

## ARTICLES

# RECENT DEVELOPMENTS IN LOANS TO THE PRIVATE SECTOR



Developments in loans to the private sector are assessed regularly as part of the ECB's economic and monetary analyses. This assessment has been particularly important and challenging since the onset of the financial tensions, as the nature of the tensions might imply specific constraints on lending, which could, in turn, aggravate the impact on the macroeconomy. This article reviews recent developments in loans to the private sector and has three main findings. First, the financial crisis had various impacts on growth in loans to the euro area private sector, but they were limited by the ECB's non-standard monetary policy measures. Second, a comparison of actual loan developments with historical regularities indicates that, over the business cycle, they were broadly in line with what was to be expected, especially when taking into account the severity of the recession. Third, loan supply factors have exerted significant downward pressure on loan growth since the start of the financial tensions in mid-2007, but they were quantitatively less important than other factors, such as demand-related factors. The outright credit crunch that was sometimes conjectured by external observers did not materialise.

### I INTRODUCTION

The major economic downturn experienced in the euro area between 2008 and 2009, and the subsequent recovery observed in recent quarters, coincided with strong movements in the growth rate of credit to the private sector. In particular, the annual growth rate of MFI loans to the private sector declined, in nominal terms, from above 11% to slightly negative values in late 2009 and early 2010, before moving into positive territory thereafter (see Chart 1).

Credit cycles have been a feature of advanced economies for a long time, and their analysis is of relevance for monetary policy purposes. Indeed, for monetary analysis, the relevance of developments in loans to the private sector over the cycle stems from the fact that they are the main counterpart to aggregate money, so that their assessment is necessary for understanding and interpreting monetary developments.<sup>1</sup> Moreover, in the euro area, unlike in the United States, bank loans are the most important source of external financing, not only for households but also for non-financial corporations. They therefore play a very important role in shaping developments in economic activity and in the transmission of the monetary policy stance to the economy.<sup>2</sup>

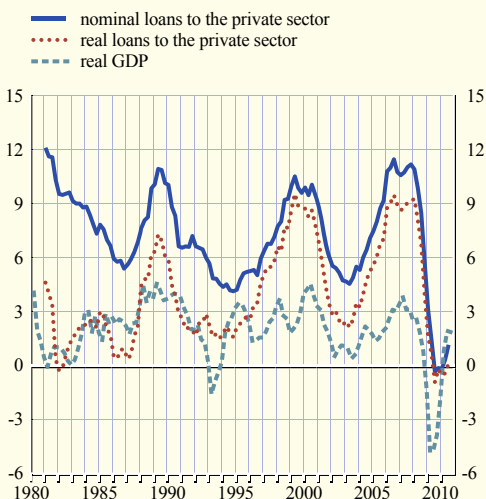
The assessment of developments in loans to the private sector has become particularly important since the onset of the financial tensions.

Key questions that have been raised over the past three years include: i) the extent to which credit markets have themselves become a source of instability rather than simply propagating disturbances that originate in other sectors of the economy; and ii) when private sector loan

- 1 See, for example, Papademos, L. and Stark, J. (eds.), *Enhancing monetary analysis*, ECB, Frankfurt am Main, October 2010.
- 2 For more details, see the article entitled "Monetary policy and loan supply in the euro area", *Monthly Bulletin*, ECB, Frankfurt am Main, October 2009.

Chart 1 MFI loans to the private sector

(annual percentage changes)



Sources: ECB and Eurostat.

Note: The real series has been calculated using the GDP deflator.

growth will recover from the unprecedented fall that took place in the aftermath of the default of Lehman Brothers in September 2008.

Against this background, Section 2 of this article reviews recent developments in loans to the private sector and discusses the possible impact of the recent crisis on such loans. Section 3 describes the main stylised facts, or historical regularities, that characterise developments in loans to the euro area private sector. Section 4 provides an overview of alternative approaches to estimating the relative impact of supply and demand factors on these developments. The final section offers some concluding remarks.

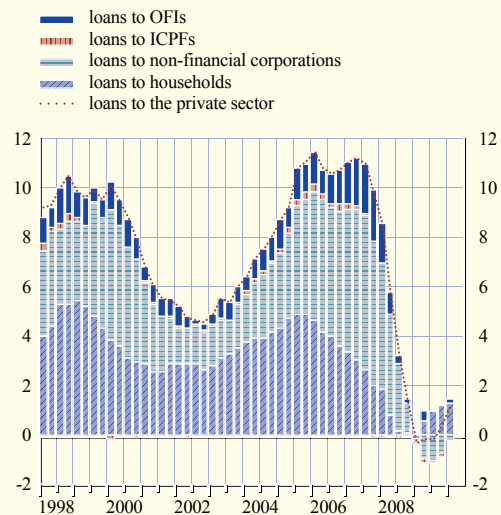
## 2 THE IMPACT OF THE FINANCIAL CRISIS

In order to assess the extent of the impact of the recent financial crisis on developments in bank loans, it is useful to look at developments in loans to individual institutional sectors, as they may have been affected differently by the specific factors at work during the crisis. Indeed, the discussion in this article will focus mostly on loans to households and loans to non-financial corporations, which, on average, have accounted for about 90% of the total growth in loans to the private sector since 1998 (see Chart 2). This section, after discussing briefly some of the effects of the crisis that may have had only a limited impact on overall developments in loans to the private sector, will then focus on the effects of the crisis on the banking sector. Thereafter, it will review the monetary policy measures used to counteract the adverse impact of the crisis and finally it will examine the developments in loans to non-financial corporations and to households during the crisis.

The financial crisis, which started in mid-2007 and intensified in the aftermath of the collapse of Lehman Brothers, triggered sharp movements in economic activity and bank lending rates. While the impact of these movements is likely to explain a large part of the developments in loans during the financial crisis, other factors

**Chart 2 Breakdown of MFI loans to the private sector**

(annual percentage changes; percentage points)



Source: ECB.

Notes: "OFIs" stands for other financial (non-monetary) intermediaries. "ICPFs" stands for insurance corporations and pension funds.

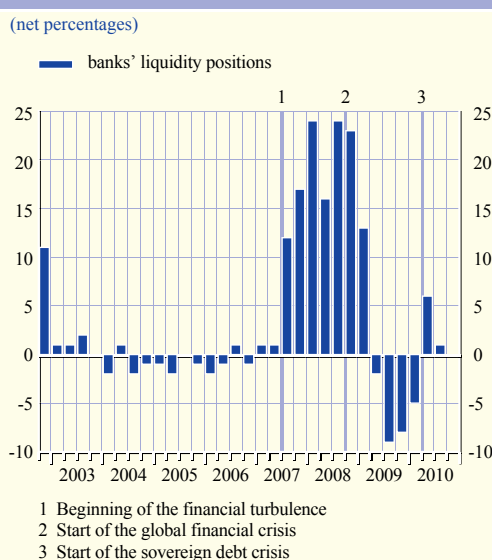
also played a role. For instance, in the early phases of the crisis and owing to the perceived risk of bank funding being more difficult to access, firms seem to have drawn down available credit lines and thus kept loan growth strong at a point when economic activity was already decelerating. Other "distortionary" effects include the effective closure of the securitisation market and even "re-intermediation" effects. However, the upward impact of these on loan growth was more than offset by banks' "retained" securitisation activity, whereby they continued to securitise loans, not to sell them in the market, but in order to pledge the securities as collateral in ECB's funding operations. Later on in the crisis, the introduction of "bad bank" schemes in some countries also had a distortionary, but to date limited, downward impact on growth in loans to the private sector.<sup>3</sup>

<sup>3</sup> For a more detailed discussion, see the article entitled "Monetary analysis in an environment of financial turmoil", *Monthly Bulletin*, ECB, Frankfurt am Main, November 2009, and the box entitled "The impact of 'bad banks' on MFI balance sheet statistics", *Monthly Bulletin*, ECB, Frankfurt am Main, March 2010.

In the context of the intensification of the financial crisis from September 2008 onwards, banks began a process of deleveraging, which reflected their reduced ability to access some sources of financing, as well as attempts to adjust their balance sheets. Euro area MFIs' main assets decreased substantially in 2009, but since early 2010 they have started to accumulate again. The decline in assets and leverage ratios observed in 2009 largely reflected MFIs' reductions of, first, their external assets and, subsequently, their positions vis-à-vis one another (inter-MFI transactions). Inevitably, balance sheet constraints within the euro area banking system had some impact on banks' credit standards. However, this may not have been a major factor behind the decline in private sector loan growth, as banks may have attempted, to some extent, to shield their retail borrower relationships. In 2010 the accumulation of assets by the MFI sector started again, driven mainly by inter-MFI loans, claims on the Eurosystem, loans to euro area non-MFIs and purchases of government bonds, although said accumulation was very weak in the summer.

During the crisis the ECB's non-standard measures have been instrumental in supporting the banking system, and thus indirectly also the credit markets, by considerably improving market liquidity and helping to alleviate bank funding risks. Although these measures did not prevent a significant decline in private sector loan growth, without them the decrease would most likely have been more pronounced, given the decline in economic activity. More precisely, these measures, which have become known as "enhanced credit support", were designed to sustain financing conditions and credit flows above and beyond what could be achieved through reductions in key ECB interest rates alone. As a result of these measures, adopted from October 2008 onwards, money market interest rates, money market spreads and interest rates on bank loans declined significantly, and banks' liquidity positions improved (see Chart 3).<sup>4</sup> These measures, and subsequent initiatives such as the covered bond purchase programme, have helped to sustain financial

Chart 3 Bank lending survey indicator of banks' liquidity positions



Source: ECB.

Notes: The indicator represents the assessment of banks' liquidity positions as a factor affecting the credit standards applied to the approval of loans or credit lines for enterprises. The net percentages are defined as the difference between the percentage of banks reporting that this factor contributed to a tightening and those reporting that it contributed to an easing.

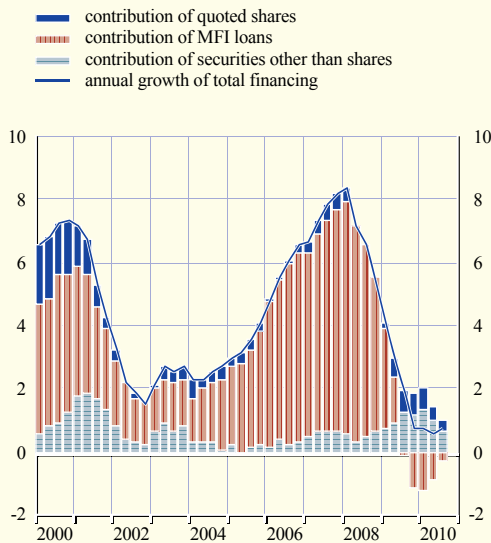
intermediation in the euro area and have been instrumental in maintaining the availability of credit for households and companies.

Growth in lending to euro area non-financial corporations started to decline gradually in 2008 and continued to do so throughout the first half of 2010. One explanation for the prolonged weakness in lending to non-financial corporations may have been the apparent and relatively high level of replacement of bank loans with the issuance of debt securities and quoted shares that took place between the first half of 2009 and the first half of 2010 (see Chart 4). More generally, the developments in corporate financing during the financial crisis suggest that the weakness in lending to non-financial corporations largely reflected a financial strategy whereby enterprises prefer to

<sup>4</sup> For more details, see the article entitled "The ECB's response to the financial crisis", *Monthly Bulletin*, ECB, Frankfurt am Main, October 2010.

**Chart 4 Main sources of financing for non-financial corporations**

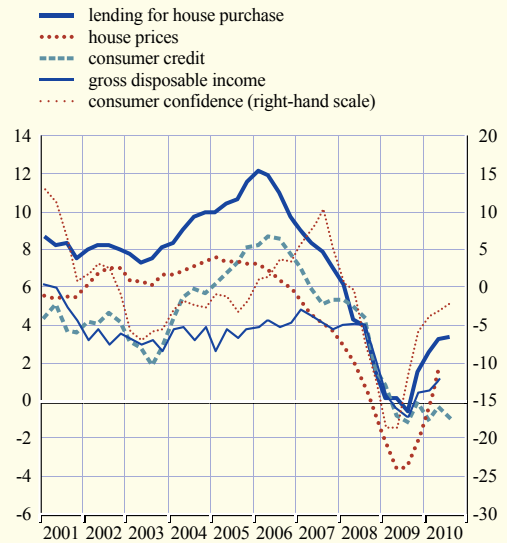
(annual percentage changes; percentage points)



Source: ECB.

**Chart 5 Loans to households, disposable income, house prices and consumer confidence**

(annual percentage changes; percentage points)



Source: ECB.

Note: Consumer confidence is reported as a deviation from the long-run average.

use internal or market-based funding in order to reduce their indebtedness and dependence on banks. However, it is not a priori clear to what extent such strategies and the associated disintermediation process have been a reaction to bank loans being more difficult to access or a reflection of the relative costs of financing. It is also an open question as to what extent the increased recourse to market-based funding relative to bank loans is a more lasting development, which may imply a weaker recovery of loans in comparison with previous episodes.

As regards loans to households, lending for house purchase and consumer credit have been following divergent trends in recent quarters. After a steep decline between 2007 and mid-2009, which ran in parallel to a similar decline in house prices, growth in lending for house purchase has since recovered significantly (see Chart 5). By contrast, consumer credit growth, which experienced a similarly steep fall between 2007 and mid-2009, has remained in negative territory in the most recent quarters.

On the one hand, this is due partly to the weak growth in disposable income, the ongoing low levels of consumer confidence and the high level of uncertainty. On the other hand, the divergence of these two main sub-components of loans to households, as well as the weakness in lending to non-financial corporations, may be related to a preference of banks, in periods of perceived macroeconomic risks, to grant loans for house purchase which are collateralised and can more easily be used to back covered bonds, the market for which has meanwhile recovered. As housing market developments have been very different across euro area countries in past years, the argument with regard to collateralised loans is unlikely to hold equally for all countries. However, for the euro area as a whole, the impact of the financial crisis on loans for house purchase has been less strong and persistent than in other economies, owing to the absence of large sub-prime mortgage markets and the fact that housing is most likely still perceived as a safer investment in the longer run, while most other longer-term investments are currently viewed as being uncertain or offering low returns.

Overall, the financial crisis and the responses of market participants and macroeconomic policies have generated a number of factors that could explain the extent to which loan growth has behaved differently in the past three years from what would have been expected on the basis of the main macroeconomic determinants. Section 3 looks into how different the behaviour of loan growth has actually been.

### 3 HISTORICAL REGULARITIES

The stylised facts, or historical regularities, of the business cycle are a useful reference point for the assessment of and outlook for loan developments. Of course, no cycle is exactly the same and so some deviations from historical regularities are to be expected. Nevertheless, they are important in assessing how strong the effect of specific factors may be on credit markets and the overall economy at any moment in time. Indeed, a question frequently raised in recent months has been whether growth in loans to non-financial corporations will start to recover roughly one year after the beginning of the recovery of real GDP growth, as has typically been observed in past economic cycles, or whether specific forces might imply a delayed upturn.

Between 1980 and 2010 nominal MFI lending to the private sector in the euro area increased at

an average annual rate of around 7.5%, or 4.1% in real terms (see the table). The average annual growth of its two main sectoral components, loans to households and loans to non-financial corporations, was similar, both in nominal and real terms. These growth rates, especially those in real terms, can be used as a benchmark for the strength of growth to be expected in the middle of the cycle in the absence of distortionary factors.

As regards the cyclical properties of growth in loans to the private sector, it can be observed that the annual growth of both total loans and the main components are procyclical, i.e. they tend to have a positive degree of co-movement with real GDP growth. Moreover, their degree of association with the cycle tends to be strong, as signalled by the high value for the maximum correlation. However, the average lead or lag time for loan growth tends to vary across components (see the last column of the table). Indeed, while total private sector loan growth tends to lag the cycle by, on average, two quarters, this conceals different patterns across the two main components. In particular, while the growth of household loans tends to lead the cycle by, on average, one quarter, that of loans to non-financial corporations tends to lag the cycle by about three quarters. Similar average leads and lags are found for the turning points in the annual growth rates of total loans and the main components relative to those in

#### Stylised facts about lending to the private sector over the business cycle in the euro area

(percentages; annual percentage changes; number of quarters)

	Average weight	Average growth	Standard deviation	Properties over the business cycle		
				Cyclicity	Maximum correlation	Average lead/lag
Loans to the private sector	100.0	7.5	2.7	procyclical	65.4	-2
Loans to households	47.7	7.6	2.4	procyclical	60.7	1
Loans for house purchase	28.5	9.2	3.1	procyclical	50.6	1
Consumer credit	7.0	6.7	3.2	procyclical	50.9	1
Other household lending	12.0	4.7	2.8	procyclical	32.9	-1
Loans to non-financial corporations	44.4	7.4	4.1	procyclical	70.7	-3
Loans of up to 1 year	29.3	6.1	6.9	procyclical	75.0	-3
Loans of over 1 year	15.1	8.1	3.2	procyclical	55.2	-3
Loans to financial corporations	7.9	8.5	12.1	acyclical	7.7	7

Sources: ECB and ECB calculations.

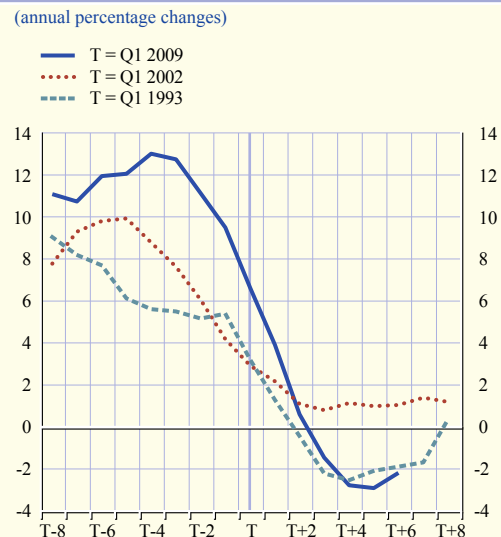
Note: Based on year-on-year growth rates of quarterly nominal data over the period from the first quarter of 1980 to the third quarter of 2010, unless stated otherwise.

real GDP growth, and average leads and lags are also very similar for these series in real and nominal terms.<sup>5</sup> At the same time, dynamic correlations suggest that while the lag of growth in lending to non-financial corporations is statistically significant, the lead of household loan growth is not. In other words, household loan growth may be more appropriately classified as coincident relative to the cycle, with a relatively large range of uncertainty in the average lead/lag cyclical relationship.

Various factors are likely to explain these different average leads and lags of the main loan components. For instance, the leading, or coincident, nature of household loan growth may reflect the fact that households adjust their spending behaviour relatively quickly once there are signs of a new phase of the business cycle. The decline in both house prices and interest rates during slowdowns, for example, typically encourages some households to resume their demand for housing loans when expectations of a recovery strengthen. The lagging pattern of loans to non-financial corporations, by contrast, may reflect the fact that firms have alternative sources of financing, and may first turn to internal funds, the availability of which increases as cash flows improve during the recovery, or they may finance themselves by issuing securities. At the same time, other factors may also be relevant, such as the possible preference of banks during a recovery first to increase their lending to households, rather than to firms, because household loans, notably those for house purchase, are better collateralised, and because firms' balance sheet conditions take some time to improve.

For purposes of interpreting recent loan developments in terms of historical regularities, it can be interesting to focus on episodes of major downturns. When comparing loan developments during the early 1990s, early 2000s and current swing, the far greater severity of the recent recession by historical standards, but also the strength of the recovery experienced in recent quarters, have to be kept in mind. For historical comparisons, it is more appropriate to focus

**Chart 6 MFI loans to non-financial corporations during major slowdowns and recoveries since 1990**



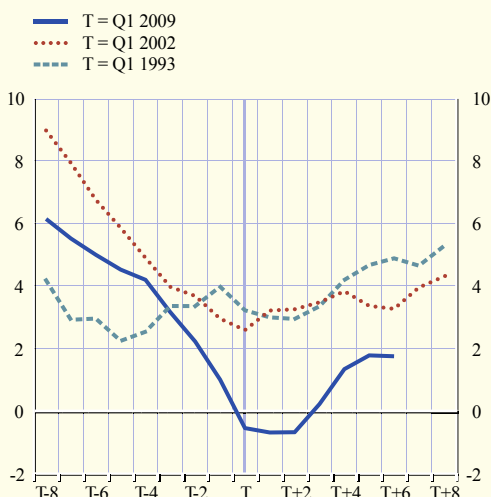
Sources: ECB and ECB calculations.  
Notes: Turning points identified by the Bry-Boschan algorithm applied to the annual growth rate series. Period T represents a quarter in which a trough in real GDP growth was identified in a major downturn.

on real loan series, i.e. loans deflated by the GDP deflator, as the higher inflation rates observed in the early 1990s, for example, would distort the picture. Chart 6 indicates that the annual growth in real lending to non-financial corporations has fallen more in recent quarters than in all of the previous episodes considered, although the difference to the episode in the early 1990s is minor. However, if the trough in the annual growth in real lending in the first quarter of 2010 is confirmed by future data, this would place it about four quarters after that in real GDP growth, much like average historical developments, including those recorded for the recoveries in the early 1990s and early 2000s. The growth in real lending to households declined significantly more during the recent slowdown than in previous episodes (see Chart 7). This was no doubt due to the far greater severity of the housing market slowdown in the latest episode. Moreover, in the most recent episode, a turning

<sup>5</sup> See, for example, the evidence discussed in the box entitled "Loans to the non-financial private sector over the business cycle", *Monthly Bulletin*, ECB, Frankfurt am Main, October 2009.

**Chart 7 MFI loans to households during major slowdowns and recoveries since 1990**

(annual percentage changes)



Sources: ECB and ECB calculations.

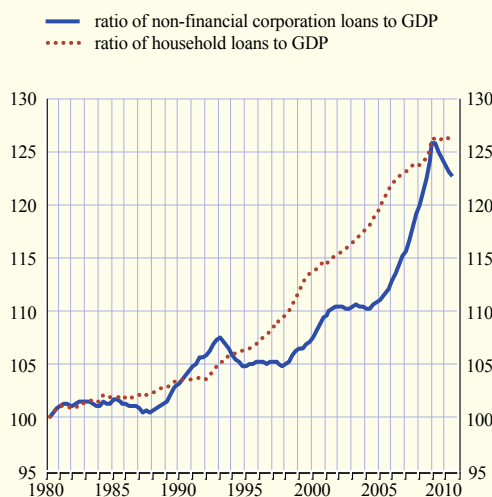
Notes: Turning points identified by the Bry-Boschan algorithm applied to the annual growth rate series. Period T represents a quarter in which a trough in real GDP growth was identified in a major downturn.

point in real household loan growth appears to have taken place two quarters after that in real GDP growth. This stands in contrast to the typical leading, or coincident, pattern of real household loan growth, but is not unprecedented as it can also be observed in the case of the slowdown in the early 1990s. However, the latest recovery in real household loan growth seems to have been more dynamic than in previous recoveries, which can be explained by the fact that, in the latter episodes, real loan growth had declined to a far lesser extent.

Despite the fact that growth in real lending to both non-financial corporations and households

**Chart 8 Ratios of outstanding amounts of MFI loans to GDP (normalised)**

(percentages; Q2 1980 = 100)



Sources: ECB and ECB calculations.

declined more during the recent slowdown than in previous episodes, taking into account the severity of the recent recession, these declines do not seem to have been excessive. For instance, the ratio of non-financial corporation loans to GDP fell during the most recent quarters by a similar amount as during the early 1990s, while the ratio of household loans to GDP has remained broadly stable in recent quarters, as it did in the early 1990s (see Chart 8). The view that, once account is taken of the weakness of economic activity, recent developments are broadly in line with historical regularities, is confirmed by an assessment based on a Bayesian vector autoregressive (VAR) model (see Box 1).

### A MODEL-BASED ASSESSMENT OF DEVELOPMENTS IN MFI LOANS TO NON-FINANCIAL CORPORATIONS DURING THE FINANCIAL CRISIS

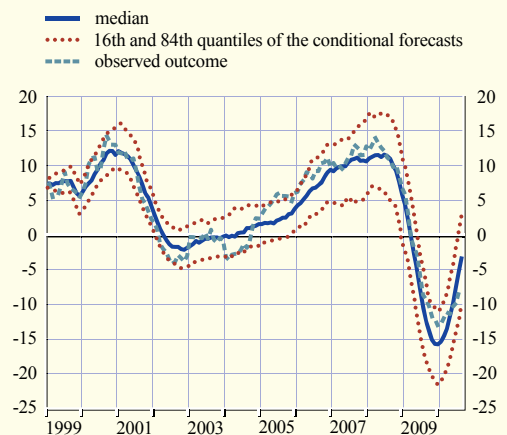
The severity of the recent financial crisis and economic downturn has raised the question as to whether the structural relationships that governed the euro area economy prior to the crisis have remained valid, both during and after the crisis. Giannone et al. describe a large Bayesian vector autoregressive (VAR) model (with 42 variables) for the euro area that captures the complex dynamic relationships between the macroeconomic, financial, credit and monetary variables in the pre-crisis period (i.e. prior to August 2007).<sup>1</sup> In this box, this model is used to assess whether the developments in short-term loans to non-financial corporations (the most cyclically responsive component of total loans to non-financial corporations) in the financial crisis/recession period can be accounted for by pre-crisis economic relationships after controlling for the intensity of the economic recession.

In order to take into account the economic structure of the euro area prevailing before the financial crisis, the model is estimated with data for the period up to July 2007. Then, given the estimated VAR parameters, expectations for all the variables included in the model are computed for the period from January 1999 to August 2010, conditional on: i) the values of all variables up to December 1998; and ii) exclusively those of the real macroeconomic variables (i.e. industrial production in the euro area and the United States, and unemployment in the euro area) from January 1999 to August 2010. In so doing, the forecasts are only conditional on the shocks that drove the business cycle in the euro area over the last decade. Finally, conditional expectations are compared with the corresponding outcomes.

In view of the fact that the estimated VAR parameters reflect the economic structure of the euro area prevailing until July 2007, the comparison of conditional forecasts and the observed outcome should be interpreted differently when looking at the pre and post-crisis periods. If, for a specific variable, large differences between the outcome and conditional expectations already appear in the pre-crisis period, then the most likely conclusion is that the variable is not strongly cyclical, i.e. sources of fluctuations other than the shocks driving the business cycle are relevant in explaining its dynamics. The comparison of pre-crisis outcomes and expectations based on real activity variables can be considered to be a rough test of the cyclical nature of the variables included in the model.

#### Short-term MFI loans to non-financial corporations

(annual percentage changes)



Source: ECB.

Notes: The solid blue line in the chart is the median, while the dotted red lines represent the 16th and the 84th quantiles of the distribution of the conditional forecasts. The dashed green line refers to the observed outcome.

<sup>1</sup> For a complete description of the model, see Giannone, D., Lenza, M. and Reichlin, L., "Money, credit, monetary policy and the business cycle in the euro area" in Papademos, L. and Stark, J. (eds.), *Enhancing monetary analysis*, ECB, Frankfurt am Main, October 2010, pp. 252-262.



If, instead, large discrepancies between the outcome and expectations appear, above all, in the post-crisis period, then it is more likely that they are due to a change in the dynamic relationships linking the variables to the rest of the economy. The chart presents the results of the aforementioned exercise for the annual growth rates of short-term loans to non-financial corporations. The dashed green line refers to the observed outcome, while the solid blue line and the two dotted red lines refer to the median, the 16th and the 84th quantiles respectively of the distribution of the conditional forecasts. It shows that the conditional forecasts and the observed outcome for the annual growth rates of loans to non-financial corporations are very similar throughout the period under review and that there were no anomalies during the crisis. Moreover, it seems that the post-crisis evolution of loans was not very surprising, given the state of the business cycle. In other words, during the financial crisis, euro area credit markets do not seem to have behaved differently to what would have been expected on the basis of the state of and the outlook for the business cycle and empirical pre-crisis regularities.

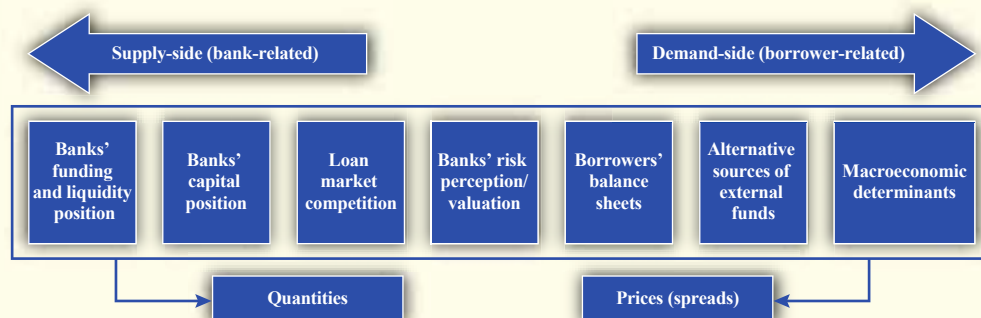
#### 4 FACTORS DRIVING DEMAND VERSUS THOSE DRIVING SUPPLY

##### GENERAL CONSIDERATIONS

While historical regularities are a useful reference point, they do not allow for a distinction between demand and supply-side influences on loan developments, which is important from a policy perspective. For instance, the economic policy implications are very different if private sector loans do not grow sufficiently to support the economy because of an impaired availability of capital and stable funding within the banking system, or because potential borrowers have no demand for loans, owing to limited spending and investment opportunities. At the same time, supply and demand forces are very difficult to assess for various reasons.

First, from a conceptual point of view, it is sometimes difficult to distinguish credit supply factors from other factors. In general, the supply of credit is determined by the ability and willingness of banks to lend. This ability and willingness may depend on factors related to the banks' own financing situation, the availability and price of funding that is reflected in liquidity management, their capital position constraints (which also depend on the composition of their asset portfolios) and competition from other banks in the loan market (see Chart 9). The above-mentioned factors relate primarily to supply-side effects, but both supply and demand-side forces might be at work simultaneously in other cases – they may overlap or interfere. For example, a channel of influence on loan developments where the overlap is most obvious

Chart 9 Schematic presentation of supply and demand-side factors that influence loan developments



Source: ECB.

is banks' risk perception of potential borrowers. The classification of such a factor as related to supply or demand depends on the information at the banks' disposal, how they evaluate the risk and the level of their risk aversion, as well as on the actual condition of borrowers' balance sheets and their economic prospects. From the perspective of potential borrowers, loan demand is influenced by the general macroeconomic conditions and outlook, by the borrower-specific situation (such as the balance sheets and income of specific firms and households) and by the prospects for, and the availability (access and price) of, alternative financing sources, such as market debt and internal financing in the case of non-financial corporations.

While the rationing of credit is often understood in terms of quantities, the supply can also be reduced via factors that are included in prices (as in the case of risk premia). In general, the amount of lending offered to the market will be dependent on its price, as will the amount of loans demanded, so that prices will always affect quantities. For various reasons related, for example, to asymmetric information problems, banks may restrict lending even if borrowers are willing to pay the requested price (as they would in accepting specific price terms). The extreme case of such restrictions in non-price terms is a "credit crunch" where banks restrict the supply of loans, regardless of borrowers' willingness to pay the required or higher price.

Second, the measurement of these forces is a difficult task. To this end, it is important to monitor and analyse several relevant indicators. In this respect, a sectoral perspective is key, as loans to households, non-financial corporations and other financial intermediaries are likely to be governed, to some extent, by different driving forces. Moreover, it is necessary to combine alternative types of indicator. For example, it is important to assess a possible decline in non-financial corporations' loan growth in conjunction with alternative sources of firm financing, which may indicate a simple substitution of sources of

funding. If that is the case, it becomes useful to assess whether such substitution is voluntary or forced, in which case other indicators relating to the cost of these alternative sources of financing need to be assessed (alternative spreads). Relevant information can also be obtained from surveys, such as the ECB's bank lending survey (BLS) and the survey on the access to finance of small and medium-sized enterprises (SMEs) in the euro area. Although an assessment of available indicators and data can go a long way in interpreting loan developments, the picture needs to be completed with quantitative estimates of the relative importance of demand and supply-side factors.

Third, estimates of supply and demand-driven forces are often model-dependent, and vary across approach and model specifications. Estimates can be obtained from approaches ranging from time series models, such as regressions using indicators derived from the BLS, to structural models, such as structural VAR or dynamic stochastic general equilibrium models. It should be borne in mind that the estimates of the influence of credit supply factors derived from these models may also vary because the different approaches capture factors that do not correspond in full. Indeed, time series approaches can at best capture some correlation between the survey indicators that can be associated with credit supply and loan developments. By contrast, structural models – given that they are rooted in economic theory – allow for a causal analysis and are based on a differentiation between structural shocks that result from unexpected changes in, or deviations from, typical behaviour and transmission mechanisms. The former, which may include credit supply shocks, for instance, are forces that initiate fluctuations, which are then transmitted via several propagation mechanisms, some of which operate through credit markets. Overall, it is useful to cross-check results derived from alternative approaches, but it is important to keep the different nature of the estimates in mind.

## SURVEY-BASED EVIDENCE

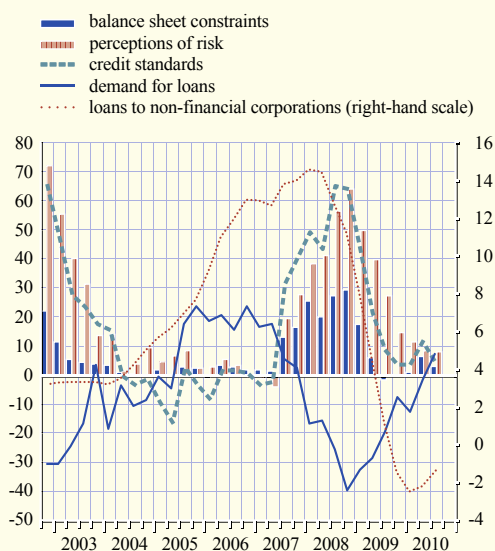
Qualitative evidence on the relevance of various supply and demand forces related to loan developments can be obtained from indicators derived from the BLS, which provides information on loan demand and the credit standards applied by banks.<sup>6</sup>

When using the net tightening of credit standards in the BLS as an indicator of supply influences on loan developments, it should be borne in mind that this series comprises different factors, which can be classified into three groups (“perceptions of risk”, “balance sheet constraints” and “competition”). The “perceptions of risk” factors summarise banks’ assessment of the impact that macroeconomic conditions have on borrowers’ risk profiles and creditworthiness. This can be considered a supply-side influence to the extent that it determines banks’ willingness to lend. However, it also – to a certain degree – reflects a usual reaction over the business cycle that does not indicate a supply-side influence where the banking sector itself is the origin of credit curtailment. In this respect, it is the “balance sheet constraints” that can be interpreted as “pure” supply-side factors (in the sense of proxying for the “bank lending channel” of monetary policy transmission), as would be associated with a credit crunch scenario, for instance, whereas the “perceptions of risk” factors also include information related to loan demand. The “competition” factor includes competition from other banks, from non-banks and from market finance. Although this factor has played a major role in the past, it has proved to be less significant in explaining developments over the cycle during the financial crisis, and therefore it will not be discussed in the paragraphs that follow.

Charts 10 and 11 show that, in the course of 2008, the net tightening of credit standards as a result of balance sheet constraints reached its highest level observed since the start of the BLS (early 2003, with information starting at the end of 2002) for both non-financial corporations and households (lending for house purchase).

Chart 10 MFI loans to non-financial corporations and related BLS indicators

(net percentages; annual percentage changes)



Source: ECB.

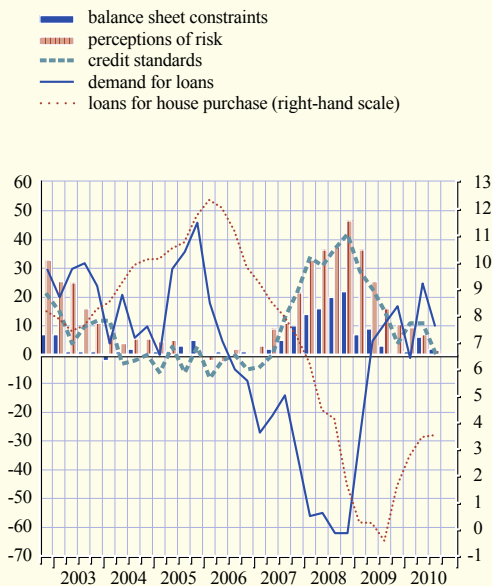
This indicates that “pure” supply-side constraints may have accounted for a significant proportion of the slowdown observed in bank lending activity. The survey data also indicate that, in relative terms, the factors that are summarised in the “perceptions of risk” group have played a clearly larger role. The importance of loan demand developments is confirmed by the indicator for loan demand, which has fallen sharply since the start of the financial crisis and reached historical lows towards the end of 2008. Since 2009 credit standards have tightened to a gradually diminishing extent, while balance sheet constraints have played a minor role and demand has appeared to recover gradually.

Survey evidence from the BLS can usefully be complemented with the results from the survey on the access to finance of small and medium-sized enterprises (SMEs) in the euro area. The latest SME survey suggests that smaller firms were affected by

<sup>6</sup> See *Bank lending survey for the euro area*, ECB, Frankfurt am Main, October 2010.

**Chart 11 MFI loans to households for house purchase and related BLS indicators**

(net percentages; annual percentage changes)

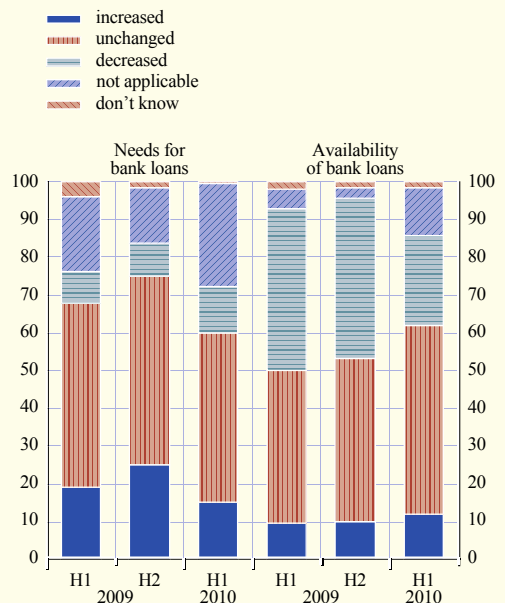


Source: ECB.

restrictions on their credit supply more than larger firms in 2009 and in the first half of 2010.<sup>7</sup> At the same time, this survey indicates that external financing needs tended to recede in the first half of 2010, possibly owing to improvements in internal financing situations (see Chart 12). Moreover, there were some signs of improvement in the availability of external financing. On balance, SMEs continued to perceive an overall deterioration in the availability of external sources of financing, but this deterioration appears to have been significantly less severe than in 2009. Survey results also point to a higher success rate when applying for a bank loan and to a slightly greater willingness of banks to provide loans, against the background of a general improvement in the general and firm-specific economic outlook. The situation of large firms was perceived to be more favourable than that of SMEs. Indeed, large firms reported net increases in the availability of external finance for most sources of financing in the first half of 2010.

**Chart 12 Euro area SMEs' assessment of their need for, and the availability of, bank loans**

(net percentages)



Source: ECB.

Note: H1 2010 corresponds to the period from March to September 2010.

Overall, survey data indicate that supply-side factors represented a constraint on growth in loans to the private sector during most of 2008 and 2009, but that this constraint has loosened significantly in the most recent quarters. These data also suggest that demand-side factors played a key role during the crisis and the subsequent recovery.

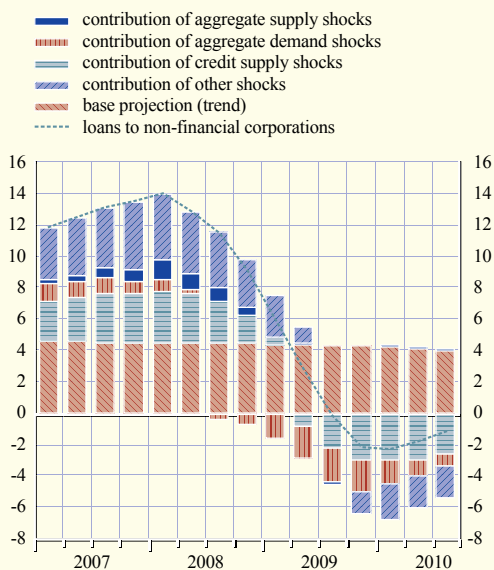
### MODEL-BASED EVIDENCE

While reduced-form models can provide some estimates of the impact of some supply-side factors on loan growth, only structural models allow for a causal analysis. As an illustration of such an approach, Charts 13 and 14 show the decomposition of the annual growth in loans to non-financial corporations and households into the contributions of different shocks using a structural VAR model. The model identifies loan supply shocks,

<sup>7</sup> See *Survey on the access to finance of SMEs in the euro area – March to September 2010*, ECB, Frankfurt am Main, October 2010.

**Chart 13 Historical decomposition of growth in loans to euro area non-financial corporations based on a structural VAR model**

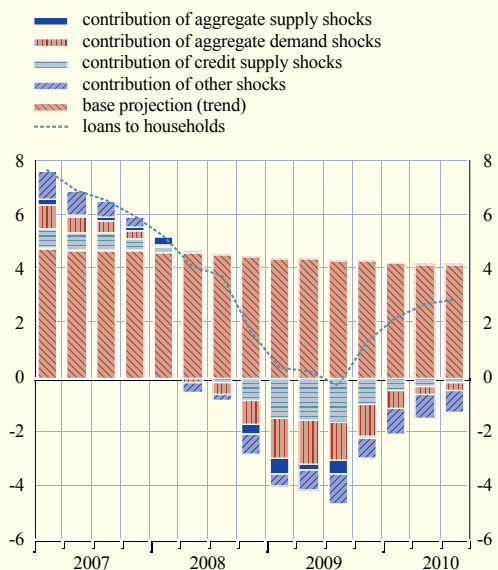
(annual percentage changes; percentage points)



Source: ECB.

**Chart 14 Historical decomposition of growth in loans to euro area households based on a structural VAR model**

(annual percentage changes; percentage points)



Source: ECB.

among other types of shock, by imposing sign restrictions on the impulse response functions based on economic theory (see Box 2 for more details). The decomposition suggests that loan supply shocks have not been among the main driving forces of growth in loans to the non-financial private sector since the financial crisis started in mid-2007, although they have had a noticeable impact, especially in certain quarters. During the initial phase of the financial crisis, loan supply shocks had a positive impact, although this impact faded gradually. By the second quarter of 2009 loan supply shocks had started to have a visible downward impact on loan growth. In relative terms, credit supply shocks had a greater effect on the pattern of growth in loans to non-financial corporations than on that of household loan growth. Indeed, according to these estimates, in the case of enterprises, these shocks accounted for almost half of the downward deviation of loan growth from the trend growth between the second quarter of 2009 to the third quarter of 2010. In the case of loans to households,

by contrast, these shocks accounted only for about one-quarter of the downward shift over the same period.

At the same time, other shocks, especially aggregate demand shocks (a category that includes shocks to consumption, investment, fiscal policy and monetary policy), appear to have contributed markedly to the recent moderation in loan growth. This category of shocks presumably implied a systematic response of loan demand and supply (part of the propagation mechanisms) that can explain a large part of the loan growth. Indeed, these shocks started to contribute negatively to loan growth developments in mid-2008, before credit supply shocks, for both households and non-financial corporations. Thus, the evidence provided by this model indicates that, although loan supply shocks have played a non-negligible role, other forces have shaped the pattern of private sector loan growth to a large extent since the start of the financial crisis, many of which can be associated with demand factors.

Structural models can take into account several important channels through which credit supply shocks move through the economy, showing that they can affect real GDP in various ways. Box 2, entitled “Analysis of the impact of credit supply factors on economic activity using structural models”, illustrates how alternative structural models can enhance the analysis of

the impact of credit supply factors on the overall economy. The main conclusion of the analysis presented in the box is that the impact of credit supply factors on real annual GDP growth has been significant, especially in 2009, but that this impact diminished gradually during 2010, becoming of minor importance by the third quarter.

## Box 2

### ANALYSIS OF THE IMPACT OF CREDIT SUPPLY FACTORS ON ECONOMIC ACTIVITY USING STRUCTURAL MODELS

Structural models, loosely defined here as models that have a direct link to economic theory, are a natural reference point for the identification and quantitative analysis of the forces driving loans to the private sector. They include a wide range of frameworks, ranging from more theory-driven models, such as dynamic stochastic general equilibrium (DSGE) models, to more data-driven models, such as structural vector autoregressive (VAR) models. These models allow for a causal analysis of the impact of credit factors on the economy and take into account (more or less explicitly) the main channels through which disturbances are transmitted across the economy. This box illustrates how the analysis of loan developments can be enhanced with two types of structural model, namely structural VAR and DSGE, both estimated with euro area data and each including loans to the private sector. In particular, it looks at two examples of the structural VAR model and one example of the DSGE model.

#### The models used

The first model used is a structural VAR model that identifies loan supply shocks, among other types of shock (shocks to aggregate demand and shocks to aggregate supply), by imposing sign restrictions based on economic theory.<sup>1</sup> The second model is the DSGE model developed by Darracq et al.<sup>2</sup> Within this model, the set of “financial” shocks includes disturbances to the lending rate margins, borrowers’ credit risk, loan-to-value ratios and bank capital frictions. “Financial” shocks therefore portray both price and non-price credit supply factors. A third approach to identifying the credit supply shock is the direct use of information from the ECB’s bank lending survey. A panel VAR methodology is employed to exploit the cross-sectional

1 The model is estimated using five variables: real GDP, the GDP deflator, short-term interest rates (EURIBOR), the spread between lending rates and short-term interest rates, and the volume of loans. As regards the identification of structural shocks, for example, loan supply shocks are identified on the basis of the responses of some variables: an expansionary loan supply shock (i.e. a shock giving rise to an increase in real GDP) would imply a decline in the spread and an increase in the volume of loans within the same quarter.

2 See Darracq Paries, M., Kok Sorensen, C. and Rodriguez Palenzuela, D., “Macroeconomic propagation under different regulatory regimes: Evidence from an estimated DSGE model for the euro area”, *Working Paper Series*, No 1251, ECB, Frankfurt am Main, October 2010. The model embeds a monopolistic banking sector and bank capital frictions, and is estimated on the basis of euro area data, including bank loans and lending rates.

information generated by the individual euro area countries, as suggested by Ciccarelli et al.<sup>3</sup> A VAR specification is adopted to make full use of the bank lending spreads to non-financial corporations.

Structural models allow each series in the model to be decomposed in terms of contributions from various structural shocks. They imply that, in the absence of shocks, the variables would remain at steady-state values (or at the long-run average). Thus, it is possible to decompose the deviations of each series from its average for each quarter, in terms of both the contributions from shocks that took place in that quarter and the effect from shocks that took place in the previous quarters, the effects of which are persisting on account of propagation mechanisms. This structural decomposition differs from the decomposition derived from reduced-form models, as the latter are statistical in nature and cannot be given a structural interpretation. At the same time, caution is necessary when comparing the decomposition of shocks across structural models, as broadly defined shocks, such as “credit supply shocks”, can involve a number of very different factors, depending on the concrete specification of the models.

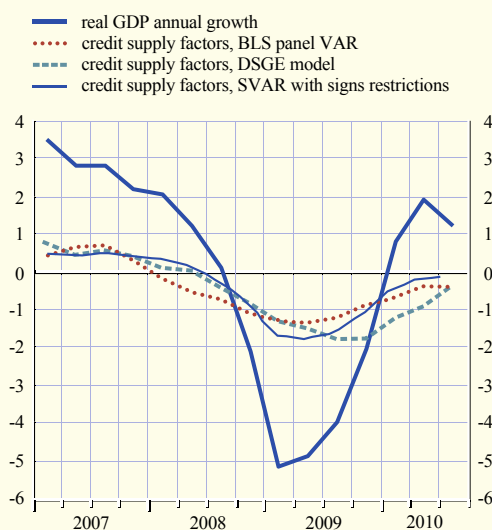
### The evidence on the effect of credit supply factors on real GDP

The decompositions of real GDP growth based on these three models show some differences, but also share some important similarities. The differences are due, in part, to the fact that the set of shocks identified differs somewhat. This box focuses on the estimated impact of credit supply factors on real GDP growth, and, in this respect, these models produce rather similar results.

Indeed, all three models suggest that loan supply shocks have not been among the main driving forces of real GDP growth since the financial crisis started in mid-2007, although they have had a noticeable impact in certain quarters (see the chart). During the initial phases of the financial crisis, loan supply shocks had only a minor impact on economic activity. By the fourth quarter of 2008, however, the effect of loan supply shocks had already had a visible downward impact, and overall accounted for almost one-third of the downward deviation of real GDP growth from the trend growth between the third quarter of 2008 and the first quarter of 2010. In the first half of 2009, when the downward impact was at its strongest, these shocks accounted for almost 2 percentage points of the decline in real GDP growth.

#### Comparison of the impact of credit supply factors on real annual GDP growth across model estimates

(annual percentage change; percentage points)



Source: ECB.

3 Ciccarelli M., Maddaloni, A. and Peydró, J.L., “Trusting the bankers: a new look at the credit channel of monetary policy”, *Working Paper Series*, No 1228, ECB, Frankfurt am Main, July 2010. Specifically, the model includes the annual growth rate of GDP, the annual growth rate of the GDP deflator, BLS demand conditions for loans to non-financial corporations, BLS credit supply conditions to non-financial corporations, short-term and long-term spreads on loans to non-financial corporations and the annual growth rate of loans to non-financial corporations. The model imposes a static shock-identification scheme using the Cholesky ordering of the variables as mentioned above, and the shocks on the BLS credit supply conditions are interpreted as credit supply shocks.

At the same time, shocks other than those that can be associated with loan supply (including aggregate supply shocks, such as technology shocks or shocks to the costs of production, and aggregate demand shocks, such as shocks to consumption and investment) appear to have contributed markedly to the moderation in real GDP growth observed in 2008 and 2009. The role of these other shocks can be assessed by noting the difference between the actual growth in real GDP and the estimated impact of loan supply factors. Thus, the evidence provided by these models indicates that, although loan supply shocks have played a non-negligible role, other forces have mainly shaped the pattern of private sector loan growth since the start of the financial crisis.

Overall, the estimates presented on the basis of different structural models point to a visible impact of credit supply factors on real annual GDP growth, especially in 2009. It is remarkable that both the size and the profile of the estimated impact of these factors on economic activity are very similar, despite the differences in the models. At the same time, the estimates presented also provide consistent messages with regard to the general picture of the relatively more important effects resulting from factors other than credit supply.

## 5 CONCLUDING REMARKS

The nature and extent of the financial tensions that have unfolded since mid-2007 suggest that loan developments may have followed a distinctly different pattern from that in earlier business and credit cycles. In particular, problems in the banking sector, disintermediation tendencies in the financing of the non-financial corporation sector and the severe crisis in the housing markets of some euro area countries have all suggested that, this time around, the growth in bank loans to households and non-financial corporations may not be in line with historical regularities.

However, the analysis suggests that, taking into account the particular severity of the recent recession, developments in private sector loan growth appear to be broadly in line with historical regularities over the business cycle. The impact of the financial crisis was significant, but was limited considerably by non-standard monetary policy measures.

Model-based evidence suggests that loan supply factors have had a significant downward impact on loan growth since the start of the financial tensions in mid-2007. At the same time, an assessment of the relative role of supply factors shows that other factors, including demand-related factors, were quantitatively

more important than those related to loan supply. A credit crunch, fears of which have sometimes been voiced by external observers, did not materialise.

Looking ahead, some risks remain. In particular, the sovereign debt crisis that started in 2010 has also affected credit markets in some euro area countries, especially in the case of loans to non-financial corporations, although the impact at the aggregate euro area level has been contained. Moreover, on the supply side, some uncertainty remains with respect to the future adjustment of banks' balance sheets. Hence, a close and continuous monitoring of credit markets in the euro area is warranted.