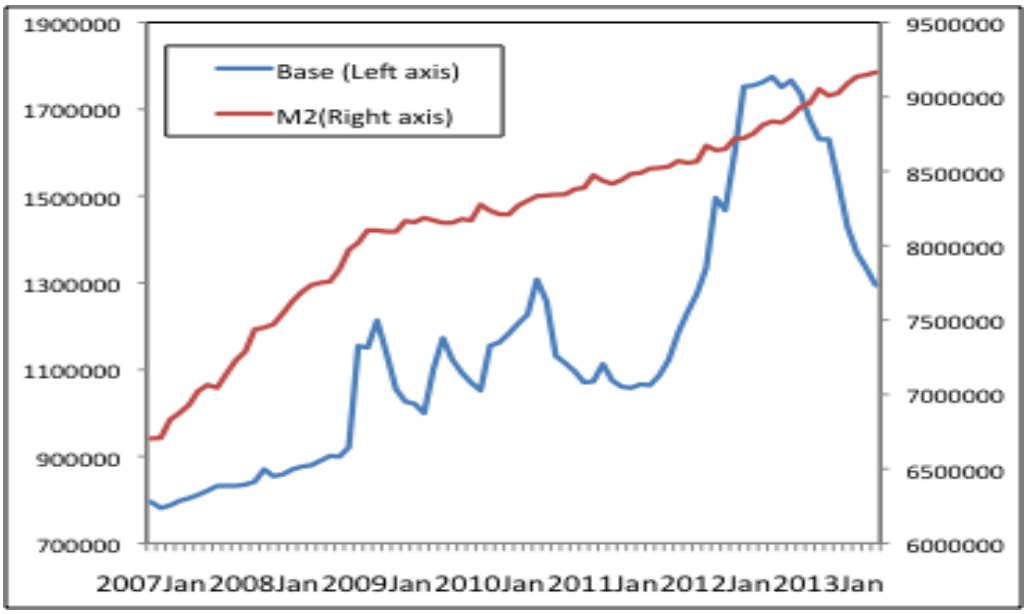
3.2. Risks

The OMT programme has radically improved the situation but it remains untested – there has been no OMT intervention so far – and criticised for implying some heavy risks. Three risks are often mentioned, none of which is valid while one risk is infrequently debated.

3.2.1. Inflation

If invoked in the case of large countries such as Italy and Spain, OMT could lead to large amounts of liquidity injection. The fear is that such injections would be too large to be sterilised so that the money stock would rise and produce rapid inflation. Each step of this reasoning is problematic, however. Even if liquidity creation is not sterilised so that the money base increases, the overall money stock (measured as M1, M2 or M3) does not follow passively. For any of these aggregates to rise, bank credit must grow (since bank credit is the main component of M1, for instance). Not only is bank credit generally anaemic currently, but the national authorities dispose of many regulatory instruments to keep control of bank credit, and so does the Eurosystem with reserve requirements.[3] It is true that, in normal times, overall money supply and the money base rise in tandem. But these are not normal times, as Figure 4 shows. Since the adoption of non-standard policy actions, the link between the money base and M2 has essentially dissolved. In fact, in spite of sharp increases in the monetary base since 2008, the growth rate of M2 has slowed down, precisely because banks have rarefied credit.

Figure 4: Money base and M2 in the euro area (EUR mn.)



Source: ECB.

[3] The Irish and Spanish authorities did not prevent fast credit growth in the 2000s, an oversight failure that is responsible for the subsequent crisis. Since then, the European Systemic Risk Board (ESRB) has been created precisely to avoid further failures. For more info, see http://www.esrb.europa.eu/home/html/index.en.html.

The second step in the reasoning invokes the historical link between money growth and inflation. The link is by no mean automatic, however. It operates as follows. Monetary base growth leads to credit growth, which fuels demand for goods and services, which leads to more economic activity, which leads to strong demand for labour and goods, thus triggering a wage-price spiral. Once again, this is true in normal times, not in the current recessionary environment. In fact, inflation is currently low in most countries.

3.2.2. Asset prices

Low interest rates in the 2000s produced asset price bubbles in a number of countries such as the US, the UK, Ireland or Spain. Is there a risk of this happening again and thus sowing the seeds of the next financial crisis? Once again, low interest rates, even very low ones do not mechanically lead to asset price bubbles. Once again, we need to have credit growing fast to allow investors to borrow from banks and invest in assets and houses. And once again, credit is currently not growing fast enough to sustain a strong economic recovery. As noted, instruments to prevent credit from growing excessively fast exist.

3.2.3. Conditionality

The OMT announcement has had a massively positive effect, but the measure has not been used and therefore tested. How do we know that, if invoked, the OMT will work, and will do so without adverse side effects?

The most worrisome aspect is the pre-announced conditionality. What happens if a country faces a bank crisis? Spreads on its public debt will promptly rise and banks will instantly lose market access, as will the government if it is already highly indebted and subject to some market pressure. If the country is large, the ECB will be the only source of urgently needed stabilising support, as befits a lender in last resort. There will be no time to negotiate the kind of elaborate programme identified as a condition for OMT. The ECB will have to choose between breaking its conditions and lose its credibility (and therefore the OMT protection would vanish), and letting the country's banking system collapse, which would probably lead to a default of the government itself. This would be an impossible situation for the ECB to be in and, yet, it is a distinct possibility.

3.2.4. Low interest rates

There is also the concern that he strong and prolonged monetary stimulus may delay this rebalancing process as it reduces bank's incentives to deal with impaired assets. This concern is misplaced for two main reasons. First, the OMT programme does not reduce interest rates throughout the euro area; it only aims at reducing interest spreads in the Member States currently in crisis, where they are arguably much too high. The ECB may well raise its policy rate to deal with this risk, in which case the OMT programme would be even more necessary to shield the crisis Member States. But keeping interest rates low is not the major source of disincentives toward bank restructuring. Bank restructuring is being encouraged in some Member States by forbearance. What is badly needed is to conduct rigorous stress tests, as was done in the US three years ago. In principle, the ECB will conduct an asset quality review, meaning stress tests, early in 2014 before it assumes its role as Single Supervisor. If properly done, this review should lead to a proper cleansing of bank balance sheets.

3.3. What else is to be done to support a recovery?

At the zero lower bound, monetary policy is largely powerless. Early studies of QE in the US accept that the Fed did affect long-term interest rates but remain ambiguous on whether it exerted a significant impact on growth (Christensen and Rudebusch, 2012; Pesaran and Smith, 2012). In the euro area, the Eurosystem only reduced the spreads, and therefore reduced long-term rates, when it adopted the untested OMT programme.

Should the OMT programme aim at eliminating the spreads? This would require a 100 % guarantee on public debts, in contrast with the current limited and vaguely formulated guarantee. The perception is that this would be a far too costly and risky for the ECB to contemplate. Pâris and Wyplosz (2013) propose a solution that would indeed eliminate the spreads and thus fully restore the transmission mechanism and provide a significant boost to growth in the crisis countries. It involves the explicit acquisition and forgiveness by the ECB of portions of excessive public debts. The mechanism is designed to amortise the losses over a very long period. Of course, such an approach cannot be the ECB's own decision because it would imply a transfer from all euro area countries to the over-indebted governments.

The dark scenario of a bank crisis would be much less likely if euro area banks would have been cleansed, as in the US. In spite of official reassurances that this step has been completed, there is indirect evidence that many banks remain fragile, as noted in IMF (2013). The measures to be taken do not fall under the ECB responsibility, however.

4. CONCLUSION

There are many types of non-standard monetary policy measures, each with different objectives. Some are structural in nature, designed to alleviate pressure on particular market segments. They have been effective, if only because the resources of a central bank are effectively unbounded. Other measures have a macroeconomic objective; they are intended as a new instrument when the interest rate is trapped at the zero lower bound. Their effectiveness remains in doubt but they are well worth trying as long as adverse effects are not identified; so far, no such adverse effect has been convincingly identified.

The Eurosystem is facing a particularly daunting challenge as it faces a mix of macroeconomic and "sectoral" distress: it is sectoral in the sense that individual member countries with highly indebted governments face much higher interest rates than the other member countries. This does not just break the transmission mechanism down, it also imparts a powerful contraction effect on the macroeconomies of the affected countries. Being structural, this situation can be treated by the central bank if it mobilises sufficient resources. But affecting some countries and not others, this situation requires that the central bank transfer income across countries, exactly like it transfers resources from national taxpayers to national distressed sectors. Limited actions like the SMP and LTROs have failed to reduce the spreads. Potentially unlimited action like the OMT has succeeded but the spreads remain large and volatile.

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DIRECTORATE GENERAL FOR INTERNAL POLICIES
POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

Can unconventional Monetary Policies ensure the stability of the euro area?

Daniel GROS
with Cinzia ALCIDI and Diego VALIANTE

NOTE

Abstract

Unconventional monetary policy tools have become standard as interest rates remain close to zero and monetary policy transmission channels do not yet function fully in the euro area. Their effectiveness is limited, however, not because of design failures, but because the underlying problem must be solved with different policy instruments.

In times of crisis the resort to non-standard monetary measures can be effective by at least preventing a generalised meltdown of the system. The OMT is a good example in this respect. It was crucial when it was announced. Yet, the stability of the euro area cannot be ensured by monetary policy.

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LIST OF ABBREVIATIONS

DSGE	Dynamic Stochastic General Equilibrium
ECB	European Central Bank
EFSF	European Financial Stability Facility
ELA	Emergency Liquidity Assistance
EMU	Economic and Monetary Union
EONIA	European Over Night Index Average
LTRO	Long-Term Refinancing Operations
MRO	Main Refinancing Operations
NCB	National Central Bank
OMT	Outright Monetary Transactions
SMP	Securities Markets Program
SSM	Single Supervisory Mechanism

EXECUTIVE SUMMARY

As the policy interest rate has remained close to the zero lower bound and the proper functioning of the euro area financial markets has not been restored yet, the use of unconventional monetary policy tools has become a standard practice of the ECB during the last 5 years. Its effectiveness on the real economy is, however, being limited not because of design failures, but because the underlying problem, namely financial instability across EMU (Economic and Monetary Union), must be solved with different policy instruments.

The Committee had put forward three issues; here we try to address each of them shortly on the basis of the findings of this note

1. *Assess the current stance of the effectiveness of the different non-standard monetary policy tools in the euro area (other Member States not considered).*

   Probably of limited effectiveness in stimulating the broader euro area economy, not because of bad design, but because lower interest rates might have unintentionally the opposite effect of what is expected: they reduce income of the net lenders (Northern EMU countries) and the lower interest rates do not reach the net borrowers (Southern EMU countries).

   The transmission channel of monetary policy remains still partially impaired and the interbank market remains less than fully functional as evidenced by the high level of Target II balances which persist (albeit declining slowly).

2. *What are possible unintended consequences of these measures in the current context of weak economic activity and subdued growth going forward? Do you see risks for price stability and asset price developments?*

   There is no risk for price stability. The main risk concerns losses on lending by the ECB, especially its Emergency Lending Assistance (ELA) programme, which might lead to re-distribution of income (or rather the fiscal burden) across euro area Member States. However, losses would arise only under an extreme scenario of policy inaction or mismanagement in the peripheral countries.

3. *What other tools/instruments could the ECB use in order to stimulate the economy in the euro area?*

   The ECB could impose a negative interest rate on banks' deposits to discourage banks in Northern EMU countries from keeping their excess funds unused and induce them to start lending again directly to Southern EMU countries.

1. INTRODUCTION

Over the last decade central banking has neglected the role of the financial system and the importance of the structure of the demand of money. By contrast, if one takes a long-term view, much of what is considered today 'non-standard' would appear rather 'conventional' by the standards of central banking before the 'modern' era.

It was mainly during the 'Great Moderation' which was characterised by liberalised financial markets and a generally accommodative macroeconomic policy that the 'modern' canon for central banking arose.[1] The basic framework assumed that by controlling the (path of) short term interest rates, central banks could control the money supply. The details of the transmission mechanism of monetary policies to the real economy were of little interest. The models used by central banks to estimate the impact of their policy on the economy belonged (and still belongs in many cases) to the class of the so-called DSGE (Dynamic Stochastic General Equilibrium) models[2] which describe an economy as a representative agent behaving according to the rational expectation hypothesis. This implies that unless frictions are assumed financial intermediation does not play any role in the economy. Default is not contemplated as it is not consistent with the description of the equilibrium. Therefore, bankruptcy costs and endogenous risk premia are absent. In short, real capital markets are not well featured in this kind of models, likewise the frictions which emerged once the crisis started.

In this world, monetary policy consisted of setting a policy rate, which usually did guide the overnight rate and the setting of the policy rate was supposed to be used to achieve an inflation target, allowing only for some temporary feedback from the real economy (according to the so called Taylor rule)[3]. By controlling the overnight interest rate through action on money supply (plus anchoring long-term inflation expectations)was considered sufficient to drive the stock of money in and outside the financial system.[4]

As long as standard tools were sufficient to affect the overnight interest rate (short-term) the only task for the central banks was to preserve price stability. Expectations that the policy rule of the central bank would continue to apply in the future then ensured that changes to short-term rates would be transmitted along the yield curve of sovereign bonds and private asset classes, such as loans (IMF, 2013). The rest of this paper is structured as follows. Next section points to the conditions under which conventional tools fail to deliver and the resort to unconventional measures is deemed necessary. Section 3 provides a review of the unconventional tools used by the ECB with particular emphasis on the OMT.

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1 See for instance Padoa-Schioppa 2004a, 2004b.

2 See for instance Gali (2008).

3 See Taylor (1993).

4 More technically standard monetary policy tools are defined as those allowing a pre-defined target of money supply to expand/restrict the balance sheet of a central bank to meet an underlying inflation target. These tools are: nominal interest rates (expectations of money supply); standing facilities (to provide and absorb overnight liquidity and to signal the general monetary policy stance), which, in turn include the deposit facility and the marginal lending facility (to align interbank interest rates to nominal rates, with the interest rate on the deposit facility (resp. marginal lending facility) providing a floor (resp. a ceiling) for the overnight market interest rate); open market operations (to provide liquidity to Monetary Financial Institutions (MFIs) with maturity from 1 week (main refinancing operations or MROs) to 3 months (longer-term refinancing operations or LTROs). MROs serve to steer short-term interest rates, to manage the liquidity situation, and to signal the stance of monetary policy in the euro area, while LTROs aim to provide additional, longer-term refinancing to the financial sector; and reserve requirements (to pursue the aims of stabilising money market interest rates, creating or enlarging a structural liquidity shortage and possibly contributing to the control of monetary expansion.).The ultimate objective of standard tools is to anchor inflation expectations to medium-term target while ensuring the well-functioning of the transmission mechanism. For more information see also http://www.ecb.europa.eu/mopo/implement/intro/html/index.en.html.

Section 4 is devoted to understand the functioning of the interbank market and the 'unconventional' role played by the ECB during the last two years. Last section concludes.

2. THE FAILURE OF STANDARD MONETARY POLICY TOOLS

Already long ago before the eruption of the crisis and even before the creation of the ECB, Folkerts-Landau and Garber (1992), asked whether the ECB was going to be a central bank undertaking traditional functions of financial banking supervision or just a 'glorified' monetary policy rule with the single objective of price stability. In the paper they emphasise that standard monetary policy tools, and hence rules, stop working when financial markets freeze and risk premia escalate to the point that systemically important institutions can no longer finance themselves and put the entire financial system in jeopardy.

Another circumstance when standard monetary policy tools are no longer sufficient is when the policy interest rates hit the lower bound of zero. The problems which arise in that setting are slightly different from those that arise when financial markets no longer work properly. Even when short term interest rates are zero, longer term interest rates can remain high. Under this condition the central bank's main task becomes to influence long-term rates. One way to do so is to persuade markets that short term policy rates will stay low for a very long time (forward guidance). Another way is to engage in purchases of long-term government securities (usually government bonds), called 'quantitative easing'. Both of these measures are now called 'non-standard'.

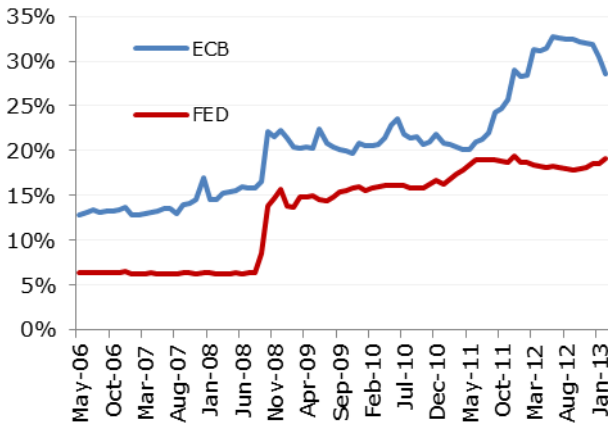
Since in practice most non-standard monetary policy measures involve the use of the balance sheet of the central bank[5], the time path of the balance sheet usually provides indications of the resort to such instruments. Indeed the massive use of non-standard measures on both sides of the Atlantic has resulted in a large expansion of the balance sheets of both the ECB and the US Federal Reserve (Fed). However, there is one important difference: The balance sheet of ECB was expanding (as percentage of GDP) already well before financial crisis. This was the result of the combined effect of the increase in cash after the introduction of the euro as well as a side effect of the credit boom on banks' reserves[6]. By contrast, the balance sheet of the Fed had remained a rather small, constant proportion of GDP. As illustrated in Figure 1, since the crisis broke, both balance sheets (in proportion of GDP to make them comparable) have expanded by a multiple.

[5] There is some discussion among policy makers and the literature on what is 'unconventional'. Borio and Disyatat (2010) define them as actions where the central banks actively use its balance sheet to affect directly market prices and conditions beyond the short-term [overnight] interest rate.

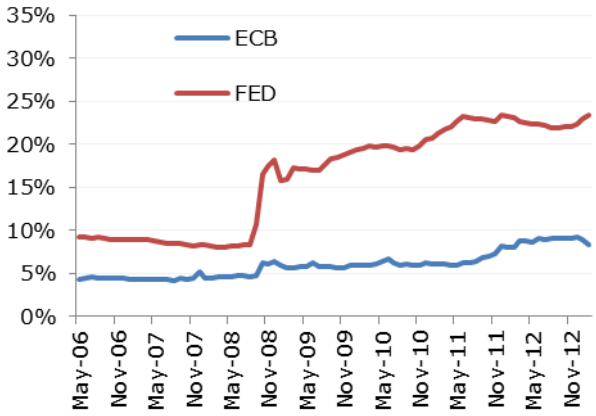
[6] Reserve requirements are much larger in the euro area than in the US.

Figure 1: ECB and FED Balance Sheets

Panel a. Central banks' total assets/liabilities as % of GDP



Panel b. Central banks' total assets/liabilities as % of banks' assets/liabilities

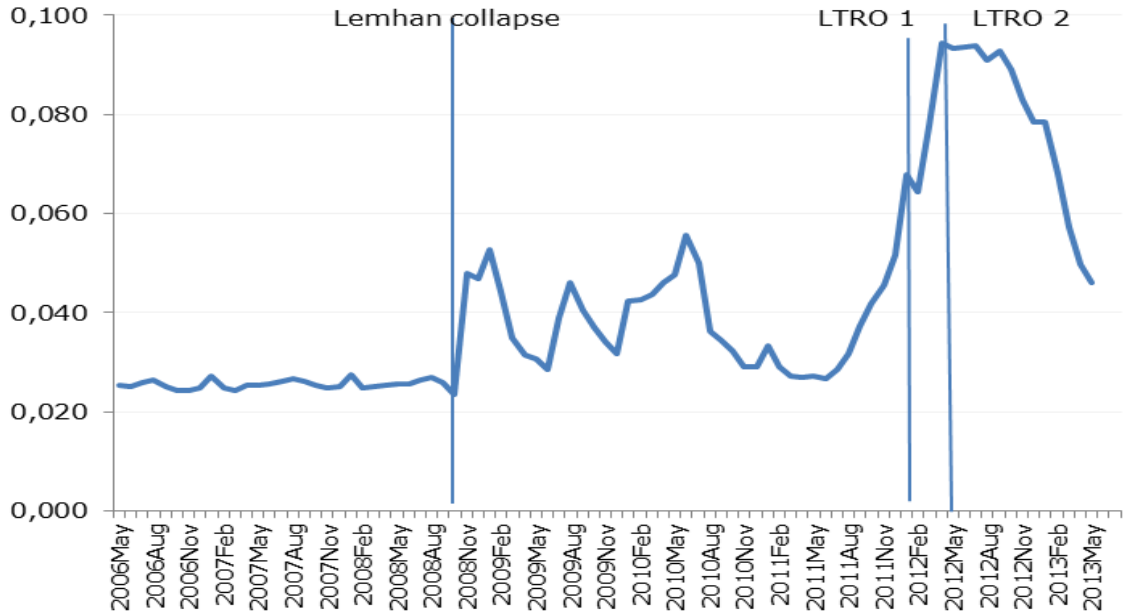


Source: ECB, Statistical warehouse and Flow of Funds.

The ECB has often been criticised as not having used its balance sheet aggressively. In part this criticism was based on the observation that the percentage increase in the balance sheet of the ECB was somewhat smaller than that of the Federal Reserve. But if measured as a ratio to GDP (as one in panel a of Figure 1), the ECB has been more active than the Fed. However, the banking sector is much larger in the euro area than in the US. The impact of the unconventional operations of both central banks might thus have been larger in the US because, as illustrated in panel b of Figure 1, the balance sheet of the Fed is now close to 25 % of the balance sheet of the entire US banking system whereas the balance sheet of the ECB amounts to 'only' 10 % of the balance sheet of the banking system of the euro area.

Another circumstance under which standard monetary policy tools fail to work is when the money multiplier becomes variable and unpredictable. The money multiplier relates the so-called monetary base, i.e. the balance sheet of the central bank, to the stock of money; in the euro area this means mainly the broad money aggregate, i.e. M3. In normal times, the monetary base is at a stable order of magnitude, smaller than the broad money supply (i.e. the money multiplier is large up to 15) and any expansion of the balance sheet of the central bank results in an expansion of the money supply of the same proportion. A more volatile ratio may signal uncertainty and potential dysfunctions in the financial system. When this is the case and the rate of expansion of the monetary base decouples from the broad money aggregate, lending to private sector and other financial transactions are no longer tightly linked to the balance sheet of the central bank.

Figure 2: Monetary base (minus cash) relative to M3 (1999-2013)



Source: ECB.
Note: We took cash out of the base money to remove the effect on volatility associated with the introduction of the euro.

Figure 2 provides evidence of how the ratio of monetary base to M3 has become instable at the inception of the financial crisis (with the Lehman Brothers' bankruptcy) and remained since then quite volatile, as the euro area's financial system remains impaired.

3. ECB UNCOVENTIONAL MONETARY POLICY TOOLS

Since the start of the crisis in the summer 2007 the ECB has profoundly changed its tool kit. Among the tools currently available:

1. Fixed rate, full-allotment liquidity provision;
2. Collateral rules;
3. Long-term liquidity provision;
4. Outright assets purchase.

Fixed rate with full-allotment liquidity provision: Under this procedure, banks can have unlimited access to ECB liquidity at a fixed rate in exchange of collateral (with a haircut). This seemingly minor change has a profound implication: the ECB's balance sheet is now driven by the demand of banks for funds. This implies that the ECB's balance sheet can expand and contract depending on the functioning of the interbank market. Risk aversion or abnormal liquidity preference by euro area banks will lead to an expansion of the ECB balance sheet. An increase in fragmentation, by which banks in core countries refuse to lend to banks in other countries because of perceived counterparty risk, will lead to increased central bank intermediation and also expand the balance sheet of the central bank (and vice versa).

This also implies that any talk about 'sterilisation' of other measures is misleading because full allotment operations can undo any sterilisation operation.

Profound changes in collateral rules: At the outset of a crisis the ECB had a simple eligibility threshold for government debt. This had to be abandoned when the rating of Greece government debt went below this level. At present the ECB applies a complex sliding scale of haircuts, accepting more risky securities as collateral, but protecting itself with higher haircuts. On balance this should not necessarily increase the risk of losses.

Long-term liquidity provision: Normally a central bank provides only short term liquidity (at most a few weeks). But with the 36-month Long Term Refinancing Operations (LTRO) the ECB provided *de facto* medium term financing to banks.

Outright purchases of specific debt securities in the open market: This tool was initially used in June 2009 under the so-called Covered Bond Purchase Programme (CBPP), according to which the ECB could buy a limited amount (EUR 60 billion) of euro–denominated covered bonds to ease funding conditions for both credit institutions and enterprises.[7] This represented the first resort to this form of non-standard monetary policy tools by the ECB. In May 2010, at the peak panic of a possible Greek default, the governing Council decided to start the Securities Markets Programme (SMP). The objective stated by the then ECB President Trichet was to "address tensions in certain market segments that hampered the monetary policy transmission mechanism"[8] through the purchase on the secondary market (i.e. from banks and at market prices) of securities that are usually accepted as collateral, more specifically, sovereign bonds of distressed countries. Indeed, the monetary policy mechanism also depends on the existence of well-functioning government bond markets, which are used as benchmark for the pricing of other assets and sovereign markets had broken down in these countries at that time.

[7] A second programme (CBPP2) for a total amount of 40 billion was launched in November 2011.

[8] See: http://www.ecb.europa.eu/mopo/liq/html/index.en.html#portfolios

The last SMP purchases took place in February 2012 and the programme was terminated in September 2012. The SMP lacked transparency: Neither size nor length of the programme (it was simply stated that it was temporary in nature), nor the criteria of the purchases were announced in advance. The ECB only published the amount of the purchases on weekly basis without unveiling the country issuer or the maturity. The justification given by the ECB was that more transparency would have given an advantage to the speculators it was fighting. Eventually, in February 2013, details about holdings of securities purchased under the SMP were published several months after it had ended (and after the announcement of the OMT). Data on weekly purchases suggest that in 2010 the ECB had embarked on market intervention intermittently buying substantial amounts of government bonds of smaller peripheral euro area countries (see Alcidi et al. (2012)). Table 1 shows the breakdown of the Eurosystem's SMP holdings as of 31 December 2012, per country of issuer, indicated at nominal value, book value and average remaining maturity.

Table 1: ECB holdings under SMP

Issuer country	Outstanding amounts		Average remaining maturity (in years)
	Nominal amount (EUR billion)	Book value* (EUR billion)	
Ireland	14.2	13.6	4.6
Greece	33.9	30.8	3.6
Spain	44.3	43.7	4.1
Italy	102.8	99.0	4.5
Portugal	22.8	21.6	3.9
Total	**218.0**	**208.7**	**4.3**

Source: ECB.

Note: The SMP holdings are classified as held-to-maturity and consequently valued at amortised cost.

The SMP was controversial from the start.[9] It was *de facto* suspended once the European Financial Stability Facility (EFSF) had been set up. The purchases of Greek government bonds remained particularly controversial given the subsequent de facto default of that government. The ECB avoided any losses on its holdings of Greek government bonds only because it was excluded from the 'private sector involvement'. But this had to be financed de facto by the EMS programme. The SMP was briefly re-activated in the summer of 2011 when the risk premia on Italian and Spanish government bonds increased strongly with the ECB buying large amounts in a relatively short time. In the case of Italy the ECB even took the unprecedented step of sending a letter to the Italian government outlining the structural reforms and the fiscal adjustment it expected to be taken. However, this attempt

[9] By contrast, the covered bond buying programme had been approved unanimously. At that time Germany and Spain were by far the countries with the largest amounts of covered bonds outstanding. In principle the banking systems of these two countries were the biggest beneficiaries or potential beneficiaries of the programme.

to impose some 'conditionality' in the context of the SMP programme is widely perceived as having failed.

3.1. Outright Monetary Transactions

In August/September 2012 the ECB announced the details of the OMT, a programme to purchase sovereign bonds on secondary markets "to safeguard an appropriate monetary policy transmission and the singleness of the monetary policy"[10].

At first, the OMT appeared as a continuation of the SMP, but when in the September meeting, Mario Draghi described the technical features of the OMT, he highlighted the differences and the intent of the Board to be much more transparent than in the past. In contrast to the SMP, the activation of the OMTs requires the country to apply for an appropriate EFSF/ESM programme which includes strict conditionality. This is been seen as condition in order to preserve ECB price stability mandate[11] and avoid the moral hazard issues. Other differences relate to more technical aspects: only bonds with maturities of one to three years can be bought under the OMT[12]; for bonds purchased under the OMTs, the ECB will enjoy the same (*pari passu*) treatment as other creditors. This was not in fact the case under the SMP. Indeed on the occasion of the restructuring of the Greek sovereign debt, ECB' holdings were paid at par. However, the profits on such holdings were then redistributed to Greece.

The key difference for many is that OMT purchases are explicitly *ex ante* unlimited. By stating this feature explicitly the ECB wanted to underline its determination to prevent a breakup of the euro area.

The ECB has not yet engaged in any Outright Monetary Transactions (OMT), and there is at present little prospect it will have to do so in the near future. Nevertheless the OMT is widely regarded as the most important non-standard monetary policy instrument in the tool kit of the ECB and is credited with having saved the euro area from disintegration.

However, upon closer inspection, a rather different picture emerges. The condition that the ECB would start buying only if the country has applied to the European Stability Mechanism (ESM) for a programme requires the assent of the governments and/or the parliaments of the Member States which finance the ESM. The ESM programme usually comes with heavy policy conditionality. From this pointy of view, OMT could be regarded as a sort of conditional SMP.

A further fundamental difference between the SMP and the OMT is in the fact that OMT is reserved to countries that still have market access[13]. This means that were a country to be in a similar situation as Greece in April 2010, when it had lost market access, the OMT could not be activated. The reason for this condition is that lending to (buying bonds of) insolvent governments is no longer monetary, but fiscal policy. However, this condition is likely to be tested in a real emergency. The purpose of the OMT is to counter speculation on the break-up of the euro area. But even if a country has an ESM programme speculation

[10] http://www.ecb.europa.eu/press/pr/date/2012/html/pr120906_1.en.html.

[11] Like for the SMP, it is foreseen that the liquidity created through OMTs would be fully sterilised in order to discard any future impact on inflation. Yet, in a context of full allotment procedures of banks' refinancing this is meaningless as the ECB anyway does not control the size of its balance sheet.

[12] Despite no limitation in the maturity was explicitly stated for the SMP, the maturity of government debt securities purchased under the SMP was on average around 4 years.

[13] This is implicitly stated in the technical feature so the OMT when it comes to the coverage "They may also be considered for Member States currently under a macroeconomic adjustment programme when they will be regaining bond market access" (http://www.ecb.europa.eu/press/pr/date/2012/html/pr120906_1.en.html) and has been emphasized by many commentators then after.

that the country is about to leave the euro area can arise. The government of the country in question could then probably no longer sell its bonds in the market. This implies that the OMT could not be activated – and would thus not be able to fulfil its mission to counter speculation on the break-up of the eurozone.

It remains true that the OMT had a large impact through the announcement effect of an explicitly potentially unlimited intervention of the ECB on the sovereign bond market at the time of severe tensions on such market segment.

Yet in reality, the SMP also did not have any *ex ante* limitations on the quantity the ECB could buy, the programme was supposed to be temporary, but this formulation did not put any explicit limit on the duration of the SMP. If anything the limits of the OMT are in reality more binding than for the SMP. As the supply of government bonds with maturities of less than 3 years is limited and large amount of them are held by banks and used as collateral in refinancing operation, the true meaning of 'unlimited' in this context means all the outstanding[14] short term bonds of the country(ies) in question. This implies that even if the OMT had to be used for both Italy and Spain it would probably still be a fraction of the balance sheet of the ECB today.

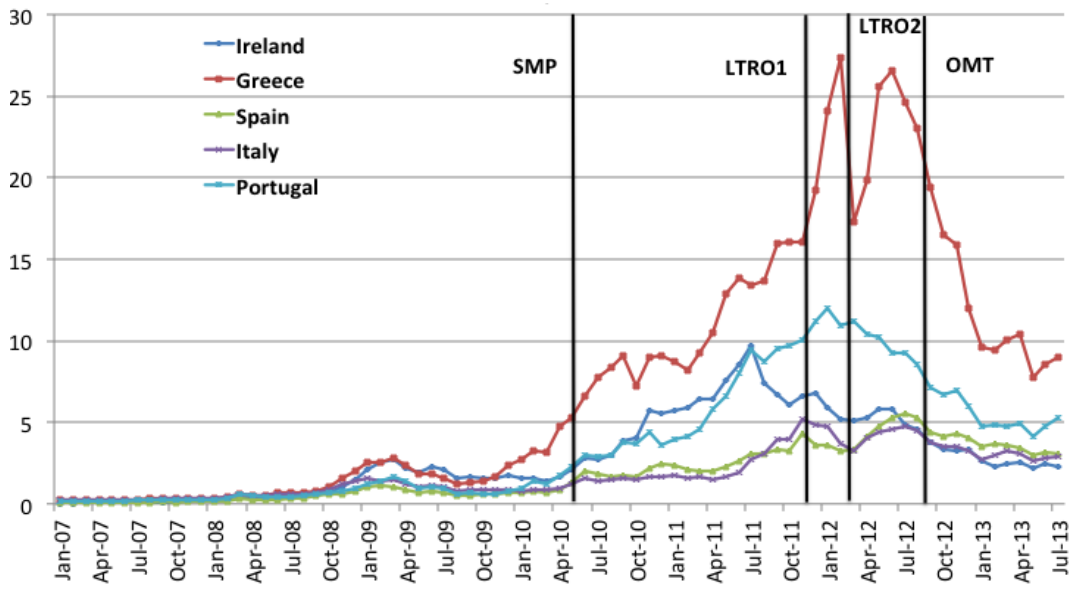
[14] In order to avoid any circumvention of the limitation to short-term maturities, the ECB has explicitly stated that it would 'monitor' the maturity structure of new issuance by governments under this programme. Any country in need support via the OMT would also have an ESM programme. The latter would presumably be used to finance any flow financing requirement resulting from an ongoing deficit.

4. ASSESSING THE EFFECTIVENESS OF NON-STANDARD MONETARY POLICY TOOLS

The effects of non-standard monetary policy tools are still under scrutiny by the economic literature. It may take years before we can have a final assessment of their broad implications. Currently, views are mixed. For instance, the LTROs have on the one hand provided emergency liquidity for banks, and so helped to avoid disorderly defaults and represented a relief for sovereigns. But, on the other, financial institutions have used this liquidity to increase their exposure to national governments, with only a very limited impact on the broader economy (Valiante, 2012). More generally, monetary policy tools, whether conventional or unconventional, are able to provide emergency liquidity but appear to be unable to redirect resources towards their optimal allocation.

One of the most important objectives of the unconventional tools is the ability to fix the transmission channels of monetary policy. As Figure 3 suggests, despite the SMP had minimal effects and LTROs unclear effects, OMT (with the announcement effect) managed to reduce banks reliance on ECB funding as the negative pressures on the economy slowed down and sovereign bond yields cooled down (in particular those with short maturities).

Figure 3: 10-year Government Bond Yields (2007-2013)

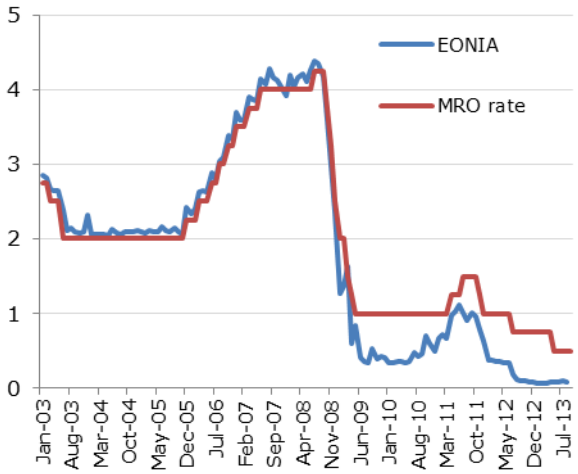


Source: ECB.

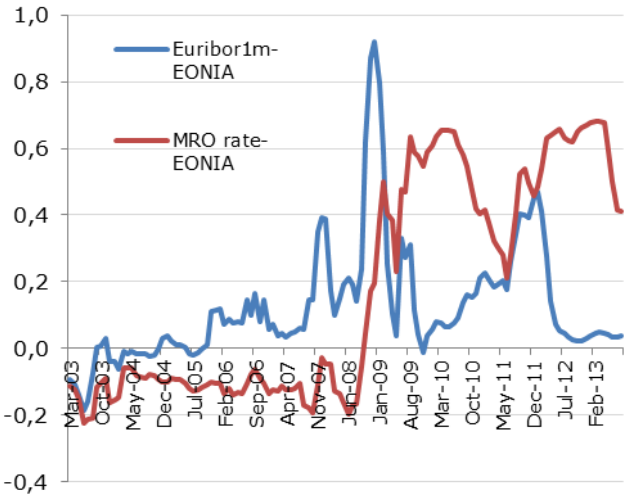
However, the transmission channels of monetary policy are still impaired, as the interbank market still strives to restart. These tools have hardly restored the situation. Policy interest rates no longer determine market rates. As explained above, central banks used to be able to guide (short term) market rates with their policy rates. As Figure 4 panel (a) shows, the riskless market rate (EONIA) used to track the rate for the MRO (Main Refinancing Operations) before the crisis, but this is no longer true. Similarly, while in quite times the spread of the Euribor over the EONIA is rather stable, the volatility has increased dramatically since the summer 2007 (panel b).

Figure 4: The policy rate and interbank interest rates (2003-2013)

Panel (a): Rate on main refinancing operations (MRO) & the overnight rate in the interbank market (EONIA)



Panel (b): Differential in the interbank rates (Euribor-EONIA) and differential between policy rate and the interbank rate (MRO rate – EONIA)

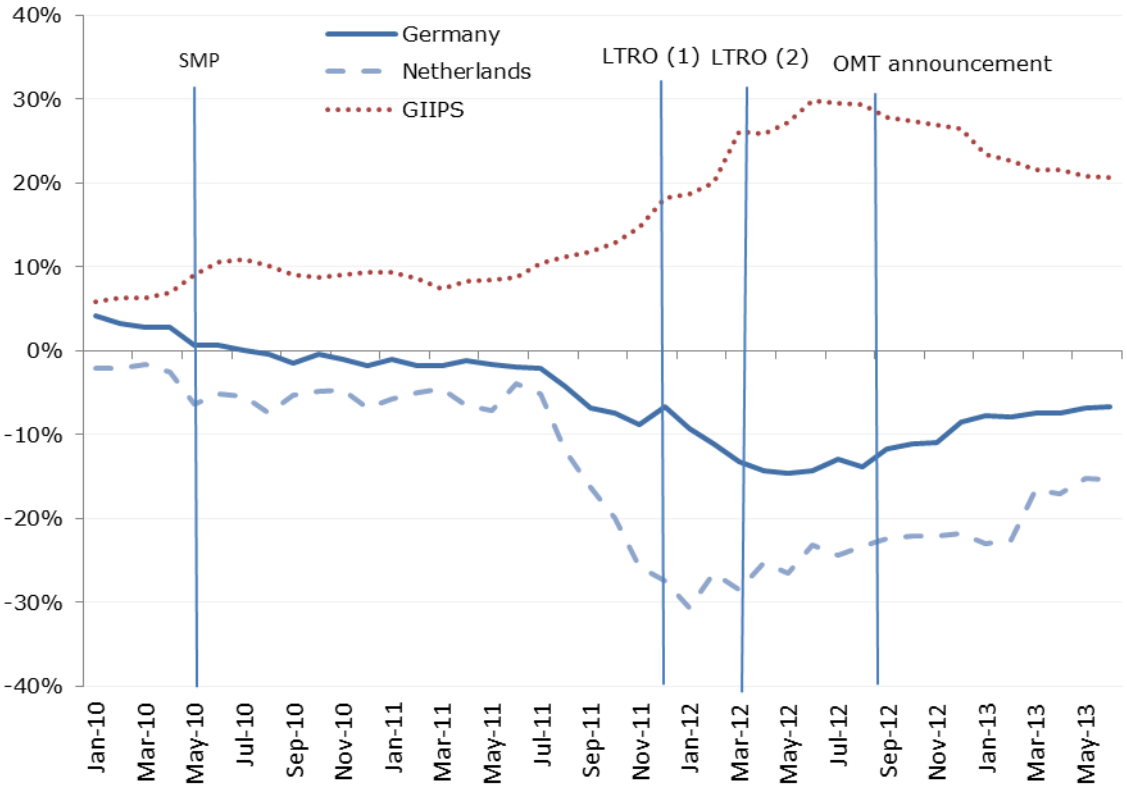


Source: ECB.

Note: Panel (b) shows the moving average over 3 months.

While an interest rate on unsecured lending very close to zero may suggests the crisis is completely over, the interbank market remains impaired and interbank transactions take place only among solid institutions mostly located in core countries, while banks in the periphery remain isolated. These dynamics explain the still strong divergence between net lending among central banks, as illustrated by Figure 5. Financial institutions located in distressed countries strive to get liquidity in the interbank market and need to access ECB liquidity facilities, which act as a central counterparty.

Figure 5: Net Financing provided by the ECB (and the Eurosystem) to MFI's across the euro area, selected countries, % GDP, 2010-2013)



Source: ECB.

4.1. The saver's conundrum

In a nutshell, a fundamental problem of the euro area is that the market cannot be brought back into equilibrium when the savers are no longer willing to lend to those who would be willing to take these savings and when lower interest rates might induce some savers to save even more.

A fundamental problem for the ECB is that even if the cross border capital markets start to function again it is not clear that lower interest rates will be effective in leading to stronger demand. Indeed, low interest rates may in some case even have a negative impact on aggregate demand within the euro area. The reason for this is that lower interest rates reduce overall spending if the income effect dominates the substitution effect. A lower interest rate lowers the returns of savings and, therefore, non-labour income (income effect). On the other hand, a lower interest rate makes it also less interesting to save today, thus increasing the propensity to spend out of the income one has (substitution effect). For a net borrower both effects go in the same direction, supporting demand. But for a net lender with substantial savings, the income effect might well prevail over the substitution effect.

It is clear that this effect can operate only on agents with large asset holdings, whose return fall when the interest goes down. The corporate sector is typically not in this position, but the impact of lower interest rates on investment demand is always highly uncertain and likely to be limited when uncertainty is a major issue (Buti and Padoan 2013).

In the euro area one can identify the North (Germany and the Netherlands, among others) as a net lender and the South (Greece, Italy, Spain, among others) as a net borrower. As

the monetary transmission mechanism is impaired in the euro area, the ECB efforts to lower interest rates are transmitted only to the North, where short interest rates are effectively zero. This is why a combination of low interest rates in Germany and high risk premia for most of the rest of the euro area is so destructive. In particular, when the yield on German government bonds becomes negative in real terms, German savers must redouble their efforts to constitute their retirement plans. Lower interest rate can thus lead to lower consumption in Germany. However, lower ECB rates do not result in lower rates in the South. The higher risk premia which remain there force this part of the euro area to cut spending, thus reducing the demand for 'loanable funds'.

The efforts of the ECB to reduce interest rates to zero and persuade markets that they will be kept low for a long time might thus not have the intended effect of stimulating demand. On the contrary it might have led to weaker demand. For a while the euro area was caught in a spiral of ever-increasing risk premia in the periphery that hampered domestic spending there. But the capital flight to the surplus euro-area Member States, lead to negative interest rates in real terms, possibly inducing households to reduce their consumption there as well. But a weaker demand from the euro-area core made the adjustment in the periphery even more difficult. Fortunately, it now seems that this spiral is now moving in the opposite direction.

5. RE-PRICING CROSS BORDER LENDING IN THE EURO AREA: ECB AS CENTRAL COUNTERPART

A key difference between the euro area and the US is that lending between two banks located in two different Member States involves quite different risks than 'domestic' lending, i.e. lending between two banks in the same country. This is not the case in the US where the supervision of the financial system is federal. The fact that the state of California might be closer to bankruptcy than some euro area Member States has no influence at all on the credit rating of banks headquartered in California; and no influence on their ability to obtain funds on the inter-bank market. This is totally different in the euro area where any bank rescue depends on the fiscal strength of the bank's home country. Additional cross-border economic and legal barriers make this difference even starker.

During the credit boom years up to 2007 enormous cross border interbank claims built up because banks trusted each other, i.e. the returns of cross-border trading were actually higher than the direct and indirect costs. As the interbank market froze in 2008 due to inability to price each other credit risk, the situation worsened quickly. At that time, it was still assumed that all euro area member governments would be able to bail out their own banks but when the solvency of the government of the 'Southern' euro area Member States could be no longer considered as granted, the interbank market split along national lines. Banks in Northern EMU countries continued to lend to each other, but they stopped lending to banks in Southern EMU countries.

A sudden withdrawal of interbank funding has the same consequences as a bank run. A bank that suddenly has to repay its interbank debt has to cut credit to its own customers or engage in fire sales, which leads to large losses. This is exactly what happened when the interbank market froze after the bankruptcy of Lehman Brothers in 2008. And the same happened with the sovereign debt crisis came up in 2010/2011: a financial meltdown was avoided only because the ECB took on the role of the euro area's 'central clearing house' (as illustrated in Figure 5 above). This happened without much fanfare: German and other Northern European banks, which no longer trust their Southern counterparts, parked their funds at the ECB's deposit facility, whereas Southern European banks used the lending facilities of the ECB to substitute the private interbank funding they had lost.

The ECB represents still today the interbank market for short term lending and with the two rounds of LTROs (in late 2011and early 2012) has also intermediated medium term funding. This was a crucial step, because banks are required to maintain a rough matching of the maturity of their assets and liabilities. Many banks would not have been able to continue operating only with the very short term funding the ECB had been providing hitherto. These operations have also increased cross-border exposures within the Eurosystem. To an even larger extent than before, the ECB took deposits from banks in savings surplus countries and lent to banks in borrowing deficit countries.[15] This is reflected in the TARGET II imbalances that have attracted much attention. The key issue for the ECB is to understand whether its role as 'cross-border central counterparty of last resort' will prove to be temporary. The reduction in the Target balances shows that the situation is slowly improving, but the very high absolute levels show that the problem has not been solved yet.

[15] The geographical distribution of the increase in the deposits at the ECB since the LTRO is clear: EUR 300 billion (60 %) came from German banks alone, with another EUR 100 billion from Dutch banks. The hundreds of billions of balances accumulated by German banks with the Bundesbank within the TARGET payment system reflect the same phenomenon.

Unfortunately, with the aim of containing risk, banking regulation is pushing banks to reduce their cross border exposure in response to the ratings downgrades of the periphery. Under the so-called standardised approach of Basle II of risk weighting, a downgrade in the credit quality of a loans held in the portfolio of bank implies a cost in terms of extra capital that have to set aside. Given the high cost of bank capital this translates into an increase of the effective cost of cross border lending. In practice, under current rules a downgrade from AA to BBB of a Spanish bank could imply an increase in the cost of borrowing from German bank of 2 percentage points. By contrast, the cost for the German of transferring the credit risk to the ECB is only 0.75 %, i.e. the spread between the lending and deposit rates of the ECB.

This might change now with the creation of the Single Supervisory Mechanism (SSM) because the ECB will not have the same incentives as national supervisors. Instead it will look at the overall liquidity situation of cross border banks. This shows how the need for an 'unconventional' monetary tool arose because of a combination of market panic and fragmentation of supervision. A structural change like the creation of the SSM might now eliminate the need for certain monetary policy instruments.

The creation of the SSM should eliminate the obstacles to cross border lending that national supervisors had created. But this might not be enough to re-start the recycling of the continuing surpluses in Germany and the Netherlands to the rest of the euro area. This means that the price mechanisms should also be used. In practical terms the only solution seems to be a negative deposit rate. The ECB could simply lower the deposit rate from zero to negative values. Maybe it could even announce that the rate would be progressively lowered until the ECB deposits would reach a certain level. When Germany's banks are faced with a substantially negative deposit rate at the ECB they might try to buy other German assets, driving the rate on Bunds even closer to zero. Sooner or later they will thus either have to resume lending to the periphery and invest in the rest of the world, or go out of business.

CONCLUSION

Unconventional monetary policy tools represent both a return to traditional model of central banking and a response of central banks to dysfunctional financial markets. In this respect the challenge faced by the ECB is particularly tough given the fragmentation of the euro area's financial markets along national borders. This fragmentation arose partially from a process of liquidity 'ring fencing' by national authorities. The unification of supervision under the SSM may thus address at least part of the problem. If the interbank market remains fragmented even after the establishment of the SSM, the ECB should consider using a conventional instrument in an unconventional way, namely to make the deposit rate negative. In this way the ECB could reinforce the incentive for banks to invest their funds were they are needed most.

The importance of the OMT for the longer term survival of the Euro is over-rated. The conditions attached to the OMT are actually more constraining than those of the SMP which it replaced. During times of panic an intervention like the OMT is needed, but in the long run the survival of the euro can only be ensured if the fundamental divergences that have arisen over the last decade are corrected.

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