



## Did the Eurosystem's LTROs of 2011 and 2012 help to avert a credit crunch in the euro area?

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*This letter presents the findings of research carried out at the Banque de France. The views expressed in this post are those of the authors and do not necessarily reflect the position of the Banque de France. Any errors or omissions are the responsibility of the authors.*

*The two 3-year longer-term refinancing operations (LTROs) implemented by the Eurosystem in December 2011 and February 2012 resulted in a massive positive liquidity shock to the euro area's banking system. In this research, we exploit a rich dataset of bilateral bank-firm credit exposures in France to analyse the effects of this large provision of central bank liquidity to banks on the credit supply to firms. We find that (1) the LTROs did indeed have a positive impact on loan supply in France; (2) the transmission mostly took place with the first round of the LTROs, in which the participating banks tended to be those facing greater financial constraints; (3) the opportunity to substitute long-term central bank borrowing for short-term borrowing was instrumental in this transmission; (4) the increase in loan supply was of greatest benefit to the largest corporate borrowers. Lastly, our evidence suggests that the LTROs did not encourage banks to evergreen bad loans to ailing firms.*

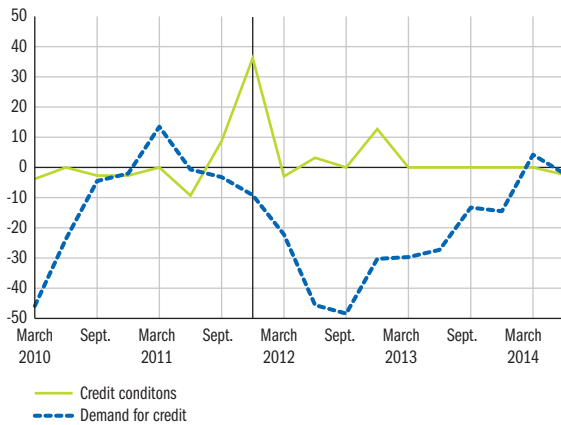
### **The Eurosystem's LTROs of 2011-2012 and bank credit in France**

On 8 December 2011, the Governing Council of the ECB announced its decision to implement two so-called longer-term refinancing operations (LTROs) with a maturity of three years and the option of early repayment after one year. These LTROs resulted in a massive positive liquidity shock to the euro area's banking system. They were announced in early December 2011 and implemented in two separate rounds on 21 December 2011 and on 29 February 2012. The first round provided EUR 489 billion to 523 banks while the second one allotted EUR 530 billion to 800 financial institutions. The total liquidity injection increased the size of the Eurosystem's

balance sheet by more than a fifth and amounted to 80 per cent of the monetary base in the euro area, 20 per cent of total bank credit to firms and almost 11 per cent of the area's nominal GDP. Furthermore, this liquidity was lent for three years at a very low interest rate compared to the funding terms banks faced in wholesale markets at the time.

The measure was designed to ensure "enhanced access of the banking sector to liquidity", and to "support the provision of credit to households and non-financial corporations". It took place against the backdrop of an intensification of the sovereign debt crisis in the euro area during the second half of 2011, which significantly dampened real activity.

### C1 Indexes of credit conditions and credit demand, bank credit to non-financial firms



Note: the vertical line indicates the quarter when the 3-year LTROs were launched (December 2011). An increase in the credit condition index corresponds to a restriction of credit supply. An increase in the demand index corresponds to increased demand perceived by banks.  
Source: Banque de France, BLS.

The outlook for credit and GDP growth was bleaker in peripheral countries, which were directly facing heightened market stress. However, tensions possibly leading to a credit crunch could be felt more broadly across the euro area. As a matter of fact, the bond spreads paid by French banks, a standard measure of funding stress, reached historical highs in the second half of 2011.

Available information from surveys of bank loan officers (the Eurosystem's Bank Lending Survey, or BLS) suggests that this negative funding shock translated into tighter credit conditions for bank customers. The increase in the BLS "credit tightening" index over the last quarter of 2011 points to a rapid contraction in the supply of credit (see Chart 1). Interestingly, the loan officers' reports also suggest that demand for credit from non-financial firms receded sharply over the course of 2012. This highlights the crucial need to adequately control for demand effects when evaluating the impact of the ECB's policy measures on credit supply over this period of time.

### Assessing the transmission of LTROs to the supply of bank credit to firms

In the research paper underlying this article (see Andrade, Cahn, Fraise and Mésonnier, 2015), we evaluate the extent to which the Eurosystem's 3-year LTROs of 2011-2012 helped to revive bank credit to firms by

alleviating the financing constraints faced by banks during this crucial episode of the euro area crisis.

To conduct our analysis, we build a unique dataset of bank-firm credit linkages as well as bank and firm balance sheet information for France.<sup>1</sup> After some standard cleaning, our dataset covers the activity of 24 banking groups accounting for 89 per cent of bank loans to firms in the autumn of 2011. It includes close to 1.4 million bank-firm credit links involving some 1.2 million firms, of which 211,000 firms have multiple lenders (multibank firms).

Our approach boils down to running a cross-sectional regression, where the rate of growth in the credit provided (including unused credit lines) by a bank to each of its customers over the 12 months surrounding the two operations (from September 2011 to September 2012) is explained by the bank's uptake of the Eurosystem's LTROs, and a list of relevant control variables.

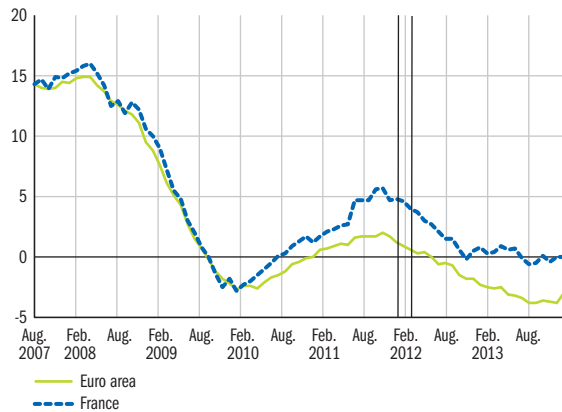
As mentioned above, the LTROs were implemented as the sovereign debt crisis escalated in the euro area, dragging down the economic outlook. Against this backdrop, loan demand from firms was very likely to be depressed, even in core euro area countries which were not directly under financial stress, such as France. Also, the risk associated with existing credit to firms may have increased during 2012, leading to higher external finance premia for firms applying for loans. As a result, it is important to adequately control for firm demand and risk in order to make a proper assessment of the impact of the LTROs. Simply looking at macroeconomic credit aggregates, without disentangling credit demand and supply effects, would lead to the conclusion that the measure was ineffective, as credit growth in fact remained subdued over 2012 (see Chart 2). This is why it is important to use detailed microeconomic data.

In our study, we solve the usual problem of disentangling demand for and supply of loans by exploiting the information contained in the French credit register run by the Banque de France. This database contains all outstanding bank credit exposures (for French banks) of EUR 25,000 or more to resident non-financial firms. It therefore provides a quasi-exhaustive list of bank-firm credit relationships for France. Following the methodology of Khwaja and Mian (2008), among others, we focus on

<sup>1</sup> Note that France is an interesting case study as the financing of its firms is largely bank-based and it constitutes the second largest economy in the euro area.

## C2 Bank loans to non-financial firms, France vs euro area

(annual growth rates in %)



Note: the two vertical lines represent the two rounds of 3-year LTROs.  
Source: Banque de France, ECB.

firms that had credit relationships with at least two banks before the announcement of the policy measure. Intuitively, the estimation methodology consists in measuring the change in the amount of credit supplied to the same firm by two different banks which each received different amounts of liquidity in the Eurosystem's LTROs. This allows us to identify the impact of the LTROs on the supply of credit to non-financial firms, while effectively controlling for firm-specific characteristics that may affect their demand for credit or their intrinsic level of risk.

Another major difficulty in identifying the effect of this unlimited provision of liquidity is that banks were free to choose the amount of central bank liquidity they borrowed from the Eurosystem.<sup>2</sup> Banks willing to bid for higher amounts in the LTROs could be expected to be those under more financial stress and therefore more likely to want to cut back their provision of credit. As a result, in order to evaluate the causal impact of LTROs on the supply of bank credit, it is also important to control for bank-specific factors that are likely to impinge on their credit supply to firms and affect their bid for central bank liquidity. We control for these bank-specific factors (notably banks' size, leverage, ratio of interbank assets to liabilities and ratio of deposits to total assets) using additional information from bank balance sheets.

## Results

We find that banks that bid for larger amounts in the LTROs did indeed use this cheap funding to increase their supply of loans to non-financial corporations. According to our

baseline estimates, each EUR 1 billion of central bank money borrowed by the average bank holding company (in gross terms) led to a EUR 95 million net increase in the amount of credit made available to the average firm over the 12-month period from September 2011 to September 2012.<sup>3</sup>

The richness of our dataset also allows us to draw further policy-relevant conclusions. Firstly, and importantly, the effect is almost exclusively associated with the first round of LTROs, which took place before 9 February 2012 when ECB President Mario Draghi publicly dismissed fears of any stigma that might be associated with bidding at these operations. Easing the threat of a stigma actually encouraged more banks to bid in the second LTRO in late February 2012, but these institutions were less likely to need to roll over the financing of their existing investments, and more likely to want to exploit an attractive funding opportunity. Indeed, we show that these banks were on average better capitalised. This confirms that the positive bank funding shock had a stronger impact on bank lending when banks were *ex ante* financially constrained.

Secondly, we provide new insights into the benefits of providing central bank liquidity over longer horizons than those that are usual in lender of last resort operations. The Eurosystem had been lending under a full allotment procedure since the intensification of the subprime crisis in October 2008. But, prior to December 2011, its liquidity had only been provided at relatively short maturities of between one week and six months.<sup>4</sup> What was new about the 2011 LTRO facility was that, for the first time, a potentially unlimited amount of central bank liquidity was lent over a longer horizon of three years, substantially reducing banks' uncertainty over their ability to withstand future funding stress. By disentangling the effects of the maturity swap associated with the LTROs and the effects of the increase in total borrowed reserves over the allotment period, we find confirmation that the bulk of the stimulus to bank lending associated with the bids in the first LTROs came from a substitution of long-term for short-term bank borrowing.

<sup>2</sup> The only limit being their access to eligible collateral that could be pledged to the Eurosystem.

<sup>3</sup> Note that a one-for-one transmission to additional credit would not be expected, for the simple reason that banks' gross borrowings from the Eurosystem did not automatically translate into an increase in their balance sheet. In fact, banks massively substituted this secure and cheap source of funding for more volatile or more expensive ones. It was this strengthening of their balance sheets which gave them a stronger incentive to lend.

<sup>4</sup> Two exceptions were the 1-year LTROs launched in June and December 2009. By definition, these were fully reimbursed by the end of 2010.

Lastly, we document distributional issues linked with the LTROs. Looking at the impact of the first LTRO round on firms of different sizes, as measured by their total bank borrowings, we find that the LTROs mostly benefited firms in the upper decile of the borrowing distribution. For large individual firms, i.e. firms in the top 1 per cent of the borrowing distribution, the benefit of being linked to a bank that borrowed from the ECB's LTROs was 3.5 times greater than the average.<sup>5</sup> In addition, we also investigate whether the impact of LTROs on loan supply varied according to characteristics other than firm size. We find that banking groups that borrowed via the ECB's LTROs tended to make much smaller increases in lending to firms with which they had a longstanding relationship (defined as a credit link that is more than three years old). They also tended to increase their lending to profitable firms. This suggests that the ECB measure did not predominantly lead to an evergreening of bad loans to "zombie firms". Likewise, firms' credit risk does not seem to be a key determinant of the increase in loan supply. Importantly, however, fringe firms in terms of credit rating, i.e. firms of intermediate credit quality which were not eligible under the Eurosystem's collateral framework before January 2012 but became eligible after the extension of collateral accepted for central bank refinancing operations (the so-called ACC programme of February 2012), benefited more than others from their lenders' LTRO borrowing. This suggests that some of the bidding banks faced collateral constraints.

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## Conclusion

Overall, our evaluation of the Eurosystem's LTROs suggests that, when an economy has slid into a recession, central banks can maintain the supply of bank credit to the real economy by pumping liquidity into banks' balance sheets. Our conclusion is therefore at odds with the conventional wisdom about this type of "quantitative easing" (QE) policies, which is that they become ineffective as the economy approaches a liquidity trap.<sup>6</sup>

In the past few years, the effectiveness of these QE policies has been the subject of renewed debate, as major central banks have implemented them to overcome the zero lower bound on interest rates. Recent theoretical contributions (see, for example, Gertler and Kiyotaki, 2010) have indeed pointed to a specific transmission mechanism, the so-called "bank lending channel", through which QE policies might be effective at the zero lower bound. According to this view, injections of central bank liquidity into the balance sheets of commercial banks can increase lending in so far as they ease some of the frictions on banks' access to external financing. Clearly, our findings can be seen as a vindication of such theories.

<sup>5</sup> These firms account for nearly 60 per cent of total bank credit to non-financial institutions in France.

<sup>6</sup> This classic view was notably stated by Keynes in 1936 and by Samuelson in his 1948 textbook.

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