Lorenzo Bini Smaghi: Conventional and unconventional monetary policy

Keynote lecture by Mr Lorenzo Bini Smaghi, Member of the Executive Board of the European Central Bank, at the International Center for Monetary and Banking Studies (ICMB), Geneva, 28 April 2009.

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1. Introduction[1]

It is a pleasure to be at the *Centre International d'Etudes Monétaires et Bancaires* to deliver this keynote lecture on unconventional monetary policy measures.

This topic has not featured prominently in the speeches given by central bankers in recent decades. But the escalating financial crisis since last autumn has pushed the theme to centre stage. Central banks throughout the world have been responding to the crisis by taking both conventional and unconventional policy measures. It is important to have a good understanding of the unconventional policies and how they differ from the conventional ones.

I would like to focus on four groups of questions:

1. First, why and when should central banks resort to such measures? There is no tried-and-tested timetable or sign-posted pathway for moving from conventional to unconventional measures. For instance, an issue to consider is whether unconventional measures should or can be implemented only after the nominal short-term interest rate has reached its lower bound and while downside risks to price stability prevail, or be adopted while interest rates are still positive.
2. Second, what are the main characteristics of unconventional measures?
3. Third, how are unconventional measures implemented if and when they are needed? To answer this question, we have to distinguish between different types of unconventional measures, from quantitative easing to credit easing. Each measure has different effects and counter-effects, depending on the structure of the financial system or other factors.
4. Fourth, how and when do central banks need to unwind the extra monetary stimulus? By definition, unconventional measures are not what is generally done, so they are not supposed to become the standard mode of monetary policy. When deciding on them, monetary policy-makers have to think ahead and ask themselves: "We can get in, but how do we get out?" They need to consider carefully the timing of their withdrawal of such monetary measures – for there are risks in doing it too early, and there are risks in leaving too late.

As you might know, the ECB Governing Council will be discussing and taking decisions on the use of unconventional measures on 7 May. My remarks here today, made on a strictly personal basis, in no way prejudge those decisions. Both my visit here and the subject of my lecture were arranged some time ago. My intention today is to offer a rationale for such measures, not to pre-announce them.

2. Why implement unconventional policy measures?

Let me start with the first question: why and when do central banks need to resort to unconventional policy measures?

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[1] I thank T. Blattner, C. Brand, A. Consolo and I. Jaccard for their input in the preparation of these remarks, which reflect the views of the author.

Let me first clarify what we mean by "conventional" measures. Nowadays, monetary policy mainly acts by setting a target for the overnight interest rate in the interbank money market and adjusting the supply of central bank money to that target through open market operations. To minimise the risk exposure of the central bank's balance sheet, all liquidity-providing operations normally take place in the form of reverse transactions against a menu of eligible collateral. In other words, in *normal times* the central bank is neither involved in direct lending to the private sector or the government, nor in outright purchases of government bonds, corporate debt or other types of debt instrument. By steering the level of the key interest rates, the central bank effectively manages the liquidity conditions in money markets and pursues its primary objective of maintaining price stability over the medium term. This has proved to be a reliable way of providing sufficient monetary stimulus to the economy during downturns, of containing inflationary pressures during upturns and of ensuring the sound functioning of money markets.

But in, so to speak, *abnormal times* conventional monetary policy tools may prove insufficient to achieve the central bank's objective. Generally, there may be two reasons for this.

- First, the economic shock is so powerful that the nominal interest rate needs to be brought down to zero. At that level, cutting policy rates further is not possible, so any additional monetary stimulus can be undertaken only by resorting to unconventional monetary policy tools. Broadly speaking, the additional monetary stimulus when the policy interest rate is at zero can be achieved in three complementary ways: (i) by guiding medium to long-term interest rate expectations, (ii) by changing the composition of the central bank's balance sheet, and (iii) by expanding the size of the central bank's balance sheet.[2] All of these measures have one element in common: they are designed to improve financing conditions beyond the very short-term interbank interest rates.
- Second, non-conventional measures may be warranted even when the policy interest rate is above zero if the monetary policy transmission process is significantly impaired. Under these circumstances, central banks have two (not necessarily mutually exclusive) alternatives, namely (i) to reduce the short term nominal interest rate even further than in normal conditions, and (ii) to act directly on the transmission process by using non-conventional measures.

The experience of the past year and a half – a very stressful time for the global financial system – have shown that non-standard tools might be needed even before policy rates have been cut to their lower bound. When the turmoil started in summer 2007 and central banks worldwide stepped in to provide additional liquidity to financial markets, it appeared that conventional measures could still do the job. Although markets were not operating normally, far from it, tensions in the euro area interbank market were considerably eased by supplementary longer-term refinancing operations. But things changed as the crisis intensified in September and October last year. Shortly after the collapse of Lehman Brothers, the spread between the three-month Euribor and the overnight interest rate EONIA – which in normal times would on average be around 10 basis points – rose to an all-time high of 156 basis points on 13 October. Market liquidity virtually dried up, and the sudden loss of confidence among market participants threatened to have a lasting effect on the orderly functioning of the euro area money market.

Under these circumstances, easing monetary policy by simply lowering official interest rates would not have been enough. Whenever the transmission channel of monetary policy is severely impaired conventional monetary policy actions are largely ineffective. Any policy decision therefore needed to take account of the extraordinary situation in money markets. Central banks have different tools to cope with the extraordinary situation in interbank

[2] See Bernanke and Reinhart (2004).

markets, and their choice largely depends on institutional characteristics, but not only. The situation of the banking sector and the types of shock hitting it are also important. So while it is tempting to draw cross-country comparisons among such non-conventional measures, it is also rather misleading.

An issue to consider when implementing non conventional policies is the risk of hindering the functioning of markets by substituting or interfering with them. Agents' refinancing needs may become excessively dependent on operations settled with the central bank. In other words, financing conditions may become overly attractive as a result of central bank operations and may crowd out other channels, reducing the incentives for restarting normal market conditions.

3. Main characteristics of unconventional measures

When conventional tools can no longer achieve the central bank's objective, policy-makers are confronted with a number of issues.

- First, the unconventional tools include a broad range of measures aimed at easing financing conditions. Having this menu of possible measures at their disposal – which are not mutually exclusive ones – monetary policy-makers have to clearly define the intermediate objectives of their unconventional policies. These may range from providing additional central bank liquidity to banks to directly targeting liquidity shortages and credit spreads in certain market segments. The policy-makers then have to select measures that best suit those objectives.
- Second, they should be wary of the possible side-effects of unconventional measures and, in particular, of any impact on the financial soundness of the central bank's balance sheet and of preventing a return to a normal market functioning.

In general, unconventional measures can be defined as those policies that directly target the cost and availability of external finance to banks, households and non-financial companies. These sources of finance can be in the form of central bank liquidity, loans, fixed-income securities or equity. Since the cost of external finance is generally at a premium over the short-term interbank rate on which monetary policy normally leverages, unconventional measures may be seen as an attempt to reduce the *spreads* between various forms of external finance, thereby affecting asset prices and the flow of funds in the economy. Moreover, since these measures aim to affect financing conditions, their design has to take into account the financial structure of the economy, in particular the structure of the flow of funds. Let me elaborate on the possible measures.

One way to affect the cost of credit would be to influence real long-term interest rates by impacting on market expectations. Expectations may work through several channels. For instance, the central bank can lower the real interest rate if it can induce the public to expect a higher price level in the future.[3] If expected inflation increases, the real interest rate falls, even if the nominal interest rate remains unchanged at the lower bound. Alternatively, policy-makers can directly influence expectations about future interest rates by resorting to a conditional commitment to maintain policy rates at the lower bound for a significant period of time.[4] Since long-term rates are *prima facie* averages of expected short-term rates, the expectation channel would tend to flatten the entire yield curve when policy-makers commit to stay at the lower bound. Moreover, a conditional commitment to keep the very short-term rate at the lower bound for long enough should also prevent inflation expectations from falling, which would otherwise raise *real* interest rates and curtail spending. In either case, if

[3] This is the type of policy analysed by Krugman (1998) and Svensson (2004).

[4] See Eggertsson and Woodford (2003, 2004).

the management of expectations is successful, it would – *ceteris paribus* – reduce the *real* long term rate and hence foster borrowing and aggregate demand.

Another way in which the central bank can influence the cost of credit is by affecting market conditions of assets at various maturities – for instance, government bonds, corporate debt, commercial paper or foreign assets. Two different types of policies can be considered. The first aims at affecting the level of the longer term interest rate of financial assets across the board, independently of their risk. Such type of policy would operate mainly by affecting the market for risk free assets, typically government bonds. This policy is typically known as "quantitative easing". The second policy is to affect the risk spread across assets, between those whose markets are particularly impaired and those that are more functioning. Such a policy would be usually referred as "credit easing". The two types of policies affect differently the composition of the central bank's balance sheet.[5] Another difference is that "credit easing" can generally be conducted also at above-zero levels of the short-term nominal interest rate, while quantitative easing should make sense only when the interest rate is at zero or very close to zero. However, both operations aim at increasing the size of the central bank balance sheet and therefore expanding its monetary liabilities.

Let me now consider quantitative easing and credit easing in turn.

4. How are unconventional measures implemented?

How can the size and composition of the central bank balance sheets be modified? The straightforward way is for the central bank to directly purchase assets in the relevant markets.

4.1 Direct quantitative easing

When the central bank decides to expand the size of its balance sheet, it has to choose which assets to buy. In theory, it could purchase any asset from anybody. In practice, however, quantitative easing has traditionally focused on buying longer-term government bonds from banks. The idea is twofold: first, sovereign yields serve as a benchmark for pricing riskier privately issued securities. When long-term government bonds are purchased, the yields on privately issued securities are expected to decline in parallel with those on government bonds. Second, if long-term interest rates were to fall, this would stimulate longer-term investments and hence aggregate demand, thereby supporting price stability.

This is where banks play a critical role in the success of any quantitative easing policy. If the aim is to ensure that new loans are provided to the private sector, central banks should mainly purchase bonds from the banks. The additional liquidity would then be used by the banks to extend new credit. However, banks may choose to hold the liquidity received in exchange for the bonds in their reserves at the central bank as a buffer. In this case, the liquidity provided by the central bank remains within the financial sector; it does not flow out of it. This risk can be minimised if the central bank conducts this type of operation only at the lower bound – that is, when it has fully exploited the standard interest rate channel. At the lower bound the remuneration of deposits is null (or almost null) and there is hence little or no incentive for banks to park excess reserves with the central bank. Deploying a policy of quantitative easing at a policy rate different from the lower bound may necessitate a larger expansion of the central bank's balance sheet and thus increase the risk exposure of the monetary authority.

In light of the above considerations, the soundness of the financial system is critical to the success of quantitative easing. When banks stop intermediating loans, this policy no longer

[5] See Bernanke (2009).

works. Quantitative easing is successful if it narrows the market spreads between the rates paid on selected credit instruments and policy rates, thereby limiting the risks of a liquidity shortfall and encouraging banks to extend credit to higher interest-paying parties.

The Bank of Japan's policy between 2001 and 2006 provides one example of quantitative easing. It had the following key features: first, it involved a shift in the operational target for money market operations from the uncollateralised overnight call rate to the outstanding balance of current account deposits at the Bank of Japan, or in short the bank reserves; second, it entailed outright purchases of Japanese government bonds to meet the target balance of current account deposits at the Bank; and third, it involved an explicit, public commitment to maintain these open market operations until the CPI did not fall on a sustainable basis.

During that period, the Bank of Japan had discussions with academics about strategies for avoiding prolonged deflation. These talks repeatedly gave rise to one particular question: why didn't the Bank of Japan simply allow the yen to depreciate in order to stop the fall in consumer prices? This is the essence of Lars Svensson's prominent suggestion of "The Foolproof Way" out of deflation.[6] But if it were so simple, why did the Japanese authorities apparently fail to take the necessary measures to prevent deflation? The answer is: it wasn't that simple. What "The Foolproof Way" underestimates is the enormous difficulty of turning around expectations of prices and economic activity when the functioning of the financial system is seriously impaired. The failures to restructure Japan's financial and corporate sector and to recapitalise banks have been widely documented as key reasons for the country's anaemic growth rates and declining prices[7] – factors over which the Bank of Japan had little control.

Let me just add something on that matter: "The Foolproof Way" wouldn't work in today's context either. Given the global dimension of the current financial crisis, it would not be possible for all countries to depreciate their currencies at the same time in order to push inflation up. Such a beggar-thy-neighbour policy would be ineffective in the present circumstances; worse, it would aggravate them by unleashing a protectionist backlash. In fact, the leaders of the G20 recently agreed to refrain from competitive devaluation of their currencies, and it is important to stick to this objective in both words and deeds. Although not all countries belong to the G20, I am confident that all advanced economies will comply with this principle.

There are some important lessons we can learn from the experience of quantitative easing in Japan:

- To begin with, it cannot be taken for granted that an increase in the monetary base results in easier monetary conditions. In fact, the money multiplier has significantly decreased during the last decade. This has, to a certain extent, reduced the effect of injecting money into the economy.[8]
- Second, as mentioned before, the banking system is crucial for the success of a quantitative easing policy.[9] However, given the high degree of de-leveraging which the Japanese economy, and the banking sector in particular, was undergoing, banks did not find themselves in a position to pass on the additional liquidity to the non-financial sector.

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6 See Svensson (2006).

7 See Kashyap (2002).

8 See Hiroshi (2006) for an evaluation of quantitative easing in Japan.

9 See Caballero, Hoshi and Kashyap (2006).

- Third, one of the expected effects of quantitative easing is a flattening of the yield curve at longer maturity which improves the medium to longer-term financing conditions for the private sector. But what ultimately matters for investment and spending decisions is the real interest rate and hence inflation expectations. Strictly speaking, an increase in the money supply should have implications for the expectations of the future price level. But quantitative easing will only affect expected inflation if the increase in the size of the central bank's balance sheet is not only sizeable but also perceived as being permanent.[10] The experience of the Bank of Japan provides a clear-cut example of a temporary expansion of the monetary base that did not affect private sector inflation expectations.

- Fourth, it is not clear how it is possible to increase inflation expectations in a significant way while avoiding a rise in the nominal long-term interest rate after some time. Setting the real long-term interest rate as the operational target for monetary policy seems to be rather challenging in an environment with developed financial markets.

- Fifth, if quantitative easing is perceived as being long-lasting then it could also have an expansionary effect by relaxing fiscal constraints. Expansionary fiscal policies represent a sound instrument to stimulate aggregate demand during a deflationary period. In this respect, outright purchases of government bonds by the monetary authority could further strengthen fiscal effects i) by accommodating the supply of governments bonds, ii) by affecting the long-end of the yield curve – the risk premium – and iii) by re-anchoring inflation expectations to a positive target. In particular, the transition to a positive inflation regime reduces the burden on the future fiscal budget by guaranteeing its financial sustainability.[11] Of course, the relevance of this effect crucially depends on the duration of the quantitative easing policy and on a credible commitment to a well-defined exit strategy. In this respect, the broad effects stemming from the fiscal and monetary policy mix have been quite muted in stimulating the Japanese economy.

- Finally, it should be recognised that a government bond purchasing programme involves the risk of accumulating significant losses for the central bank. Government bonds would be purchased at rather high prices. If the easing measure turned out to be a success, the ensuing economic recovery would gradually entail an increase in long-term interest rates; this would bring down government bond prices, so that the central bank would eventually face losses. Concerns about central bank's balance sheet and financial independence can seriously impede monetary policy.[12] Such constraints may be one reason why the Bank of Japan's government bond purchasing programme has failed to restore positive inflation rates.

Let me also mention that in the context of the euro area the design of such unconventional policy measures poses some intricate challenges, due to its unique institutional framework. In the first place, we need to be mindful of the Treaty requirements relating to the prohibition of monetary financing and the granting of privileged access, as well as of the consistency with the Treaty principle of open market economy and the preservation of the disciplining function of markets for borrowers and lenders.[13] Although purchases of government bonds are possible in the secondary market, there is a risk to eventually become a market maker for public debt, which could be construed to be against the Treaty prohibition of monetary

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[10] Krugman (1998).

[11] See Auerbach and Obstfeld (2003).

[12] See Bernanke (2003), Stella (2005) and Jeanne and Svensson (2007).

[13] Articles 101 and 102 of the Treaty.

financing. Moreover, we have more than just one fiscal authority in the euro area. The Eurosystem would have to decide how to spread purchases of government bonds across euro area countries. If, for example, the Eurosystem only concentrated on public bonds with the best credit rating, it would risk providing privileged access to some countries, contravening Article 102 of the Treaty. If it spread purchases according to a specific key and ended up affecting cross-country differences in yields, it would be seen as granting privileged access, as financing conditions for some governments would be supported to a greater extent than for others. It may also be the case that the risk-free component of corporate bonds would not move exactly in tandem with the risk-free component of government bond yields. This would be tantamount to giving preferential treatment to government debt. These issues would need to be addressed before implementing a government bond purchasing programme in the euro area.

4.2 Direct credit easing

Credit easing is a policy that directly addresses liquidity shortages and spreads in certain (wholesale) market segments through the purchase of commercial paper, corporate bonds and asset-backed securities. The effectiveness of measures which are aimed at wholesale financial markets depends on their importance in the financing of households and firms, which varies considerably from country to country. (It is notably lower in the euro area than in the US, for example). It is also a more attractive strategy in times of acute bank distress, for obvious reasons.

Two things need to be noted here. First, buying privately issued securities is not fundamentally different from buying government bonds in terms of the impact on the money supply or the monetary base. Second, buying privately issued securities implies that the central bank interacts directly with the private sector and is thus stepping into the realm of credit risk – just as any normal commercial bank would do. Outright purchases of privately issued securities affect the risk profile of the central bank's balance sheet. In order not to compromise the financial independence of the central bank, policy-makers need to carefully assess the eligibility of all assets on account of the implications they could have for the risk exposure of the central bank's balance sheet.

Caution is also called for in another respect. Outright purchases of privately issued securities need to be carefully planned to avoid allocative distortions in terms of industries, firms or regions. Also the size of the issuer matters. While it is easy to see how large firms can benefit from the central bank's purchases of privately issued securities, it is more difficult to ensure that small and medium-sized companies get equal treatment. Given the limited depth of corporate bond markets in many economies, purchases of privately issued securities might therefore be a difficult endeavour for policy-makers.

The Federal Reserve's approach since December 2007 has been a high-profile example of credit easing. The Fed has established several lending programmes to provide liquidity and improve the functioning of key credit markets. The Term Auction Facility, for instance, helps to ensure that financial institutions have adequate access to short-term credit, while the Commercial Paper Funding Facility provides a backstop for the market for high-quality commercial paper.[14] More recently, the Fed, in cooperation with the US Treasury Department, has begun to purchase asset-backed securities such as mortgage securities backed by government-sponsored enterprises (GSEs).

How effective have these measures been? It's too early to say. Moreover, with a wide range of unconventional monetary policy measures – since March the Fed has also been purchasing government bonds in parallel – it is extremely difficult to single out the impact of

[14] These programmes belong to a group of policy responses associated with the lender-of-last-resort function of monetary policy.

any specific measure. That being said, the spreads on eligible commercial paper in the United States have come down following the introduction of the Fed's Commercial Paper Funding Facility (see Chart 1). Also, the Fed's purchases of GSE debt and GSE-guaranteed mortgage-backed securities have resulted in a decline of the 30-year conforming mortgage rates by more than one percentage point following the announcement of this programme in late November 2008, and have continued to decline since its expansion on 18 March 2009 (see Chart 2). The narrowing of the spread between mortgage rates and Treasuries also suggests that the Fed's programme of purchasing agency-related mortgage securities may have been effective in easing mortgage market conditions.

4.3 Indirect (or endogenous) quantitative/credit easing

The measures described above foresee the direct acquisition by the central bank of the assets, in exchange for central bank money. This implies that the central bank directly holds the assets, until maturity or resale, and thus the risk on its balance sheet. An alternative way is to increase the size of the balance sheet by lending to banks at longer maturities, against collateral which includes assets whose markets are temporarily impaired. This policy affects directly the yield curve over the horizon at which policy operations are conducted or committed to be conducted. For instance, monetary policy operations with maturity of 6 months directly affect the 6 months interbank money market. This is particularly the case if the operations are conducted at a fixed rate, full allotment. The horizon of the yield curve which is affected may be lengthened to the extent that the central bank commits to conduct such type of tenders for a given period of time. For instance, if the central bank commits to conduct 6 months refinancing operations with fixed rate tenders for 2 years, the yield curve over the two and a half year horizon is likely to be influenced.

The increase in the monetary base is determined endogenously by the banking system, based on banks' preference for liquidity and thus on the state of stress of the banking system. In normal conditions, when financial markets function properly, the size of the central bank balance sheet would be such that the overnight rate would coincide with the short term refinancing rate of the central bank and excess reserves are negligible. Under stress, the size of the central bank balance sheet would increase, on the basis of banks' increased demand for excess reserves, to the point that the overnight rate would be lower than the short term main refinancing rate.

Another aspect of such a policy relates to the quality of the collateral. By enlarging the pool of the collateral accepted for the refinancing operations with the central bank, the financing conditions by banks to these sectors are facilitated, which should be reflected in the credit spreads that banks charge in particular to the corporate sector. This technique also enables the counterparties of the central bank to choose the collateral to use in their refinancing operations. In times of market stress there will be a natural tendency for banks to use a greater amount of assets of a lower quality. The overall collateral deposited with the central bank will vary endogenously, depending on the state of stress of the financial markets. The eligibility of certain categories of assets for monetary policy operations will facilitate their creation and trade among market participants.

In the euro area, the ECB decided to adopt a "fixed-rate full-allotment" procedure: since October 2008 eligible counterparties in the euro area have had access to unlimited liquidity for periods ranging from one week up to six months at a fixed rate. At the same time, we implicitly eased monetary conditions further by expanding the list of assets eligible as collateral in Eurosystem refinancing operations. The Eurosystem accepts a broad range of assets as collateral in all its credit operations. This feature of the Eurosystem's collateral framework, together with the fact that access to Eurosystem open market operations is granted to a large pool of counterparties, has been key to supporting the implementation of monetary policy in times of stress. The in-built flexibility of its operational framework allowed the Eurosystem to provide the necessary liquidity to address the impaired functioning of the money market without encountering widespread collateral constraints throughout much of

2008. It was only towards the end of the year that, in the light of the extension of refinancing for terms longer than overnight in euro and in US dollars as well as the recourse to fixed rate full allotment tender procedures, the Governing Council decided to expand the list of eligible collateral on a temporary basis until the end of 2009.

In 2008 the average amount of eligible collateral increased by 17.2%, compared with 2007, to a total of €11.1 trillion. As regards the composition of collateral put forward, the average share of asset-backed securities increased from 16% in 2007 to 28% in 2008, overtaking uncovered bank bonds as the largest class of assets put forward as collateral with the Eurosystem. Uncovered bank bonds accounted on average for slightly less than 28% of the collateral put forward in 2008. The average share of non-marketable assets increased from 10% in 2007 to 12% in 2008. By contrast, the average share of central government bonds dropped from 15% in 2007 to 10% in 2008.

In my opinion, these changes to our monetary policy implementation can be better characterised as “endogenous credit easing” rather than “quantitative easing”, since the main aim is to relax banks' collateral and funding liquidity constraints, so that they will expand credit supply. Moreover, it is a policy that has been implemented at above-zero level of the short term nominal interest rates.

It should also be emphasised that, given the importance of the banking channel in providing credit to the economy, the unconventional policy measures that would best suit the euro area are likely to differ in terms of scope and depth from those in the US or other advanced economies where a more market-based financial system prevails, a consideration that is too often overlooked. This is the main reason why our policy response so far has been tailored to the specific nature of Europe’s financial structure. A few figures will give an idea of the differences in the financial systems of the US and the euro area. For example, at the end of 2007, the stock of outstanding bank loans to the private sector amounted to around 145% of GDP in the euro area, but only to 63% in the United States. By contrast, outstanding debt securities – a measure of the depth of financial markets – amounted to 81% of GDP in the euro area as against 168% in the United States.

The ECB operations have eased financing conditions for the private sector and allowed banks to refinance loans more easily than would otherwise have been the case. The evidence on the extent of these policy measures on market interest rates and money market conditions is quite encouraging. While the spread between the three-month Euribor and the EONIA is now at levels well below 100 basis points as well as at comparable levels or below the corresponding spreads seen in the US and the UK, ECB refinancing operations are also down from a peak of €857 billion at the beginning of the year to 676 billion last Friday. There is also mounting evidence that the Eurosystem’s policy measures have been effective in averting a dramatic contraction in credit volumes, though credit developments certainly need a close monitoring in the period ahead.

5. Exit strategy

Let me now turn to the last of the four questions that I posed earlier on: how and when do central banks need to unwind the extra monetary stimulus? The simple answer to this question would be – of course – when the economy rebounds and inflationary prospects are back in line with the central bank’s price stability objective. Unfortunately, for a number of reasons, formulating an adequate exit strategy is not such an easy task. Why? Let me mention two choices that need to be made: first, devising the right sequence for the phasing out of the conventional and unconventional monetary policy accommodation; second, deciding on the speed at which the unconventional accommodation is removed.

Let me first clarify what it means, in practice, to unwind unconventional monetary policy operations. In the case of quantitative easing and credit easing policies, it normally implies selling assets outright, and in significant amounts. In the case of the endogenous easing

measures, the unwinding happens automatically, since banks should naturally reduce their demand for central bank money and increase interbank lending as their situation normalises.

Starting with the problem of the right sequence, it should be reminded that an environment of extremely low interest rates and ample liquidity aims at favouring borrowers and penalising lenders, over the medium term, when the policy is reversed. On the other hand, most of the unconventional measures put in place are designed to stimulate lending, to convince savers to hold risky longer-term assets. The effectiveness of these measures therefore mainly depends on the readiness of banks to go back to their main business of lending to households and firms rather than parking excess reserves with the central bank. Clearly, an increase in policy rates – and in particular in the deposit rate – risks undermining banks' incentive to re-engage in funding the private sector. In a similar vein, prospects of rising interest rates may discourage private savers from purchasing longer-term assets, as a tightening of monetary policy inevitably implies a capital loss for those who bought these assets. Raising policy rates, or the expectation of such increases, when confidence is not fully restored could therefore be counterproductive.

What, then, are the implications for the sequencing of unwinding conventional and unconventional policy measures? In simple terms, it means that non-standard measures that aim mainly at restoring the orderly functioning of money markets, such as supplementary longer-term refinancing operations or an extended menu of eligible collaterals, might have to be rolled back before interest rates are increased again. Why?

First of all, because raising interest rates in an environment in which such unconventional measures were still judged to be necessary would risk undermining a sustained recovery by money markets. If concerns about the required and available amounts of short-term funding still prevailed among market participants, raising rates might reinforce these fears and could lead to further, unwarranted upward pressure on overnight rates. Second, supplying extra liquidity to the markets through non-standard measures while, at the same time, tightening monetary policy would send mixed signals on the effective monetary policy stance. Measures to alleviate the strains in money markets could in fact be seen as a continued easing of the monetary policy stance. Third, with non-standard measures such as the unlimited provision of liquidity still in place it might be more difficult for the central bank to steer the level of market rates consistent with its policy target. For example, a fixed rate tender with full allotment usually leaves the banking sector with a large daily liquidity surplus, which needs to be mopped up by additional fine-tuning operations towards the end of the reserve maintenance period in order to avoid a sharp drop in the overnight interest rate. This, however, causes extra volatility in the markets as well as large interest rate fluctuations that are undesirable from the point of view of an effective signalling of the monetary policy stance. Fourth, with markets still in need of additional non-standard measures, the pass-through of an increase in policy rates would probably be hampered. The orderly transmission of any monetary tightening would only resume once trust among market participants has had been restored and money markets were operating normally again. Finally, in any bank-dominated system of fund intermediation, in which the recovery of the economy largely depends on the soundness of the banking system, inflationary pressures that would require a tightening of monetary policy are likely to appear only when the banks take up their normal lending activity again. This, in turn, implies that non-standard measures should ideally be rolled back before interest rates were increased.

This reasoning might not hold for measures taken to revitalise the flow of credit in certain market segments – such as through the purchase of corporate bonds. These measures are primarily designed to bypass the financial sector and to ensure that non-financial corporations still have access to external financing. Now, in theory, by stimulating longer-term investments and hence aggregate demand, these measures might induce inflationary pressures in the medium to long-term, independent of the functioning of money markets and lending by banks. The strength of this channel depends on the depth of the corporate bond market. If policy-makers were to react to these inflationary pressures by raising interest rates

pre-emptively while money markets were still weak, the consequences for the banking channel of intermediation could be severe – for the reasons I have just given. If, however, markets were to function properly again, there would be no reason to postpone the unwinding of "credit easing" policies to a date longer than needed. Taken together, this reasoning suggests that purchases of privately issued securities should be unwound before or at the same time as interest rates are raised back to normal levels.

This raises the question of the reaction that financial markets might have to the start of the unwinding of the direct easing measures. For instance how would markets react to the central bank starting to sell the government bonds it purchased under the direct quantitative easing policy? Such a start would signal presumably that the tightening cycle is close and could affect yields. Furthermore, if the amount of assets to be sold is significant, this can have an impact on the market conditions of the underlying assets, possibly further depressing its price.

Naturally, the question remains: how quickly should policy-makers reverse their policies? On the one hand, withdrawing liquidity in such large quantities will trigger a substantial contractionary monetary policy shock. The large size of many easing programmes will make it difficult to sell assets without a significant market impact. If it happens too quickly or abruptly, policy-makers risk choking off the economic recovery or imposing heavy capital losses on lenders. For instance, in the corporate bond or commercial paper market, even small sales of securities by the central bank could cause spreads to widen considerably and to sharply tighten credit conditions for firms. On the other hand, with policy rates at record low levels and additional liquidity-providing measures adopted in so many countries, the possibility of inflation risks emerging sometime later is not something that can be excluded. Retaining such exceptional policy measures for too long might aggravate the upside risks to price stability and sow the seeds for future imbalances in financial markets.

Getting the timing right in withdrawing additional liquidity is likely to be decisive in order to ensure a non-inflationary recovery. Generally speaking, the lower the reversibility of the non-conventional operations, the larger the risk of being behind the curve when the macroeconomic and financial market situation improves.

Indeed, to a large extent the speed of unwinding of unconventional measures would depend on their degree of reversibility. As I already noted, some of the unwinding would happen automatically as central bank programmes become increasingly unattractive as financial conditions normalise. For instance, many lending facilities provide liquidity at a premium over the main policy rate or with a high haircut applied to the required collateral, making interbank lending the more attractive option once normal lending activity among market participants is restored. As a result, the central bank's balance sheet would decline automatically as demand for its funds decreases. As noted, the ECB's current liquidity-providing operations imply an "endogenous" exit strategy as banks would automatically seek less credit from the ECB when tensions in financial markets ease. The speed of the reversibility would therefore largely depend on the speed of the resurgence of the financial system. In the euro area, the revitalisation of money markets is key to the ECB's exit strategy and any future interest rate decision should therefore avoid a further disruption of money markets. In this context, bringing the main policy rate too close to zero would risk hampering the functioning of the money markets as it would reduce the incentives for interbank lending. This, in turn, could blur the important signals coming otherwise from the resurgence of interbank lending and the associated positive effect on the ECB's balance sheet.

Obviously, the speed of tightening would also depend on the maturity of the assets bought by central banks within the framework of their easing programmes. Differences in the maturity of assets will ensure that a tightening of the accommodative stance would come in gradual tranches. This is important to avoid any abrupt tightening of credit conditions in the middle of the recovery. At the same time, measures centered on assets that are longer-term in nature and less liquid could pose challenges to the future unwinding of these measures. If market

conditions were to improve faster than expected, an increase in the average maturity of the central bank's portfolio would make it more difficult for financial markets to return to normal private sector functioning and would also heighten medium-term inflation risks.

Overall, special operations other than the traditional repurchase agreements might be needed to sterilise the effects of unconventional policy measures at the appropriate time in the future. One option would be to have the fiscal authority issue debt certificates to the market and deposit the proceeds with the central bank. The switch in the ownership of government debt from the private sector to the monetary authority would alleviate the inflationary pressures arising from the additional liquidity. Another option would be for the central bank to issue debt certificates itself, as the ECB for example can do according to its Statute. In this way the central bank would essentially change the composition of the liabilities side of its balance sheet, moving away from excess reserves and towards less-liquid debt securities. The effect, compared with government debt issuance, would in essence be the same.

An important final element related to the exit strategy, but which should be considered carefully already when deciding to embark on unconventional measures, is that when the central bank sells the assets their value is likely to have declined considerably, given the higher rate of interest. This implies a financial loss for the central bank. The consequences for the financial – and overall – independence of the central bank should not be downplayed.

6. Conclusions

To conclude, the decision whether to embark on non-conventional monetary policy measures, which specific ones and for how long depends on a series of considerations, including the overall conditions of the economy, in particular the presence of deflationary pressures and the effective constraint provided by the zero lower bound for interest rates, the structure of the financial flows in the economy, the medium term incentives that would be created for the private sector and the risks entailed in the exit strategy, including for the independence and credibility of the central bank. Some measures present greater advantages, in terms of providing the right incentives and being easily reversible. Others present more risks and have to be well targeted and used under specific circumstances. Considering the pros and cons of the various measures requires deep thinking. I have tried to develop tonight some of the considerations underlying such a reflection. Hopefully this has been useful in understanding why the ECB has proceeded speedily in some areas while taking the necessary time to reflect on others.

Thank you very much for your attention.

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Annex

Chart 1

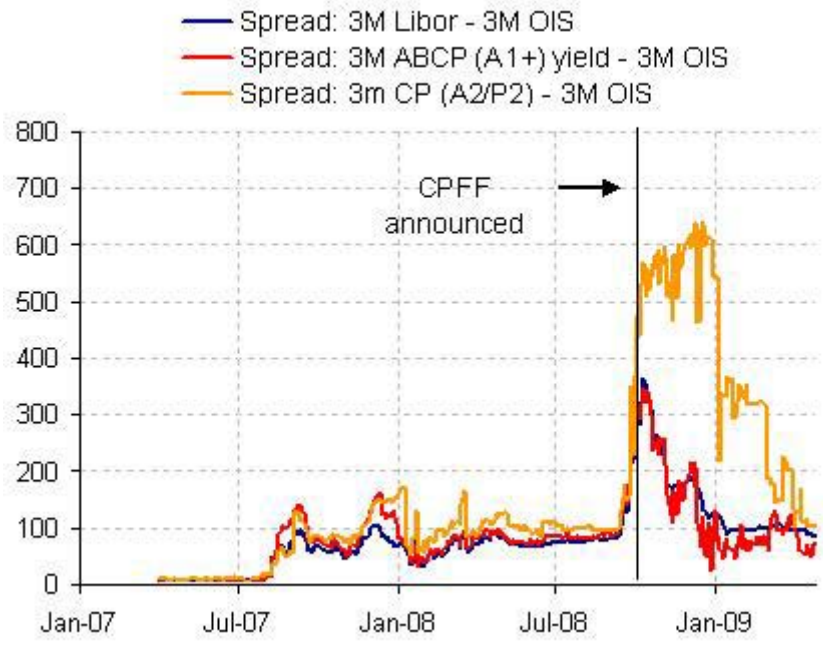
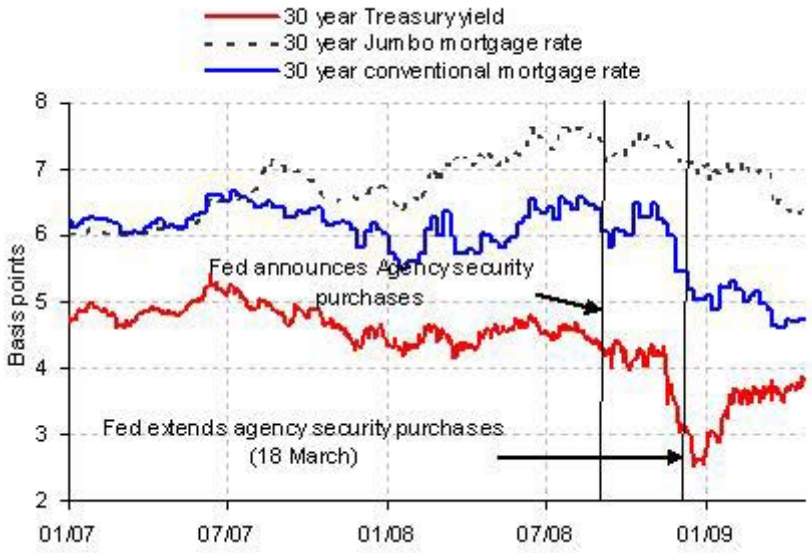


Chart 2


30 year Treasury yield
30 year Jumbo mortgage rate
30 year conventional mortgage rate
Basis points
8
7
6
5
4
3
2
Fed announces Agency security purchases
Fed extends agency security purchases (18 March)
01/07
07/07
01/08
07/08
01/09