

## Box 2

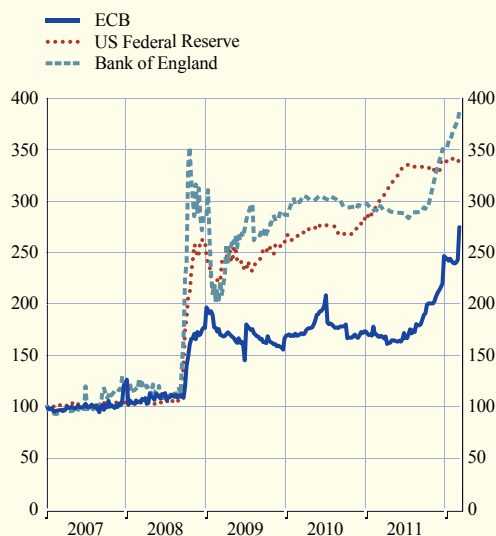
### THE RELATIONSHIP BETWEEN BASE MONEY, BROAD MONEY AND RISKS TO PRICE STABILITY

From a medium to longer-term perspective, inflation moves in line with broad monetary aggregates. This relationship holds through time, as well as across countries and monetary policy regimes: it is “hardwired” into the deep structure of the economy. Empirical evidence confirms this relationship also for the euro area. This underpins the prominent role assigned to broad money in the ECB’s monetary policy strategy.

The responses of all major central banks to the financial crisis have entailed the implementation of non-standard monetary policy measures. In particular, after the collapse of Lehman Brothers in September 2008, the volume of monetary policy operations undertaken by the Eurosystem, the Bank of England and the Federal Reserve System increased (see Chart A). The timing and magnitude of this expansion, however, were not identical, reflecting the specificities of the operational framework of the respective central banks and their different assessments regarding the impact of financial market tensions on the economy. In the euro area, the volume of monetary policy operations increased sharply in the second half of 2011, mainly as a consequence of higher demand in the liquidity-providing operations, as was visible, in particular, in the two longer-term refinancing operations (LTROs) with three-year maturity conducted in December 2011 and February 2012. This box discusses whether the significant expansion in the provision of

Chart A Balance sheet expansion of the Eurosystem, the Bank of England and the Federal Reserve System

(index, January 2007=100)



Sources: Federal Reserve System, Bank of England and ECB.  
Note: The balance sheet measure used follows the presentation in Chart 9 in the article entitled “The ECB’s non-standard measures – impact and phasing-out”, *Monthly Bulletin*, ECB, July 2011.

liquidity by the Eurosystem might have implications for broad money and credit growth, and thus ultimately raise risks to price stability over the medium to long term.

The box is structured on the basis of two key questions, namely as to whether a large increase in central bank liquidity:

- (i) necessarily implies rapid broad money and credit growth;
- (ii) can create inflationary pressure without a corresponding increase in broad money and credit.

### (i) Does a large increase in central bank liquidity necessarily imply rapid broad money and credit growth?

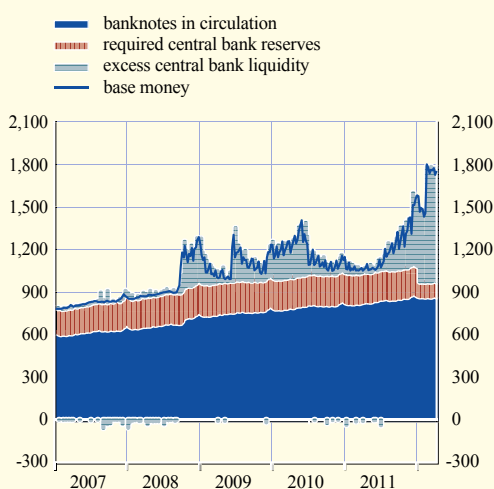
The large increase in Eurosystem lending to euro area credit institutions was mirrored by a significant increase in base money (see Chart B). Base money consists of currency in circulation, the deposits that credit institutions are required to maintain with the Eurosystem in order to cover the minimum reserve requirement (required central bank reserves) and credit institutions' holdings of highly liquid deposits with the Eurosystem over and beyond the level of required central bank reserves (excess central bank reserves and recourse to the deposit facility), which can be considered "excess central bank liquidity". The increase in base money is mainly attributable to an expansion of the excess central bank liquidity held by some euro area credit institutions.

The occurrence of significant excess central bank liquidity does not, in itself, necessarily imply an accelerated expansion of MFI credit to the private sector. If credit institutions were constrained in their capacity to lend by their holdings of central bank reserves, then the easing of this constraint would result mechanically in an increase in the supply of credit. The Eurosystem, however, as the monopoly supplier of central bank reserves in the euro area, always provides the banking system with the liquidity required to meet the aggregate reserve requirement. In fact, the ECB's reserve requirements are backward-looking, i.e. they depend on the stock of deposits (and other liabilities of credit institutions) subject to reserve requirements as it stood in the previous period, and thus after banks have extended the credit demanded by their customers.<sup>1</sup>

In the current situation of malfunctioning money markets, the Eurosystem supplies central bank reserves to each counterparty elastically against the provision of adequate collateral, through fixed rate tenders with full

Chart B Base money in the euro area

(EUR billions)



Source: ECB.

<sup>1</sup> The set of credit institutions' liabilities subject to reserve requirements largely coincides with the liabilities included in the broad monetary aggregate M3 and comprises: overnight deposits, deposits with an agreed maturity of up to and including two years, deposits redeemable at notice of up to and including two years and MFI debt securities issued with an original maturity of up to and including two years.

allotment. This ensures that each individual counterparty is able to meet its reserve requirements, as well as any additional liquidity needs. In the case of normally functioning interbank markets, the Eurosystem always provides the central bank reserves needed on aggregate, which are then traded among banks and therefore redistributed within the banking system as necessary. The Eurosystem thus effectively accommodates the aggregate demand for central bank reserves at all times and seeks to influence financing conditions in the economy by steering short-term interest rates.<sup>2</sup>

In sum, holdings of central bank reserves are thus not a factor that limits the supply of credit for the banking system as a whole. Ultimately, the growth of bank credit depends on a set of factors that determine credit demand and on other factors linked to the supply of credit. The demand factors include borrowing costs and income prospects. Factors relating to the credit supply are the risk-adjusted return on lending, the bank's capital position, its attitude towards risk, the cost of funding and the liquidity (including roll-over) risk. Liquidity risk refers to the risk that a credit institution does not have sufficient financial resources to meet its commitments when they fall due, or can secure them only at excessive cost. Loans to customers contribute to liquidity risk as, following their disbursement, they can generate obligations to make payments on behalf of customers.

In a situation marked by tension in financial markets, some banks that find it difficult to access markets borrow additional central bank reserves in order to be certain that they will be able to meet payment obligations that are coming up, for example, because they have large imminent bond redemptions. Were the central bank not to accommodate this demand, many credit institutions would have strong incentives to reduce their lending as rapidly as possible and divest other assets. For these banks, therefore, the provision of liquidity is expected to contribute to avoiding a large contraction of credit and to restoring orderly credit supply conditions.

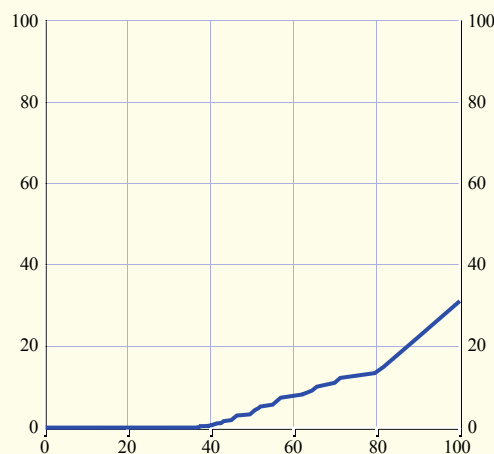
In the current situation in the euro area, central bank reserves end up with a subset of banks, which receive more payments than they make. For a representative period in mid-March 2012, Chart C shows, on the y-axis, the percentage of total borrowing from the Eurosystem that was redeposited with the Eurosystem by the same counterparties. This is related on the x-axis to the proportion of total recourse to the deposit facility and liquidity-absorbing operations that the respective counterparties account for cumulatively. Chart C documents that credit institutions with significant recourse to the deposit facility

**Chart C Cumulative distribution of placements in the deposit facility and in liquidity-absorbing operations**

(percentages; mid-March 2012)

x-axis: cumulative share in the deposit facility and in liquidity-absorbing operations

y-axis: share of total borrowing from the Eurosystem that was placed in the deposit facility and in liquidity absorbing operations by the borrowing counterparty



Source: ECB calculations.

<sup>2</sup> See also "The supply of money – bank behaviour and the implications for monetary analysis", *Monthly Bulletin*, ECB, October 2011.

and to liquidity-absorbing operations have not, by and large, obtained these reserves by borrowing from the Eurosystem. For instance, almost 40% of the total recourse to the deposit facility and to liquidity-absorbing operations was accounted for by counterparties that did not borrow from the Eurosystem. This finding is suggestive of segmentation between a group of credit institutions that relies on Eurosystem refinancing operations and another that eventually ends up holding the excess central bank liquidity.

On aggregate, credit institutions cannot get rid of the excess central bank liquidity as banks cannot, as such, lend on deposits with the central bank to the money-holding sector. For the individual credit institutions, lending to the private sector will not mechanically reduce excess central bank liquidity. Although extending loans to the economy would, in principle, create deposits that are subject to reserve requirements, this approach to reducing excess central bank liquidity is extremely protracted.<sup>3</sup> Importantly, excess central bank liquidity does not in itself alter the demand for loans or banks' ability to bear credit risk. Moreover, for credit institutions with excess central bank liquidity, liquidity risk was not, in the first place, a constraining factor in their decisions to extend credit to the economy.

In sum, in the current circumstances, the expansion of base money is a precondition for averting a sharp decrease in broad monetary aggregates, but does not mechanically and in itself lead to an expansion over and beyond the level of money holdings that would prevail in the absence of liquidity tensions. Indeed, the significant expansion of base money that followed the two three-year LTROs was instrumental in interrupting the sharp contraction of broad money and credit in the euro area, which had been unfolding in the last three months of 2011 (see Chart D). At the same time, the expansion of broad money and, in particular, credit to the non-financial private sector remains low, thereby not pointing to excessive monetary expansion.

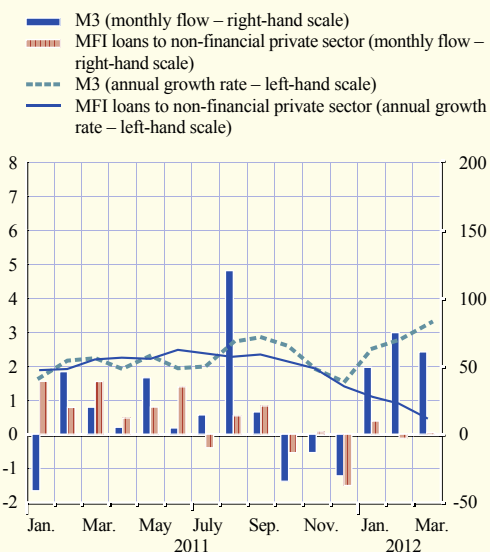
**(ii) Can a large increase in central bank liquidity create inflationary pressure without a corresponding increase in broad money and credit?**

Banks that find themselves with central bank reserves that they do not want to hold, as they offer only a low risk-adjusted return, may try to acquire higher-yielding assets, also by extending credit. This has two interdependent effects. First, the demand for assets leads to a stabilisation of their valuation and improves the funding conditions for the issuers. Second, all market participants tend to benefit from the improvement in the valuation of their portfolios and the better risk environment.

<sup>3</sup> The slow pace of the reduction of excess central bank liquidity is due to the fact that an increase of €100 in deposits leads to an increase of €1 in the reserve requirements (as the "reserve ratio" is currently 1%).

**Chart D Euro area M3 and MFI lending to the non-financial private sector**

(annual percentage changes; EUR billions; adjusted for seasonal and calendar effects)



Source: ECB.

To the extent that such an acquisition of assets occurs, it will be reflected in broad money and credit aggregates. This will occur when banks pay for the assets acquired from the money-holding sector or extend credit to this sector, or governments spend the funds received from issuing securities. Moreover, by affecting relative yields and asset prices, the portfolio rebalancing also affects monetary developments. At the same time, the rebalancing could contribute to influencing investment and consumption decisions, and thus spending decisions. All in all, as such broader effects materialise, they would be well captured under the ECB's two-pillar monetary policy strategy.

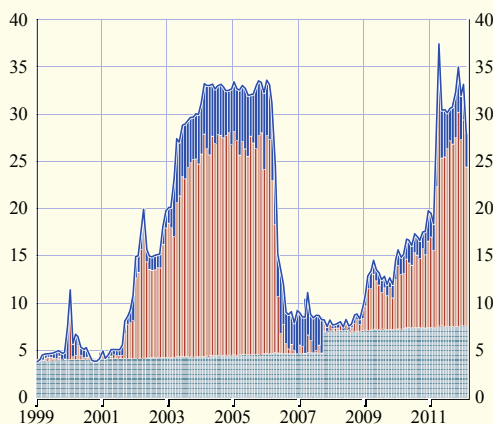
The two episodes of significant excess central bank liquidity in Japan in the period between 2001 to mid-2006 and, more recently, since March 2011 provide an illustration of the thrust of the arguments presented in this box. The adoption of the monetary easing framework by the Bank of Japan in 2001 resulted in a sharp increase in excess central bank reserves (see Chart E).<sup>4</sup> This increase was accompanied by a reduction in the Bank of Japan's key interest rates to zero and stopped the slowdown in broad money growth. Despite the increase in excess central bank reserves in 2001, there was no strong acceleration of either broad money growth or inflation, both of which remained at very low levels (see Chart F). In 2006, within a span of a few months, the Bank of Japan was able to reabsorb the significant amount of excess central bank reserves and to re-establish balanced liquidity conditions by not rolling over short-term liquidity-providing

4 For an account of the economic environment that ultimately gave rise to the need for the adoption of this monetary easing framework, see the article entitled "Comparing the recent financial crisis in the United States and the euro area with the experience of Japan in the 1990s" in this issue of the Monthly Bulletin.

**Chart E Current account balances at the Bank of Japan**

(JPY trillions)

- balances of financial institutions not subject to reserve requirements
- excess central bank reserves
- required central bank reserves
- current account balances held with the Bank of Japan

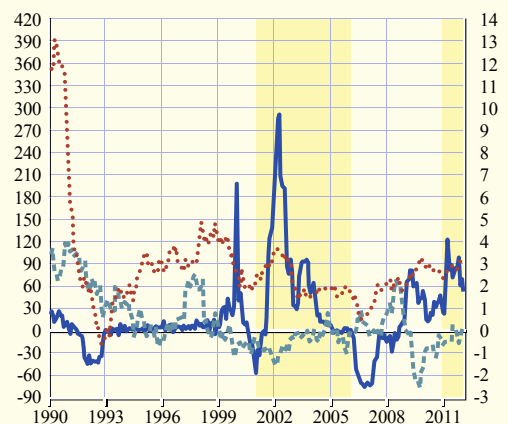


Sources: BIS and ECB estimates.

**Chart F Current account balances at the Bank of Japan, broad money and CPI inflation**

(annual percentage changes)

- current account balances held with the Bank of Japan (left-hand scale)
- broad money (right-hand scale)
- CPI (right-hand scale)



Source: BIS.

Note:

- 1) The episodes of excess reserve holdings are indicated by the shaded areas.
- 2) Broad money is M2 plus certificates of deposit until the discontinuation of the series at the end of 2007, and M2 thereafter.

operations. After the collapse of Lehman Brothers, Japanese banks were again provided with central bank reserves in excess of the required amounts. The second episode with very significant excess central bank reserve holdings by the Japanese banking system, however, only occurred after the Great East Japan Earthquake in March 2011. In this episode, too, there have thus far been no indications of a significant pick-up in broad money growth and inflation. While the first episode of excess central bank reserve holdings was specific to Japan, excess central bank reserves in the current episode are a broadly observed phenomenon across advanced economies. In this respect, caution should be applied in drawing conclusions from the first episode of excess central bank liquidity in Japan for the current episode in both Japan and other advanced economies.

### Conclusions

The significant increase in excess central bank liquidity in the euro area was necessary to offset the contractive impact of elevated liquidity stress on banks' balance sheets, which could otherwise have led to abrupt asset sales and a curtailment of credit with potentially severe consequences for the real economy.

In principle, the efforts of banks to offload undesired excess liquidity (which cannot, by nature, be successful on aggregate) may support asset prices and the extension of credit, but in an environment characterised by a stabilisation of economic activity at a low level, this is highly unlikely to translate into consumer price inflation. In any case, signs of a surge in inflationary pressure would be anticipated by a faster expansion in money and credit, which the ECB is well equipped to detect and address with its two-pillar strategy. More broadly, the ECB will continue to use the full range of standard and non-standard policy measures available to ensure that its monetary policy stance is consistent with maintaining price stability in the euro area over the medium term.