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Unconventional monetary policies, an appraisal

This study was prepared under the authority of the Treasury and Economic Policy General Directorate and does not necessarily reflect the position of the Ministry for the Economy, Industry and Employment.

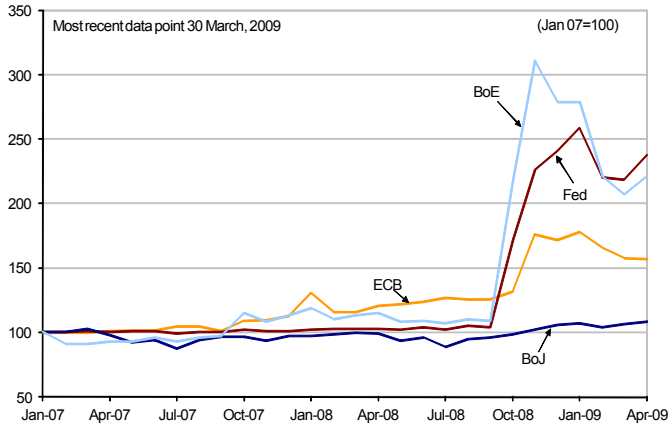
- The major Central Banks have cut their key rates sharply in recent months in response to the rapid slowdown in the economy. These conventional monetary policies have shown their limitations, however. In the first place, central banks have little room for manoeuvre: target rates are now between 0 and 0.25% for the Fed, 1.25% for the ECB, and 0.5% for the Bank of England (BoE). Second, despite previous rate cuts, monetary and financial conditions have deteriorated further. Finally, the financial crisis has weakened channels for the transmission of conventional monetary policies.

- Consequently, the central banks have implemented unconventional monetary policies, in the first place in order to tackle the liquidity crisis in the interbank market, and then, when the limits to cutting key rates became clearer, with a view to improving overall financing conditions for the economy.

- The measures taken by the ECB have resulted in a 45% expansion of its balance sheet between September 2008 and January 2009. These measures have primarily sought to boost the liquidity of the interbank market, while the other central banks (the Fed, the BoE and the BoJ) have also sought to influence the price of certain financial assets (public or private) through their purchases.

- The measures taken by the other central banks have pushed down interest rates right across the yield curve, putting downward pressure on their currencies, especially vis-à-vis the euro, which could worsen deflationary pressures in the euro area. This is what happened, for example, after the Fed's announcement of its Treasury bonds purchase facility on Wednesday 18 March, when the euro gained nearly 5% against the dollar. This situation prompted the President of the ECB to announce that the Governing Council intended to decide on new non-standard measures at its meeting on 7 May. He also said that the main refinancing rate of 1.25% could be cut further if circumstances warranted.

Change in the size of the balance sheets of the ECB, BoE, BoJ and the Fed



Source: Datastream

DGTPE
DIRECTION GÉNÉRALE DU TRÉSOR
ET DE LA POLITIQUE ÉCONOMIQUE

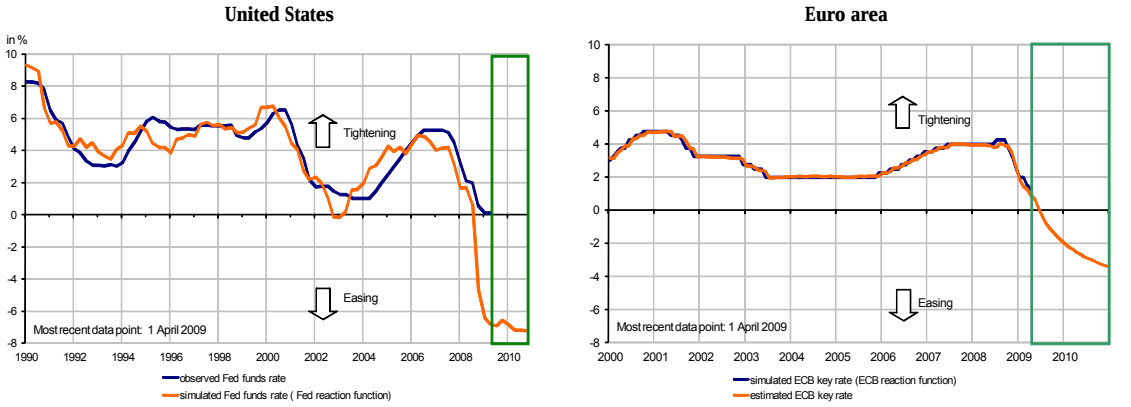
1. Monetary and financial conditions have tightened considerably in the euro area and the United States despite steep cuts in key rates

1.1 The central banks have cut key rates sharply, an the ECB could cut its rates again shortly

In the United States, the Fed has been pursuing a zero-rate policy since the end of 2008. On 16 December last, the target fed funds rate was brought down to within the range of 0% to 0.25% (compared with its previous target of 1%). This policy was consistent with the Fed's customary approach as described by a reaction function estimated on the basis of trends in activity, inflation and pressures in the financial markets[1]. This reaction function did indeed show that a negative target rate ought to have been achieved by autumn 2008 (see chart below). The reaction function continues to suggest a negative target rate right up to the end of 2010. A prediction of a negative rate is interpreted as signalling that conventional monetary policy has reached its limits. The Fed could thus find itself pursuing this zero rate policy at least until 2010. This zero rate policy could persist until 2014 according to a recent estimate by Goldman Sachs[2]. In a recent study, Goldman Sachs estimated that to achieve an effect comparable to a 100 basis points cut in the key rate would entail an expansion in the size of the Fed's balance sheet of between $1,000 billion and $1,600 billion[3].

In the euro area, quantitative tools like the Taylor rule, or a reaction function similar to that used for the United States, imply key rates that ought rapidly to tend towards zero. Forecasts by the major international institutions (i.e. the IMF and the OECD) are expecting key rates close to zero in the euro area by summer 2009 and throughout 2010.

Graphique 1 : Fed and ECB reaction functions



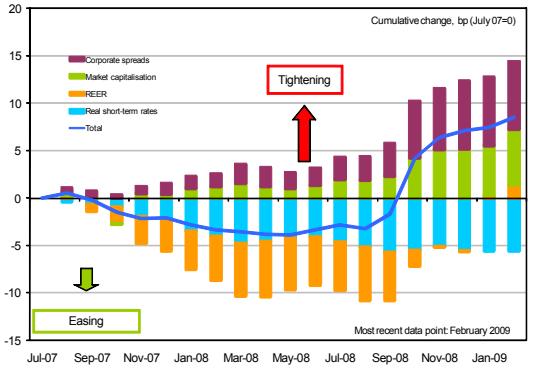
Sources : Fed, DGTPE calculations

Sources : ECB, DGTPE calculations

1.2 Monetary and financial conditions remain particularly tight in both the euro area and the United States despite the rate cuts

In the United States, the DGTPE[4] indicator of monetary and financial conditions points to a deterioration equivalent to 630 bp rise in interest rates since July 2007, despite a 500 bp fall in the key rate over the same period. Indeed, the rate cuts have been more than offset by the steep rise in the risk premium on bonds and the fall in stock market indexes.

Chart 2: Index of monetary and financial conditions in the United States



Sources: Datastream, DGTPE calculations

REER: Real effective exchange rate

(1) The specification adopted for the Fed's reaction function makes the key rate dependent on the potential growth rate, the gap between GDP and its potential, year-to-date inflation excluding food and energy prices, and the gap between BAA corporate bond spreads and their long-term average (estimation period 1991-2007).

(2) See Goldman Sachs US Economics Analyst, 16 January 2009: "When ZIRP is not enough".

(3) See "Unconventional Easing - Not Much Bang for the Buck So Far" US Daily, 10 March 2009.

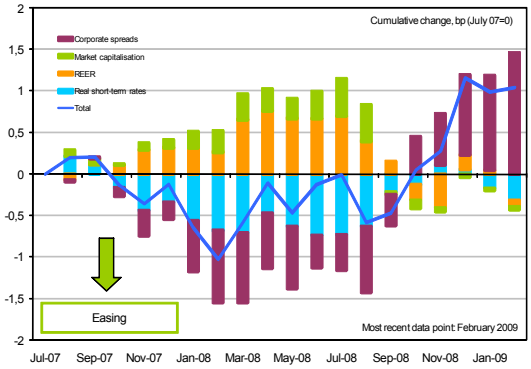
(4) Cf. "Les conditions monétaires et financières courantes et passées dans la zone euro et aux Etats-Unis" (Current and past monetary and financial conditions in the euro area and the United States), *DP Analyses Économiques no. 76, juin 2005*.

The scale of the shock sustained is confirmed by the indicator recently developed by the OECD[5], which introduces additional variables, including survey data on credit, and which also signals a hefty tightening of financial conditions in the United States since July 2007. The additional cut in the key rate required to offset the shock in the light of this indicator would be of the same order of magnitude, i.e. 625 bp, according to the OECD.

In the euro area, the prospect of monetary easing is also suggested by the deteriorating indicator of monetary and financial conditions between July 2007 and February 2009. Calculated on the basis on corporate bond rates, as above for the United States, conditions have tightened by around 100 bp over the period. The indicator calculated by the OECD, which introduces additional variables, survey data on credit in particular, also signals a hefty tightening of financial conditions in the euro area since July 2007. According to the latter, an additional 725 bp cut in the key rate would be needed to offset the shock. Yet the ECB has cut its key rate by 275 bp over this period.

As a result, central banks currently have only very limited room for manoeuvre for conventional monetary policy in the case of the ECB, and none at all in the case of the Fed, whereas the clear downturn in activity and the sharp tightening of monetary and financial conditions argue in favour of large additional rate cuts.

Chart 3: Index of monetary and financial conditions in the euro area



Sources: Datastream, DGTPE calculations

Against this background, the central banks that had already resorted since the onset of the crisis, to unconventional monetary policies, i.e. ones not involving action on interest rates[6], in the form of injections of liquidity into the banks, have taken additional measures since October 2008, either by increasing the amount of funding supplied, as in the case of the ECB, or by direct purchases of securities (as in the cases of the Fed, the BoE and the BoJ).

There are significant differences in the funding structures of private agents as between the United States and the euro area (table 1). Bank funding accounts for half of all funding in the euro area, whereas in the United States the markets provide five times more funding than banks.

Table 1: Private sector funding structures in 2007

% of GDP	Euro area	United States
Bank lending to the private sector	145	63
Debt securities issued by the private sector	81	168
Equities issued by the private sector	85	144
Total	311	375

Source : ECB Monthly Bulletin, April 2009

In the United States, the collapse of the securitisation market (ABS) and more generally that of the shadow banking system (non-bank financial institutions) has very powerfully impacted the funding of private agents. It was in this context that the Fed, with Treasury backing, has put in place programs aimed at reviving the securitisation market, property loans (mortgage backed securities or MBS) especially, circumventing the banking system.

Where new lending is concerned, the most recent data point to a distinct slowdown in loans outstanding in the United States (+4.9% year-to-date in February, versus +10% one year ago) and to a lesser extent in the euro area (+7.6% year-to-date in February 2009, versus +14.8% one year ago). This trend may be accounted for both by weaker demand for credit as a result of the slowdown in economic activity and the property market, and by constraints on the supply of bank credit. The most recent central bank surveys (Fed and ECB) on lending conditions thus point to a clear tightening of lending conditions, due to higher interest rates and/or a reduction in new lending.

2. The Fed and the ECB are pursuing unconventional monetary policies that have sharply expanded the monetary base since September 2008

2.1 Unconventional monetary policies: asset-oriented and liabilities-oriented policies

Even if the tools used are different, the end-purpose of unconventional monetary policies is to improve financing conditions in the economy.

Unconventional monetary policies may also pursue a variety of intermediate goals. The aim of liquidity injections is to **act on the supply of credit** by lowering banks' funding costs and thereby influence the distribution of credit in the economy. Outright purchases low-risk financial securities (such as Treasury bonds) are intended to bring down yields on the latter and hence encourage investors to reallocate their portfolios towards riskier securities, thereby improving the flow of funding to businesses and financial institutions. Purchases of risky assets such as corporate bonds seek to improve the liquidity of these securities and hence reduce the illiquidity premium on these assets and improve market funding conditions, **boosting the demand for securities**.

The commonly mentioned concept of quantitative easing refers imprecisely to a variety of distinct types of unconventional monetary policy measures. Here we adopt the following definitions, which may differ from other analysts' usage (box 1):

- ***Liabilities-oriented policies*** are **monetary policies aimed at expanding the monetary base** (i.e. notes and coins in circulation and banks' reser-

(5) Guichard, S., D. Haugh and D. Turner (2009), "Quantifying the effect of financial conditions in the euro , Japan, United Kingdom and United States," *OECD Economics Department Working Papers, no. 677, Paris.*

(6) Conventional monetary policies act directly on interest rates, mainly via the choice of target (or key) rate by the central bank.

ves held with the central bank) in central bank liabilities.

- ***Assets-oriented policies*** are **monetary policies aimed primarily at modifying the central bank's** assets, either by changing the maturity of assets, or by modifying the nature of central bank assets.

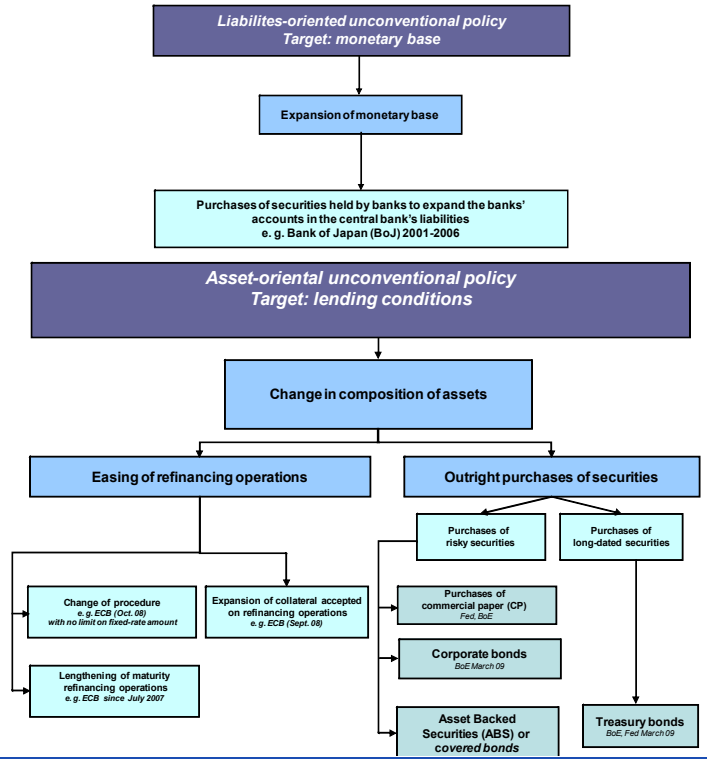
Unconventional asset-oriented policies can take three forms, depending on whether or not they are accompanied by an expansion of assets, and depending on the central bank's sources of funding:

1. **asset-oriented policies with assets remaining constant:** the central bank substitutes certain assets for others, for a constant balance sheet size (this was the case with the ECB between September 2007 and September 2008, and for the Fed between March and September 2008);
2. **asset-oriented policies with an expansion of assets but for a given monetary base:** the central bank increases its assets by means of Treasury deposits[7] (as in the case of the BoE for purchases of commercial paper (CP) in February 2009);
3. **asset-oriented policies with an expansion of assets funded by monetary creation** (as in the case of the Fed and the ECB from September 2008 onward).

The difference between asset-oriented policies with monetary creation and liabilities-oriented policies stems from the fact that, in the first case, the central bank seeks to act on its assets, and liabilities adjust in consequence, whereas in the second the central bank targets its own liabilities and it is the assets that adjust.

There are several forms of asset-oriented policies, depending on whether the central bank seeks to act on maturities (short or long rates) or on risk. Thus, since September 2007, the ECB has lengthened the maturity of its refinancing operations, and from October 2008 it has broadened the range of eligible collateral in order to act on yields on riskier securities, within the framework of its asset-oriented monetary policy for a constant level of assets.

Box 1: **Asset- and liabilities oriented unconventional policies**



2.2 Japan pursued a liabilities-oriented monetary policy between 2001 and 2006

Between 2001 and 2006, Japan pursued a liabilities-oriented unconventional policy, the aim being to achieve a quantitative target regarding the level of the Japanese private banks' current accounts on the liabilities side of the BOJ's balance sheet, by means of open market operations (in which the BoJ purchased securities from the banks and credited their current accounts). Consequently, the increase in the BOJ's assets was merely the mechanical counterpart of this process.

This policy had several aims, namely:

- **to create inflationary expectations and to reduce real interest rates**: this aim has not been achieved, since the mechanisms whereby an increase in the monetary base leads to rising prices is probably less effective when the banking sector is in crisis;

(7) In September, a portion of loans to businesses and swap lines was indirectly funded by the US Treasury. The latter loaned new securities to the Fed, which the latter sold on the markets. In exchange, the Fed credited the Treasury account with an equivalent amount on the liabilities side of its (the Fed's) balance sheet. A substantial portion of the expansion of the Fed's balance sheet in September 2008 stemmed from this indirect funding by the Treasury and therefore does not correspond to monetary creation.

- **to ensure abundant and cheap funding for the banks:** by enabling them to fund their operations at very low rates, Japanese policy helped banks in difficulty, particularly the weakest among them;
- **to help finance the economy:** in so far as the banks hold substantial reserves with the central bank, these can be used to expand lending to the economy at lower rates. The BoJ's policy is not thought to have had any major effect on activity, or at best a slight fall in long-term rates resulting from purchases of securities by the BoJ[8].
- **to reduce the yen's appreciation:** this goal has been achieved, since the yen did fall, notably as a result of carry trade transactions encouraged by the very low level of interest rates in Japan.

2.3 Asset-oriented policies for a constant monetary base, pursued by the Fed and the ECB (September 2007- September 2008)

As far back as September 2007, the ECB put in place an asset-oriented policy while keeping the monetary base constant by injecting liquidity at longer maturities. While keeping its refinancing amounts constant (at around €500 billion, see box 2), the ECB increased its portion of longer term refinancing (3-months) while reducing the share of shorter-term (one week) refinancing. In addition, at the end of March 2008, the ECB lengthened the maturity of its refinancing operations to 6 months (see figure 1).

Lacking an operational framework as broad as that of the ECB (box 3), from December 2007 onwards the Fed introduced a series of procedures[9] aimed at injecting liquidity for up to three months by lending to banks against guarantees in the form of assets received as collateral. Especially from March 2008 onwards, the Fed increased the scale of its three-month lending to banks, sterilising its liquidity injections into the banks by selling Treasury securities.

Box 2: **The differences, in terms of risk, between direct purchases of assets by the Euro system and repo transactions within the framework of refinancing operations**

Securities purchases (outright purchases) imply transfer of ownership from the vendor to the purchaser with no future retrocession of ownership. The securities purchased are recognised in the central bank's assets. The risk is transferred to the Euro system in full.

In a repo transaction, securities are purchased against cash in return for a simultaneous commitment to resell them to the counterparty at an agreed price and at a predetermined later date. **These operations are recorded as guaranteed loans under assets in the balance sheet, but the securities thus acquired are not included in the ECB's securities portfolio[a], being off-balance sheet. The Eurosystem requires that the value, adjusted for a discount** (or haircut) of the assets given as guarantees should be maintained throughout the duration of the temporary sales transactions intended to supply liquidity. Consequently if the value, computed at regular intervals, of the assets purchased falls below a certain level, the national central bank requires the counterparty to provide additional assets or cash (in other words a margin call)[b].

Thus, while repo transactions incur a smaller risk of default than direct asset purchases, for the central bank to make a loss both the commercial bank would have to default and the value of the securities used as collateral would have to fall below the value of the loan.

a. ECB Annual Accounts, 2008, page 8.
b. ECB, The implementation of monetary policy in the euro . November 2008, page 54.

Box 3: **Differences between the operational frameworks of the Fed and the ECB at the onset of the crisis**

The procedures employed by the Fed and the ECB for implementing monetary policy differ significantly before the start of the crisis. **The ECB makes loans for longer maturities** (3 months, compared with 15 days for the Fed), and **accepts a wider range of securities as guarantees** (a broader range of collateral than the Fed).

The Federal Reserve proceeds mainly via open market operations, consisting in the buying and selling, either outright or temporarily, of Treasury debt securities (bonds and notes) or Federal agencies securities. Temporary operations, known as repurchase agreements (repos) or reverse repurchase agreements (reverse repos), are made against collateral and for maturities of between one working day (which is the norm) and 65 working days. Three types of collateral are accepted, namely US Treasury securities, certain debt securities issued by Federal agencies, mortgage-backed or not (residential mortgage backed securities or RMBS). The institutions eligible to take part in this sort of operation are primary dealers, together with international institutions or official foreign institutions holding an account with the Federal Reserve of New York. Open market operations are the main determinant of Federal funds interest rates.

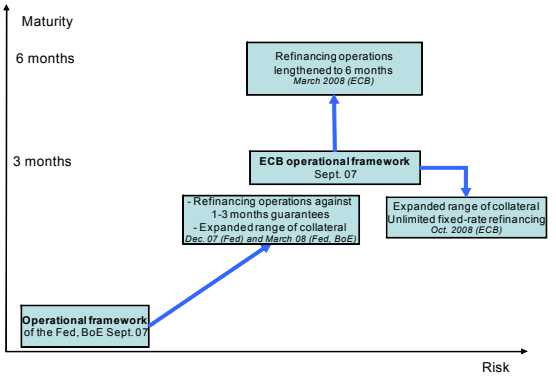
The ECB conducts repo transactions for maturities ranging from one week to three months, within the framework its refinancing operations. The ECB accepts a very wide range of securities as guarantees for these operations, A-rated ABS in particular, and applies relative low penalty rates (of around 5% on average).

With the crisis, the Fed has broadened the range of collateral eligible for its repo transactions, lengthened the maturity of the repos, and widened the range of eligible financial institutions. The ECB, meanwhile, has on several occasions modified the range of eligible collateral (tightening in September 2008, with effect from February 2009, and easing in October 2008), and lengthened the maturity to 6 months in March 2008.

(8) See Spiegel, "Did Quantitative easing by the Bank of Japan 'Work'?" *FRBSF Economic Letter no. 2006-28, October 2006*.
(9) TAF (Term Auction Facilities): 1 and 3-month loans by the Fed to banks against collateral, starting in December 2007; TSLF (Term Securities Lending Facilities): 1-month loans by the Fed to non-bank financial institutions (primary dealers) in March 2008; and PDCF (Primary Dealer Credit Facilities): overnight loans to primary dealers.

The ECB and the Fed thus arranged massive injections of liquidity for longer than usual maturities, with a view to reducing short-term (three months notably) tensions in the interbank markets. The ECB's operational framework is more flexible than that of the Fed: the ECB accepts a wider range of collateral than the Fed and applies lower penalty rates (i.e. haircut) to the securities given as guarantees[10].

Figure 1 : From September 2007 to October 2008, the Fed and the ECB introduced bank refinancing facilities over longer maturities

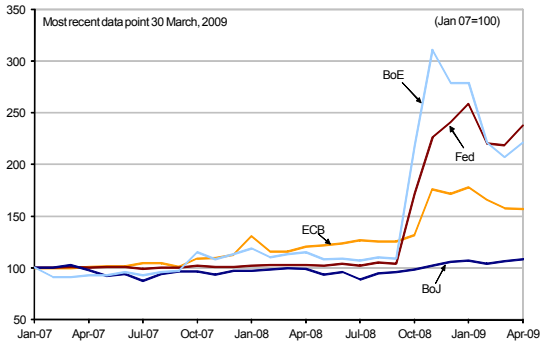


2.4 Asset-oriented policies with variation of the monetary base (September 2008 to February 2009)

With the intensification of the financial crisis and key rates at very low levels (for the Fed), the ECB and the Fed decided, from September 2008 onwards, to adopt asset-oriented policies with expansion of the monetary base (notes in circulation and commercial bank accounts with the central bank). The central banks' balance sheets have expanded accordingly, by more than 45% in the case of the ECB, 150% for the Fed, and 155% for the BoE between September and January 2009.

The ECB modified its refinancing procedures, introducing fixed-rate (the Refi rate), full-allotment operations starting in October 2008. Banks can thus obtain the liquidity they require from the ECB (against guarantees) and availed themselves of the possibility of depositing the surpluses with the central bank, thereby expanding the monetary base.

Chart 4: Change in the size of the balance sheet of the ECB, the BoE, the BOJ and the Fed



Source: Datastream

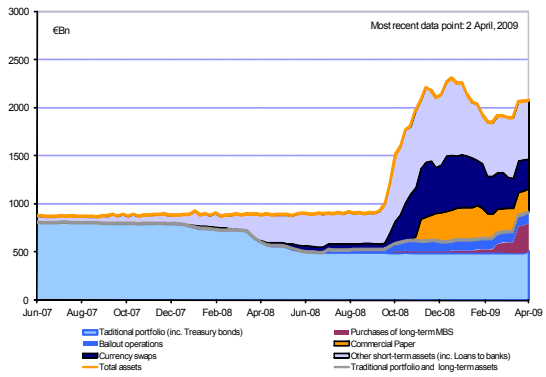
Starting in September 2008, the Fed ceased to sterilise its interventions by selling the Treasury securities it holds: the changes in the composition of its assets are first reflected in an increase in the monetary base on the liabilities side. They began to expand rapidly in particular from the moment the banks' reserves with the Fed began to be remunerated[11] (beginning of October 2008).

In addition, with the support of the Treasury, the Fed also instituted a series of funding mechanisms aimed at improving the funding of private agents, households in particular. The Term Asset-backed Securities Loan Facility (TALF), for example, is a mechanism in which the Fed lends to private agents with a view to reviving the market for ABS backed by car loans, student loans and credit card loans. The Fed can lend up to $1,000 billion against collateral to finance the purchase of ABS. The Fed than sells the collateral to a vehicle, and the Treasury will inject up to $20 billion to finance these purchases.

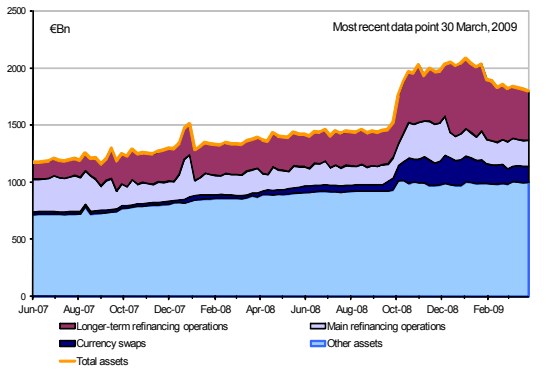
The balance sheets of the Fed and the ECB began shrinking again in January 2009. This trend was due to the improving situation in the interbank markets (with narrowing spreads and expanding volumes of interbank trade between banks) and the unwinding of currency swaps between the central banks (massively entered into in October 2008 in response to the banks' demand for dollars). Consequently, the fall in the balance sheet does not reflect a withdrawal by the central banks from unconventional monetary policies, but a change in the commercial banks' funding needs.

Chart 5: Change in the composition of the assets of the Fed and the ECB

Fed



ECB

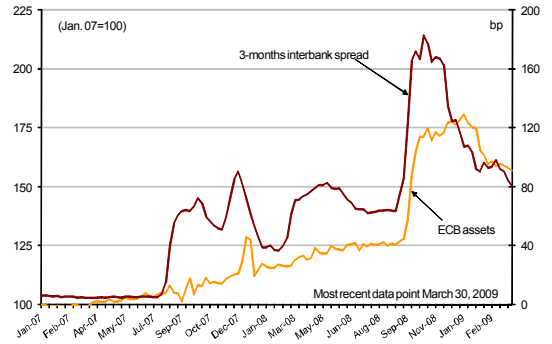


Source: Datastream

(10) The ECB raised its penalty rates in September 2008, with effect from February 2009, to align itself with the rates charged by the Fed and the BoE.

(11) Contrary to the ECB, which sets a floor rate for the overnight rate on the interbank market (EONIA) based on the rate on the deposit facility, the Fed had no floor rate for the overnight rate (the effective Fed funds rate), and as a result the Fed funds rate was very largely below the Fed's target rate.

Chart 6: Change in ECB balance sheet and in interbank spreads



Source: Datastream

2.5 Asset-oriented policies with purchase of securities (from February 2009)

The Fed, the BoE (see box 4) and the BoJ have introduced a series of securities purchasing facilities since the beginning of 2009 (table 2).

The Fed, for instance, has put in place several facilities (table 2), covering commercial paper at the end of October 2008, GSE bonds (Government Sponsored Enterprises, Fannie Mae and Freddie Mac), Mortgage Backed Securities (MBS) guaranteed by the GSEs in January 2009, followed by a Treasury bond purchasing programme in March 2009.

Table 2: The central banks' asset purchase programmes

Central bank	Fed	BoJ	BoE
Purchases of short-dated securities	Yes	Yes	Yes
Purchases of corporate bonds	Yes (purchases of GSE securities and MBS)	Yes	Yes
Purchases of Government securities	Yes	Yes	Yes

Table 3: The Fed's programme of notional purchases in March 2009

Purchase operation	Start	Amount
Purchase of CP	End october 2008	$250 Bn
Purchases of GSE bonds	January 2009	$200 Bn
Purchases of GSE-guaranteed MBS	January 2009	$1,250 Bn
Purchases of Treasury bonds	March 2009	$300 Bn
TOTAL		$2,000 Bn

Box 4: The BoE's unconventional monetary policy

Until February 2009, the monetary policy of the Bank of England (BoE) was similar to that of the ECB. The BoE injected liquidity, lengthened the maturity of its bank refinancing operations, and broadened the range of collateral accepted in repo operations (asset-oriented policies with monetary creation), moving closer to the operational framework of the ECB. The BoE's liquidity injections were put in place within the framework of the Special Liquidity Scheme in April 2008, in the form of a repo facility for illiquid securities against Treasury bonds for a maximum maturity of one year.

Starting in February 2009, the BoE began to purchase securities. Initially, it bought short-dated securities (commercial paper) by using Treasury deposits. The monetary base thus remained constant (asset-oriented policies with an increase in assets for a given monetary base).

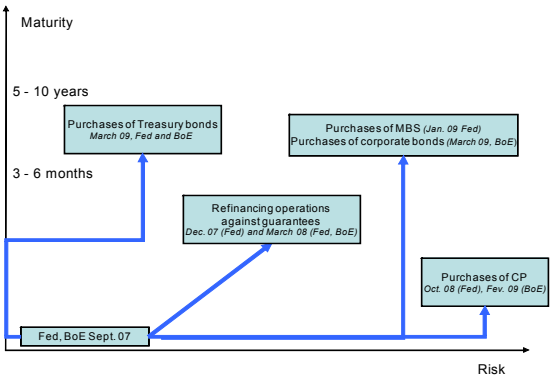
Since March 2009, the BoE has been buying long-dated public paper (under asset-oriented policies), financing these purchases by creating money. Moreover, on 19 March 2009 the BoE announced that it planned to buy corporate bonds under its Asset Purchase Facility for a maximum of £75 billion. At 27 March 2009, the BoE had bought £2 billion of CP, £13 billion of Treasury bonds and £130 million of corporate bonds.

While the ECB's and the Fed's unconventional monetary policies had been roughly similar since 2007, their policies began diverging above all after January 2009 with the introduction of Fed's programmes to purchase long-dated securities.

Today there are several significant differences between the asset-oriented policies of the ECB and Fed. In particular, whereas the ECB responds solely to the needs of the banks and concentrates on the interbank market, via its Asset purchase facilities (table 3) the Fed has expanded its Asset purchase facilities range to include risky securities (shifting towards the righthand side of figure 2) and longer maturities (shifting to the upper portion of figure 2), to improve the refinancing conditions of non-bank institutions. In that sense, the operational framework of the ECB has changed less since September 2007, even though it made major modifications in March (lengthening the repo to 6 months, figure 1), and in October 2008 (fixed-rate repo for full-allotment).

In addition, the ECB's policy continues to be determined by the liquidity needs of the banks, whereas that of the Fed is more discretionary.

Figure 2 : Since the beginning of 2009, the BoE and Fed have been acting on long-term rates and risky securities



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