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Unconventional monetary policy measures in response to the crisis

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"One of my conclusions from my study of the Great Depression is that people tend to think of orthodoxy as safe. But strategy should depend on the situation. In a crisis, orthodoxy can prove to be a very bad strategy."

Ben Bernanke[1]

The main objective of monetary policy is to maintain price stability. In order to achieve this objective, the central bank sets the value of its key policy rate, i.e. the rate at which it lends the money it issues to commercial banks at a very short-term horizon. Under normal circumstances, policy rate decisions are transmitted to the economy via a number of channels. Traditionally, the first monetary policy transmission channel is the interest rate channel: the current key policy rate and its expected future path largely determine the short-, medium- and long-term nominal interest rate. Moreover, since inflation expectations are relatively sticky in the short term, changes in policy rates also influence the level of longer-term real interest rates, which are the rates relevant for determining aggregate demand. The second transmission channel, the credit channel, brings into play the role of banks and the actual functioning of the bank-lending market. While its empirical significance varies according to the different economies and their financial structures, this channel tends in theory to amplify the impact of monetary policy impulses, by acting on either the real cost of bank loans for their customers, or on the quantity of credit that banks are willing to supply. All in all, by controlling the very short-term nominal interest rate on the money market, central banks influence the financing conditions of the economy and thus the aggregate demand for goods and services and, ultimately, following a certain lag, the level of inflation.

The crisis that is currently gripping the global economy, which started in mid-2007 on the US subprime mortgage-backed securities market, is affecting, to varying degrees in different countries, the standard functioning of these transmission channels, forcing central banks to adapt the way in which they conduct monetary policy. First, this crisis severely affected the balance sheet of commercial banks. This spurred a process of massive deleveraging, which may have led banks to ration their supply of credit just when central banks were seeking to ease their monetary policy. Second, rates prevailing on interbank markets – and on private securities markets – currently factor in high risk premia that are offsetting the impact of the policy rate cuts. Lastly, the rapid economic downturn required policy rates to be slashed to such an extent that, in many countries, they have reached or are close to the zero bound, below which they cannot be cut.

In this context, the traditional channels through which central banks bring about a decline in the medium- or long-term real interest rate appear largely ineffective. This situation may become even more problematic if the recession worsens and fuels

NB *The views expressed in this paper are those of the authors and do not necessarily reflect those of the Banque de France.*
1 *Quoted by the Financial Times, 5 January 2009.*

expectations of a prolonged fall in the level of prices. Temporary disinflation could then turn into a deflationary situation, i.e. a broad-based, prolonged and self-sustaining decline in the price level of goods and services. Indeed, if expected inflation is negative, the real interest rate is positive even if the corresponding nominal rate is zero. Consequently, if the real equilibrium (or natural) interest rate of the economy is itself very low, or even negative, the real effective interest rate may be too high and discourage investment.

Central banks still have tools at their disposal to deal with the threat of deflation, even if their policy rates are already close to the zero bound. Many recent theoretical and empirical research papers, prompted in particular by economic policy debates surrounding Japan's lost decade[2], show that central banks can implement a raft of "unconventional" monetary policy measures to avert the threat of a liquidity trap. In general, these studies conclude that such measures may be effective, at least under certain conditions. Moreover, a number of these tools have been used over the past ten years, in particular in Japan at the start of the decade and, since 2007, in the United States.

The response of central banks to the current crisis has sometimes given rise to noteworthy innovations in the operational framework for monetary policy.[3] However, the typology established some years ago by Bernanke et al. (2004) is equally valid today. According to these authors, unconventional monetary policy measures may take three forms:

- *measures aimed at influencing private sector expectations about the future course of the policy rate,*
- *measures aimed at increasing the monetary base on the liability side of the central bank balance sheet,*
- *and, measures aimed at changing the composition of the asset side of the central bank balance sheet.*

This article provides an in-depth assessment of these three types of unconventional monetary policy measure and, in the conclusion, offers three monetary policy scenarios corresponding to different combinations of conventional and unconventional measures to respond to the current crisis.

♦ Shaping expectations about the future path of interest rates

The monetary policy stance is not confined to the current level of very short-term interest rates. In a modern theoretical framework where private sector expectations play an important role in determining the macroeconomic equilibrium, monetary policy affects demand mainly by its ability to anchor agents' expectations about future interest rates to a path consistent with the price stability objective. Consequently, the fact that the key policy rate has reached, or is close to, the zero bound does not prevent the central bank from influencing expectations about the future path of policy rates, so that they too are aligned with a level close to zero. The most direct way of doing this is for the central bank to commit, explicitly or implicitly, to keeping policy rates at a low level for some time.

This first type of unconventional measure induces a decline in the medium- and long-term ex ante real interest rates through two complementary effects. First, it reduces the medium- and long-term nominal interest rates, in line with the theory of the term structure of the yield curve. Second, it increases expected inflation over the medium and long terms. In turn, the effect of this decline in the medium- and long-term real ex ante interest rates is to stimulate aggregate demand. The central bank can thus counteract the downside risks to price stability over the medium term.

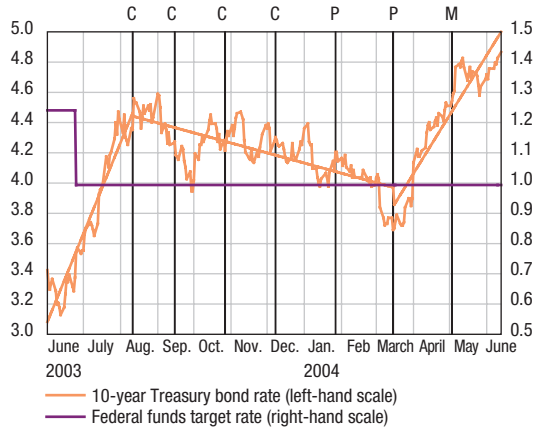
2 *See in particular Krugman (1998), and Orphanides (2004). On Japanese monetary policy and the similarities to the US Great Depression, see for example Ahearne et al. (2002), Okina (1999), Orphanides and Wieland (2000), Reifschneider and Williams (2000) and Svensson (2001).*
3 *For presentations of the measures implemented by the Federal Reserve since mid-2007, see Cecchetti (2008a, 2008b) and Thornton (2009). For an overview covering other central banks, see for example Fender and Gyntelberg (2008) and Bentoglio and Guidoni (2009).*

This commitment to keeping policy rates at a low level for some time is generally explicit, i.e. a public statement is issued by the central bank. This was notably the case of the measure adopted by the US Federal Reserve between August and December 2003 (see Bernanke, 2004), when its key policy rate had been lowered to 1%, with a view to reducing the risk of deflation. At the time, this risk was perceived to be not zero for the American economy. Indeed, during this period, the series of announcements by the Federal Reserve in which it stated that it expected to keep the federal funds rate at a low level for "a considerable period" was apparently sufficient to interrupt and even partly reverse the rise of over 100 basis points in the long-term nominal interest rate observed between end-June and early August 2003, which was thwarting the Federal Reserve's efforts to fight deflation (see Chart 1).

The Federal Reserve recently returned to this type of measure by announcing, in its press release of 16 December 2008, that the Federal Open Market Committee (FOMC) "anticipates that weak economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time." The Bank of Japan had also adopted a measure of this nature in 1999-2000 (see Fukui, 2003).

These explicit commitments are all formulated in a conditional manner, i.e. they concern maintaining interest rates at a low level until inflation or economic activity satisfies certain predetermined conditions, rather than maintaining interest rates at this level for a certain period unconditionally. This conditional nature, commented on and justified by Bernanke (2004), enables the central bank to respond in a timely and appropriate manner to unexpected developments concerning inflation or economic activity.[4]

Chart 1
An example of explicit manipulation of future interest rate expectations by the Federal Reserve



C: "The Committee believes that policy accommodation can be maintained for a considerable period."
P: "The Committee believes that it can be patient in removing its policy accommodation."
M: "The Committee believes that policy accommodation can be removed at a pace that is likely to be measured."

The empirical study by Bernanke, Reinhart and Sack (2004) concludes that explicit commitments to maintaining policy rates at a low level may have the desired impact, even though this impact is uncertain. The mixed opinions of these authors on the Japanese experience of 1999-2000 zero interest rate policy (ZIRP) must nevertheless be qualified: since this policy was fairly rapidly called into question, it is unlikely that it was implemented in a sufficiently convincing way for private agents.[5]

According to certain economists, the commitment to maintaining interest rates at a low level for a certain period can also be implicit. Central banks can do this by temporarily adopting a price-level target path (see Eggertsson and Woodford, 2003). Indeed, this implies offsetting current low inflation by higher

4 *Moreover, the minutes of the FOMC meeting of 15 and 16 December 2008 testify to its members' attachment to conditional communication: "participants judged that communicating the Committee's expectation that short-term interest rates were likely to stay exceptionally low for some time could be useful because it could lead to pricing of longer-term interest rates consistent with the path of monetary policy that policymakers saw as most likely. Participants emphasized the importance of explicitly conditioning communication regarding future policy on the evolution of the economic outlook".*

5 *The Bank of Japan announced the implementation of the ZIRP in February 1999, committing to maintaining the call rate "as low as possible" until deflation had been eliminated. Fearing renewed inflation, the Bank of Japan nevertheless raised its key rate to 0.25% in August 2000, invalidating its prior commitment (see Orphanides (2004)).*

future inflation, which in turn requires, in periods of sharp recession, maintaining policy rates at a low level for a certain period.[6]

The explicit adoption of a price-level target path, or likewise an *average* inflation target over a period of four to five years (i.e. a longer period than the medium term corresponding to the central bank's usual price stability horizon), can also be seen as a way of ensuring the credibility of its "inflation commitment", which appears contrary to its usual objective.[7] Indeed, faced with a significant risk of deflation, central banks may choose to commit to conducting an expansionary monetary policy for a longer time than would appear necessary ex post, in order to obtain a greater decline ex ante in the long-term real interest rate.[8] This means that the central bank will have an incentive, once the risk of deflation has been excluded, to renege on its commitment and raise interest rates earlier than promised. Assuming that private agents are rational, this incentive may be detrimental to credibility and hence to the effectiveness of the initial commitment. In this case, the central bank must then clearly state, in its communication with the public, that it recognises this problem and will not give in to this incentive: adopting a price-level target would therefore be a tool for resolving this credibility problem. To conclude on this point, it should nevertheless be recalled that no central banks have implemented a price-level target strategy in recent history. It thus remains difficult to assess the extent to which this theoretical hypothesis would be effective in reality or what the attendant macroeconomic cost of such a strategy would be.[9]

♦ Deliberate increase in the monetary base on the liability side of the central bank balance sheet: quantitative easing

Another option would be to explicitly abandon interest rate targeting and announce a quantitative target in terms of the desired level of commercial banks' excess reserves.[10] This measure was tested in Japan from March 2001, initially to lend credibility to the Bank of Japan's commitment to return to the zero-interest-rate policy (ZIRP). At the outset, this quantitative target was set at JPY 5,000 billion, but was subsequently raised a number of times, reaching JPY 30,000 billion in May 2003. In practice, such a measure can be implemented via purchases of private or public securities with different maturities. The Bank of Japan, however, chiefly focused on purchasing public securities, first with short-term maturities and then a growing proportion of bonds. But the main objective of such open market operations is not to alter the relative price of the assets purchased by the central bank, but to satiate the banking system's demand for central bank money, beyond the quantity required to maintain the very short-term interest rate bounded at zero.

The effectiveness of quantitative easing has been contested from a theoretical standpoint ever since Keynes (1936) and Hicks (1937) first introduced the concept of the liquidity trap. Indeed, the initial idea of the liquidity trap is that if interest rates are sufficiently low (and in particular when the nominal interest

6 *Another option, defended by Lars Svensson (2001) for Japan to defeat deflation, combined adopting a price-level target with devaluation. Svensson's strategy unfolds in three stages: announcing a price-level target sufficiently above the current level; a strong devaluation of the exchange rate and an exchange rate peg commitment consistent with reaching the price-level target; lastly, when price-level target is reached, shift to a float and inflation targeting. Irrespective of the relevance of such a strategy for Japan at the start of the decade, a country-by-country devaluation is nevertheless manifestly inappropriate in the current global recession.*

7 *According to Krugman (1998), in order to increase inflation expectations over time and emerge from the liquidity trap, the central bank must "commit to being irresponsible". For the adoption of a long-run average inflation target (eg 5 years), see for example Nessén and Vestin (2005).*

8 *This is an example of a time-inconsistent monetary policy (see Kydland and Prescott, 1977). Such monetary policy does not only result ex post in an inflation rate temporarily above its target, but it can also lead to an asset price bubble. For instance, it is widely believed that the recent housing bubble was fuelled by monetary policy that remained expansionary for too long in the United States in 2003-2004 owing to the Federal Reserve's commitment to maintaining policy accommodation "for a considerable period".*

9 *Sveriges Riksbank conducted, from 1931 to 1937, one of the few known experiences in price-level targeting (see Berg and Jonung, 1999).*

10 *Excess reserves are defined as the share of commercial banks' deposits at the central bank over and above that stipulated under minimum reserve requirements.*

rate is zero), agents prefer to hold money rather than securities: in such a situation, agents expect that interest rates can only rise (and the price of securities can only fall due to the inverse price-interest rate relationship). Consequently, any additional injection of liquidity is hoarded by agents. If agents keep money in their portfolio instead of purchasing corporate bonds, the excess saving over investment is not absorbed and the economy cannot emerge from recession. Since Hicks (1937), this analysis has been reviewed, while moving away from the ad hoc assumptions of the original model (see, for example, Krugman, 1998, 2000).[11] In the modern theoretical framework of a general equilibrium model, Eggertsson and Woodford (2003) showed, for example, that a quantitative easing policy has no effect if the economy is free of financial frictions and if monetary policy has no impact on the government's intertemporal budget constraint.

In their defence of quantitative easing policies, advocates of monetarism highlight the relationship between the quantity of money and the price level underscored in the long-run quantity theory of money, but in general they do not specify the transmission channel from the monetary base to the broad monetary aggregate.[12] The question nonetheless arises as to whether quantitative easing can function when banks are confronted with an accumulation of non-performing loans in their balance sheets, as was the case in Japan, or a fundamental uncertainty surrounding the value of a large share of the assets they hold, as is the case today in the United States, the United Kingdom and Continental Europe. Moreover, as stressed by Bernanke et al. (2004), this monetarist rationale is based on a reduced form approach (Fisher equation), which is not robust if there is a regime change in the economy or in monetary policy, in accordance with the Lucas Critique.

However, unlike Eggertsson and Woodford's model, the real world is not free of financial frictions, and even less so during a financial crisis. Furthermore, while there is a consensus among economists on recognising the long-term link between money and inflation, it would indeed be strange if a *sustained* or definitive increase in the monetary base did not ultimately result in a rise in the overall level of prices.

It is generally considered that, if it works, the impact of quantitative easing is transmitted in theory via at least two channels.[13] The first is based on the assumption that money and securities are imperfect substitutes, even when the interest rate is close to zero.[14] In the current environment, the total or partial seizing up or segmentation of a number of markets makes this assumption very likely. By saturating agents' portfolios with money, the central bank can in principle prompt them to purchase securities, and this excess demand for assets other than money triggers a decline in their yields, which is conducive to an economic recovery. However, according to King (2001), the few empirical studies on the existence of a level of satiation in the demand for money are not conclusive in that their results are uncertain and contradictory. The second channel can be termed "the signalling channel" (Bernanke et al., 2004). Quantitative easing is, in this case, a way to give credibility to the central bank's commitment to keeping the policy rate at zero for an extended period. Indeed, if this were not the case and the central bank had bloated its balance sheet with medium- to long-term government bonds, it would then become exposed to a significant risk of capital loss.

11 *Hicks' analysis formalises Keynes' idea in the framework of the standard IS-LM model. This reduced-form model, still used for teaching purposes, does not specify the microeconomic behaviour of agents. In this model, prices are assumed to be rigid in the short term, which implies that the real and the nominal interest rate cannot be distinguished.*

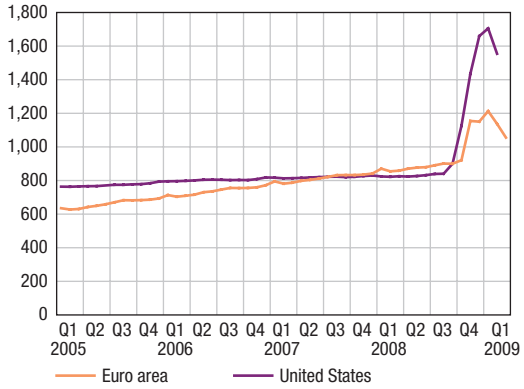
12 *For the monetarist approach during the Great Depression, see the seminal work of Friedman and Schwartz (1963). For a monetarist analysis of Japanese monetary policy, see Meltzer (2001) and Hetzel (2003).*

13 *A third channel, the fiscal channel, may also come into play when the central bank purchases government bonds in exchange for the liquidity that it injects. This channel is based on the fiscal theory of the price level, which stipulates that, in the case of major fiscal stimulus, the government's intertemporal budget constraint can only be respected if the level of prices increases to erode real government debt burden.*

14 *This assumption is based notably on Tobin (1969).*

Empirically, the effectiveness of the only recent experience of quantitative easing, conducted by Japan between 2001 and 2006, is also debatable. The empirical study carried out by Bernanke et al. (2004) concludes cautiously that the quantitative easing measures in Japan may not have been very effective, in that they appear to have had only a minor impact on long-term interest rates.[15]

Chart 2
Strong growth in the monetary base in autumn 2008
(USD/EUR billions)

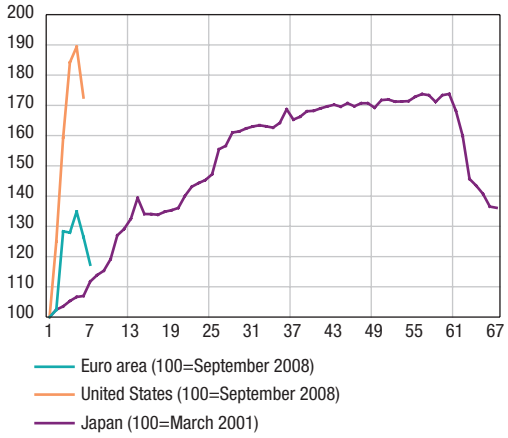


Sources: Federal Reserve System, ECB.

To conclude on this point, it is important to note that central banks' massive liquidity injections in the money market since the start of the crisis cannot be associated with a quantitative easing policy, at least until the second phase of the crisis in September 2008. As Chart 2 shows, excess liquidity and the monetary base both remained at a level comparable to their previous level in the euro area and the United States throughout the first year of the crisis. This indicates in particular that the Federal Reserve sterilised, by open market operations, the targeted liquidity injections it carried out via its new operational procedures (such as the Term Auction Facility and the Term Securities Lending Facility) with certain categories of financial intermediaries (in particular primary dealers).[16] These liquidity injections were thus related to the lender of last resort function rather than to the conduct of monetary policy, in accordance with the separation principle of liquidity management and monetary policy decisions formulated in the same period by the European Central Bank (ECB).[17]

The measures implemented by central banks in the wake of the failure of Lehman Brothers in mid-September 2008 to ease heightened tensions in the money market and all debt securities markets nevertheless led to a very rapid increase in the size of their balance sheets, which doubled in the space of a few weeks in the case of the Federal Reserve and the Bank of England, and rose by over 30% over the same period in the case of the ECB and the Swiss National Bank (Fender and Gyntelberg, 2008). The expansion of the monetary base on both sides of the Atlantic at the end of 2008 was even more rapid than that of Japan as of March 2001 (see Chart 3). However, it would be erroneous to interpret the measures taken as a Japanese-style quantitative easing policy, since the central banks concerned did not attempt to satiate the banking system's demand for central bank money but rather they tried to prevent

Chart 3
Comparative developments in monetary bases in the United States and the euro area at end-2008 and Japan from 2001
(months)



Sources: Federal Reserve System, ECB, Bank of Japan.

15 *See also for example Shirakawa (2002) and Kimura et al. (2002).*
16 *See Thornton (2009). Taylor and Williams (2008) show that the TAF failed to reduce the BOR-OIS spread, indicating that the latter reflected more a counterparty risk on the money market than a liquidity risk.*
17 *See Trichet (2008).*

the collapse of the interbank market in Europe[18] and the United States[19], lend to certain institutions in difficulty[20] and support the commercial paper market in the United States. The significant increase in excess reserves and the monetary base can be attributed to the policy of responding to liquidity demand.[21] These measures are thus associated with a third category of monetary policy action that aims to change the asset side of the central bank's balance sheet rather than its liabilities side.

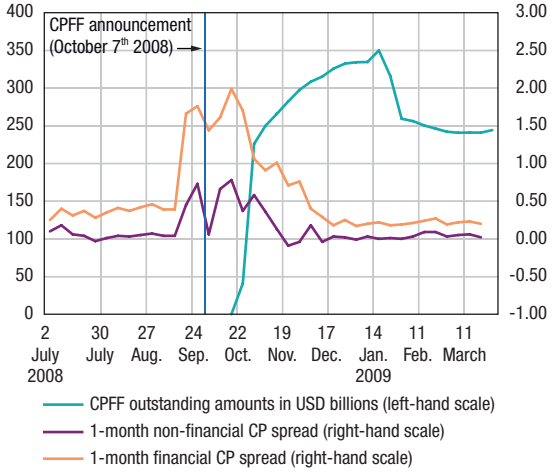
♦ Measures aimed at changing the composition of the asset side of the central bank balance sheet: credit easing

The third type of unconventional measure a central bank can implement involves purchasing securities with a view to influencing their relative price by changing the composition of asset side of the central bank balance sheet. These securities may be public or private and may be purchased from banks or other financial or non-financial intermediaries.

In the absence of simultaneous sales of other assets (sterilisation), such purchases typically lead to an expansion of the central bank's balance sheet and the monetary base, in the same way as quantitative easing. However, the aim of central banks is not to directly increase their liabilities, in particular commercial banks' excess reserves. Rather, they seek to put upward pressure on the prices of the securities they purchase. For example, as Bernanke (2002) proposes, the central bank can publicly announce a target ceiling on the medium-term government bond yield, and commit to purchasing as many bonds as needed to drive their yield below this target ceiling. The Japanese experience nevertheless shows that the two objectives can be pursued simultaneously: while attempting to achieve its target for bank reserves, the Bank of Japan gradually increased the maturity of the government securities purchased, in order to change the level of longer-term risk-free interest rates.

This strategy has been implemented with a certain degree of success by the Federal Reserve since October 2008, contrasting with the doubts of Bernanke et al. (2004) about its potential effectiveness in the United States. The facilities put in place for the commercial paper market[22] and mortgage market[23] indeed led to a rapid and significant narrowing of spreads on the assets concerned (see Chart 4).

Chart 4
A visible impact of the CPFF on highly-rated US commercial paper prices
(spread over the federal funds rate)



Source: Federal Reserve System.

18 *The introduction of fixed rate tenders with full allotment by the ECB in mid-October 2008 resulted in an increase in the funds parked by banks in the deposit facility offered by the Eurosystem, whose total amount jumped from EUR 20 billion on 7 October to EUR 214 billion on 11 November 2008.*
19 *Via in particular greater use of longer-term liquidity injections (TAF) introduced by the Fed in December 2007.*
20 *Notably the insurance company AIG.*
21 *The minutes of the FOMC show however the intention of increasing the size of the Fed's balance sheet and mention the possibility of abandonning the target federal funds rate in favour of a quantitative target. However, this option has not been chosen for the moment.*
22 *Directly via the purchase of securities by the Commercial Paper Funding Facility (CPFF), announced on 7 October 2008, and, indirectly, via the support of money market mutual funds (AMLF, announced on 19 September 2008 and MMIFF, announced on 21 October 2008).*
23 *On 25 November 2008, the Fed launched a new facility called TALF (Term Asset-Backed Securities Loan Facility) to support loans to small business enterprises, student loans, car loans and credit card loans. The facility amounted to USD 200 billion. A programme was also implemented to purchase mortgage agency securities to the tune of USD 500 billion. These ceilings have since been raised to USD 1,000 billion and USD 1,450 billion respectively.*

In his speech in January 2009, the President of the Federal Reserve, Ben Bernanke (2009), described the measures implemented after September 2008 as credit easing. He stressed that this did not reflect any doctrinal disagreement with the Japanese approach, but rather the differences in financial and economic conditions between the two episodes. In particular, he stated that credit spreads were much wider and credit markets more dysfunctional during the current crisis in the United States than was the case during the Japanese experiment with quantitative easing. In this context, the credit easing measures have the advantage of directly reducing households' and companies' financing costs, without having recourse to a reluctant banking sector.

Despite its success, the implementation of this type of measure raises a certain number of questions.

First, as Bernanke (2009) recognises, central bank communication on monetary policy strategy is more difficult than in the case of quantitative easing because the amount of credit easing cannot be summarised by a single indicator. Since the elasticity of the asset prices with respect to central bank lending varies from one market segment to another, and also probably over time, the sum of the amounts lent is not sufficient to give an accurate idea of the contribution of monetary policy to the improvement of financial conditions.

Second, the central bank may become exposed to a potentially substantial credit risk if it accumulates private securities. However, this credit risk may be limited if the central bank uses such a measure only if a temporary market dysfunction, in particular due to a liquidity constraint, results in the price of these securities being underestimated. By using this strategy in this way, it also contributes to restoring the smooth functioning of the market. Conversely, the accumulation of government securities on the asset side of the central bank balance sheet could be seen to compromise the independence of its monetary policy, even though, in a period of deflation, monetary financing of the deficit does not pose the problems that it poses under normal circumstances.[24] In particular, its leeway for rapidly raising its key policy rate when emerging from the crisis may be reduced by the risk of capital loss on its bond assets.

Third, in the absence of sterilisation operations, the monetary expansion that results from massive securities purchases is inconsistent in the long term with an interest rate objective other than the zero bound. The Federal Reserve experienced this in the last quarter of 2008. The rapid growth of commercial banks' excess reserves following the implementation of the credit easing policy, while the federal funds target rate was initially 2%, caused the federal funds effective rate to fall rapidly below the target rate until December 2008 (see Chart 5). As revealed by the minutes of the December 2008 meeting, in which the FOMC decided to establish a target range for the federal funds rate of 0 to 0.25%, the pursuit of a rapid expansion of the asset side of the central bank's balance sheet was tantamount to temporarily giving up control of its interest rate policy.[25]

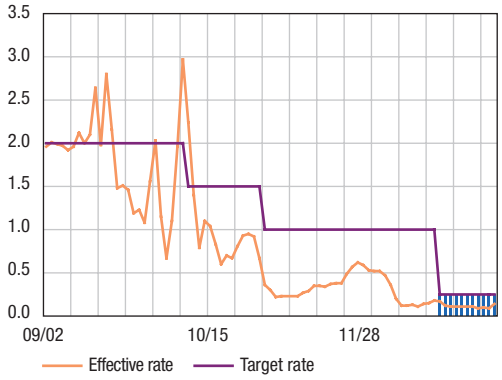
Lastly, the effectiveness of the credit easing measures depends on the financing structure of the economy. These measures should have an especially significant impact given that financing through securities

24 *Massive outright purchases of government securities by the ECB are banned on the primary market by the Treaty on European Union and subject to certain limits on the secondary market.*

25 *"In the discussion of monetary policy for the inter-meeting period, Committee members recognized that the large volume of excess reserves had already resulted in federal funds rates significantly below the target federal funds rate and the interest rate on excess reserves. (…) Since the large amount of excess reserves in the system would limit the Federal Reserve's control over the federal funds rate, several members thought that it might be preferable not to set a specific target for the federal funds rate. (…) The members decided that it would be preferable for the Committee to communicate explicitly that it wanted federal funds to trade at very low rates; accordingly, the Committee decided to announce a target range for the federal funds rate of 0 to ¼ percent. Members also agreed that the statement should indicate that weak economic conditions were likely to warrant exceptionally low levels of the federal funds rate for some time." Minutes of the FOMC, 15-16 December 2008. Note that the announcement combines the confirmation of measures to expand the balance sheet and communication about the future path of policy interest rates.*

issuance accounts for a large share of the financing of the economy. They should therefore be more effective in the United States than the euro area, where the financing of the economy relies more on bank intermediation.

Chart 5
Federal funds target rate and federal funds effective rate, September-December 2008
(%)



♦ Three strategic scenarios for dealing with the current crisis

The strategy adopted by the central bank for dealing with the current crisis naturally depends on its assessment of the economic outlook and in particular of the deflation risk. This assessment must be based on the analysis of the usual range of economic, monetary and financial indicators. In the current situation, it must also take account of the major uncertainty surrounding the economic outlook, due in particular to the speed at which it is worsening, the unprecedented lack of visibility as to the price of many financial instruments, the degree of exposure of bank balance sheets to asset writedowns and the fact that some of the amplification mechanisms at work in this financial crisis are new. This assessment of the macroeconomic situation must be supplemented by an analysis of the functioning of the main transmission channels of conventional monetary policy measures, i.e. the way in which policy rate cuts affect agents' bank and market financing conditions.

Depending of the result of this assessment, there are three possible scenarios for monetary policy.

In the first, relatively favourable, scenario, the risk of deflation is considered negligible and the main transmission channels of conventional monetary policy measures (interest rate and credit channels) are considered operational. At the time that this article was written, this was the case for the euro area. Indeed, recent developments and the latest euro area inflation forecasts show a strong disinflation trend that should be temporary and should not therefore result in lasting deflation. Furthermore, the latest available data appear to indicate that market interest rates as well as banks' lending rates to companies are responding well to the recent cuts in ECB policy rates. In this first scenario, it is not necessary to cut the policy rates further than the "usual" central bank reaction function would require, which naturally does not rule out further significant and rapid cuts should the deterioration in the economic outlook itself be strong and rapid. However, measures aimed at restoring the smooth functioning of the money market should be kept in place.

In the second, relatively unfavourable, scenario, the risk of deflation is also considered negligible but the main transmission channels of conventional monetary policy measures are considered impaired and the financial conditions lastingly too restrictive. In this case, we can also consider that there is no reason to lower policy rates further that "usual" central bank reaction function would require. However, the range of unconventional monetary policy measures should be broadened in order to ease financing conditions, for example via the purchase of commercial paper or longer-term private securities (credit easing measures).

In the third, highly unfavourable, scenario, the risk of deflation is considered non-negligible, the main transmission channels of conventional monetary policy measures are considered impaired and a credit crunch is underway. In this case, a risk management approach must be implemented: as defended by Mishkin (2008, 2009) and Orphanides (2004, 2009), the main aim is to insure against the risk of deflation materialising. This requires a strong monetary policy response, making use of conventional measures (rapid policy rate cuts to a very low level) as well as unconventional measures, in particular a commitment to maintaining policy rates at zero for a considerable period and credit easing measures. Like all insurance policies, this option comes at a price. In this case, this price is paid if the deflation risk does not materialise and is associated with the ex post rise in inflation induced by the fact that monetary policy has been expansionary for too long.

In this third scenario, in addition to a strong monetary policy response, the central bank must communicate in an appropriate manner. Indeed, as Bini Smaghi (2008) stresses, in the absence of such communication, the response could be interpreted by private agents as a signal that the central bank is more pessimistic than them about the outlook for activity and the time required to emerge from the crisis. This could produce the counter-productive effect of generating deflationary expectations that would then be difficult to dislodge. If the central bank explicitly presents this response as an insurance policy against deflation, it should be possible to reduce the risk of misinterpretation or overreaction on the part of private agents.[26]

♦ Conclusion

Central banks have a range of unconventional tools at their disposal for stimulating the financing of the economy despite the serious and protracted disruption in the functioning of the financial system, even when the policy rate reaches the zero bound. Empirical studies conducted on periods prior to the current crisis and the first assessments of the impact of the recent measures suggest that unconventional monetary policy measures are indeed effective. Table 1 offers a summary of the benefits and drawbacks of these different measures.

Table 1
Constraints associated with unconventional measures

	Communication about the future path of policy rates	Excess reserve targeting (quantitative easing) via the purchase of securities:		Purchases of longer- term securities (credit easing):	
		Public	Private	Public	Private
Requires reaching the lower bound	No	Yes	Yes	Yes*	Yes*
Operational if the banking system is affected by asset writedowns	Yes	No	No	Yes	Yes
Credit risk on the asset side of the central bank' s balance sheet	No	No	Yes	No	Yes
Risks to the central bank's independence	No	Yes	No	Yes	No

(*) No initially, yes beyond a certain amount.

26 *Morris and Shin's (2002) analysis can explain such overreaction by private agents to a public signal.*

Despite their differences, these measures all lend credibility to the choice of a protracted expansionary monetary policy. Indeed, provided that the central bank can credibly commit to maintaining an expansionary monetary policy for as long as necessary, there is no deflationary spiral or liquidity trap from which the economy cannot emerge.[27] From this point of view, as highlighted by Orphanides (2004), certain past episodes sometimes presented as liquidity traps, such as those experienced by the United States between 1935 and 1938 and Japan between 1998 and 2001 with a policy rate close to zero, are more the result of hesitation by the central bank to pursue resolutely and for sufficient time unconventional measures rather than reflecting the ineffectiveness of monetary policy at the zero bound.

Current issues *(Questions actuelles)* presents the findings of the analyses conducted at the Banque de France on current matters.
This publication aims to contribute to economic debate and does not reflect the official position of the Banque de France on these subjects.

27 *Fiscal policy also appears to have an important role to play in stimulating economic activity. Analysing the effectiveness of a fiscal stimulus and its co-ordination with monetary policy is, however, beyond the scope of this article.*

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