



## IV SPECIAL FEATURES

### A DETERMINANTS OF BANK LENDING STANDARDS AND THE IMPACT OF THE FINANCIAL TURMOIL

*Banks are key providers of funds to firms and households in the euro area. The analysis of bank lending standards – banks' internal guidelines or criteria governing their loan policy – is therefore important for understanding the provision of credit in the euro area. This special feature first analyses the determinants of bank lending standards in the euro area and how changes in lending standards impact on banks' risk taking. Second, it shows that, generally, the risk built up by banks in good times may – via its impact on capital – imply future restrictions on the supply of loans and that bank balance sheet constraints may have a detrimental impact on the loan supply in the current crisis.*

#### INTRODUCTION

Banks are the key providers of funds in most economies, particularly the euro area.<sup>1</sup> Therefore, it is crucial to understand the mechanisms governing their decisions to grant credit to firms and households. Lending standards – the lending terms and conditions specified in a loan contract – provide a core piece of information on these mechanisms in the euro area.

An important aspect of the analysis is to assess how the impact of short-term interest rates, and thus of monetary policy, is transmitted through the credit markets. This transmission works via different channels. Banks tend to adjust their lending rates to changes in policy rates with different degrees of sluggishness – the interest rate channel. Further, policy rates may impact the supply of credit, affecting the capital and liquidity positions of banks – the bank lending channel. At the same time, short-term rates also affect the creditworthiness of borrowers, and thus the agency cost of lending – the balance sheet channel.<sup>2</sup>

Short-term rates may also affect banks' appetite for risk. This mechanism – the risk-taking channel – has been the focus of more recent economic analysis, fuelled in part by the unfolding of the financial crisis.<sup>3</sup>

This special feature first analyses the determinants of bank lending standards in the euro area and, second, shows that in the current crisis bank balance sheet constraints may have a detrimental impact on the loan supply.

The evidence presented, which is based on the answers from the euro area bank lending survey,<sup>4</sup> suggests that risks that materialise in the downturn may have been building up in the upturn, when the economy was performing well. In particular, it is shown that lending standards are pro-cyclical.<sup>5</sup> High GDP growth tends to lower standards. In addition, a lower level of short-term interest

- 1 See P. Hartmann, A. Maddaloni and S. Manganelli, "The euro area financial system: structure, integration, and policy initiatives," *Oxford Review of Economic Policy*, Vol. 19, No 1, 2003, and F. Allen, M. K. F. Chui and A. Maddaloni, "Financial structure and corporate governance in Europe, the USA and Asia", in X. Freixas, P. Hartmann and C. Mayer (eds.), *Handbook of European Financial Markets and Institutions*, Oxford University Press, 2008.
- 2 For a detailed explanation of these mechanisms, see B. S. Bernanke and M. Gertler, "Inside the black box: the credit channel of monetary policy transmission", *Journal of Economic Perspectives*, 9(4), 1995.
- 3 See, for example, C. Borio and H. Zhu, "Capital regulation, risk-taking and monetary policy: a missing link in the transmission mechanism?", *BIS Working Paper*, No 268, Bank for International Settlements, 2008; V. Ioannidou, S. Ongena and J.-L. Peydró, "The impact of short-term interest rates on risk taking: Hard evidence", in A. Felton and C. Reinhart (eds.), *The First Global Financial Crisis of the 21st Century*, Center for Economic Policy Research, 2008; G. Jiménez, S. Ongena J.-L. Peydró and J. Saurina, "Hazardous Times for Monetary Policy: What Do Twenty-Three Million Bank Loans Say About the Effects of Monetary Policy on Credit Risk?", *CEPR Discussion Paper*, No 6514, Center for Economic Policy Research, 2007.
- 4 For a detailed explanation of the euro area bank lending survey, see J. Berg, A. van Rixtel, A. Ferrando, G. de Bondt and S. Scopel, "The bank lending survey for the euro area," *ECB Occasional Paper Series*, No 21, 2005, and S. Sauer, "The euro area bank lending survey – a review of six years of experience", *Revue Bancaire et Financière*, forthcoming.
- 5 This finding is in line with A. N. Berger and G. Udell, "The institutional memory hypothesis and the procyclicality of bank lending behaviour," *Journal of Financial Intermediation*, Vol. 13, No 4, 2004.

rates generally softens standards. Moreover, the softening of standards is over and above changes in the quality of borrowers' collateral and the industry-specific economic outlook, which may point to excessive increases in banks' risk-taking during economic upturns. Standards are eased for all types of loans, but the impact is larger for loans to non-financial corporations.

Concerning the impact of financial innovation, a higher level of securitisation softens standards and increases the impact of a low level of short-term interest rates on standards.

These results suggest that low short-term rates, especially in an environment where securitisation activity allows banks to sell off risks to third parties, could cause an *excessive* softening of standards in the upturn of the cycle, which materialises as bank problems in the medium term.<sup>6</sup> Once banks begin to suffer from balance sheet difficulties (as in the current situation, for example), they react by tightening standards, which tends to have a detrimental impact on the provision of credit and may ultimately affect economic activity with potential amplifying "second-round" effects on bank sector stability.

It should be pointed out that empirical analysis using bank lending survey data is still subject at this stage to the constraint of a relatively short time series covering not quite one business cycle. However, the availability of a large panel covering data for 12 countries and the non-synchronisation of business cycles across countries significantly enlarges the data sample.

Section 2 describes the bank lending survey for the euro area, while Section 3 analyses the determinants of lending standards and Section 4 studies the impact of supply-side factors on bank lending during the financial crisis. Section 5 concludes.

## THE BANK LENDING SURVEY

The Eurosystem's bank lending survey for the euro area was introduced in 2003 and is conducted at a quarterly frequency.<sup>7</sup> In the survey, reporting

banks reply to a set of questions on the credit standards that they apply to loans to enterprises (including both small and large enterprises) and to households (both loans for house purchase and consumer credit). Apart from the general questions on the extent to which banks have changed their credit standards in comparison with the previous quarter and how they expect to change them in the next quarter, the survey also includes questions related to the factors that contributed to changes in the standards, such as banks' risk perception, bank balance sheet constraints and competitive conditions, as well as questions related to how lending terms and conditions have been changed. In addition, banks are asked to report how they perceive the demand for loans (from enterprises and households respectively) to have developed in the previous quarter. As for credit standards, banks likewise report on the relative importance of the factors contributing to changes in perceived loan demand (such as borrowers' financing needs and their use of alternative sources of financing). Furthermore, non-standard questions are occasionally included in the survey on an ad hoc basis, with the aim of covering specific (structural and cyclical) developments in euro area credit markets that are not captured by the standard questionnaire.<sup>8</sup>

The sample currently consists of 118 reporting banks covering the 16 euro area countries.<sup>9</sup> The sample banks are selected in such a way as to produce a fair representation of the euro area banking sector, taking into account differences in the banking structures across countries.

6 For the origins of banking instabilities, see O. de Bandt, P. Hartmann and J.-L. Peydró, "Systemic risk in banking: An update," in A. Berger, P. Molyneux and J. Wilson (eds.), *The Oxford Handbook of Banking*, 2009. For evidence on bank contagion, see R. Iyer and J.-L. Peydró, "Interbank contagion at work: Evidence from a natural experiment," *The Review of Financial Studies*, 2009.

7 Similar surveys were already conducted by the Federal Reserve System and the Bank of Japan. More recently, bank lending surveys have also been introduced by other central banks within the EU.

8 For example, various ad hoc questions concerning the impact of the financial crisis on bank lending conditions have been included since the October 2007 survey round.

9 Owing to mergers and other structural changes in the national banking sectors, the sample of banks has changed slightly since the inception of the survey in 2003. The entry of new euro area countries has also led to an increase in the number of reporting banks over the years.

Overall, the surveyed banks cover around half of all the loans granted by monetary financial institutions (MFIs) to the non-financial private sector in the euro area.

### DETERMINANTS OF LENDING STANDARDS

This section analyses the financial and macroeconomic factors affecting euro area bank lending standards. Lending standards describe a bank's general loan policy and are reflected in the set of all lending terms and conditions specified for the bank's typical business loan, line of credit or loan to a household. Apart from the volume and interest rate, important standards include collateral, covenants, maturity and loan limits.

On the basis of a panel regression, lending standards are found to be pro-cyclical, i.e. higher real GDP growth tends to soften lending standards, whereas lending standards are tightened in a downturn of the business cycle.<sup>10</sup> Lending standards also depend on short-term interest rates. In particular, a lower level of overnight rates (as measured by the EONIA) softens overall lending standards, both for average and for riskier loans. The results are economically significant: the impact of a change in the EONIA is more than ten times that of a change in GDP growth, despite having similar variations.

Moreover, the softening of lending standards is over and above changes in the quality of borrowers' collateral and the industry-specific outlook (i.e. over and above the balance sheet channel of monetary policy transmission), which may suggest an increase in bank risk.<sup>11</sup>

The analysis of the terms and conditions of loans shows that banks soften their standards by reducing spreads on average loans, but also by reducing collateral requirements and covenants, and by increasing loan amounts and maturities. The softening of standards applies to all types of loan, but the impact is larger for loans to non-financial corporations.

A relative measure of the level of interest rates is the difference between the rate implied by a

simple Taylor rule and the EONIA. Lending standards are also affected by these relative levels of rates, and they tend to be eased when the level of short-term rates is low compared with the rate implied by a Taylor rule. This impact tends to be stronger when short-term rates have been low for some time, especially for loans to households. Therefore, rates that are too low for too long seem to soften standards even further.

Overnight rates affect bank lending standards more than other yield curve measures, such as long-term rates and term spreads. Short-term rates affect funding liquidity, and this in turn has a direct effect on the supply of credit.<sup>12</sup>

An important development in the banking sector in the euro area over the last decade has been the use of securitisation. Using a measure of securitisation at the country level,<sup>13</sup> panel regressions show that a higher level of securitisation softens bank lending standards.<sup>14</sup>

10 For a detailed analysis of the results presented in this section, see A. Maddaloni, J.-L. Peydró and S. Scopel, "Does monetary policy affect bank credit standards? Evidence from the euro area bank lending survey", *ECB Working Paper*, forthcoming; G. De Bondt, A. Maddaloni, J.-L. Peydró and S. Scopel, "The bank lending survey matters: first empirical evidence for euro area credit and output", *ECB Working Paper*, forthcoming; A. Maddaloni and J.-L. Peydró, "Bank risk-taking, securitization, supervision and low interest rates", paper presented at the conference on "The financial crisis", organised by the *Review of Financial Studies* and *Yale School of Management*, July 2009; and M. Ciccarelli, A. Maddaloni and J.-L. Peydró, "Trusting the bankers: a new look at the credit channel of monetary policy", *ECB Working Paper*, forthcoming.

11 The findings are robust to different controls, measures of monetary policy and econometric specifications. The basic control variables are GDP growth, inflation, country risk, loan demand proxied by the results of the bank lending survey, country-specific fixed effects and, in some specifications, time and bank-specific fixed effects. Moreover, several alternative measures of the stance of monetary policy are used, such as variations in nominal overnight rates and/or real short-term rates, or differences between overnight rates and Taylor-rule implied rates.

12 See K. Nikolaou, "Liquidity (risk) concepts: definitions and interactions," *ECB Working Paper*, No 1008, 2009.

13 The measure of securitisation used is the quarterly volume of securitisation activity based on the nationality of the collateral, normalised by the total lending activity in each country (sources: ECB, Eurostat, Thomson Financial Datastream, Dealogic and ECB calculations).

14 This is also in line with the findings of the microeconomic study by Y. Altunbas, L. Gambacorta and D. Marqués-Ibañez, "Securitisation and the bank lending channel," *European Economic Review*, forthcoming.

This softening could be due to the improvement in bank performance owing to securitisation. On the other hand, it could be due to the lack of proper incentives to monitor borrowers if securitised assets are completely taken off bank balance sheets.<sup>15</sup> It is found that the level of securitisation softens standards to a greater extent when overnight rates are lower, so that the softening of standards is greater when both the level of overnight rates is low and the level of securitisation is high. This result is consistent with the argument that lower levels of overnight rates induce a search for yield, and securitisation can provide high-yield assets. Since securitised assets are sold, they give little incentive for a proper screening by banks; hence, banks tend to be (too) soft when setting their standards.

The results shown in this section suggest that several determinants of lending standards contribute to an accumulation of risks that may materialise in the medium term.

#### THE IMPACT OF SUPPLY-SIDE FACTORS ON BANK LENDING DURING THE FINANCIAL CRISIS

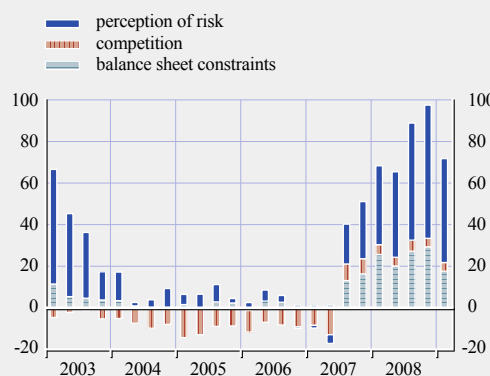
The financial crisis that erupted in mid-2007 had significant negative implications for banks' profitability and, hence, also for their capital positions – mainly as a result of the severe losses and write-downs on banks' trading books. Furthermore, the past two years' disruptions in the securitisation and interbank markets have significantly hampered banks' funding abilities. Indeed, according to the bank lending survey results, bank balance sheet constraints have become more stringent during the crisis (see Chart A.1).<sup>16</sup>

A key question is to what extent the current constraints on bank balance sheets are likely to impair lending activity. This issue is analysed in the following, using information from the bank lending survey.

Using a country-panel estimation approach, estimates of the impact of balance sheet constraint factors on corporate and household

**Chart A.1 Factors contributing to changes in credit standards applied to loans and credit lines to enterprises in the euro area (bank lending survey)**

(Q1 2003 – Q1 2009; net percentages)



Source: ECB.

Note: The “perception of risk” factor encompasses the “industry and firm-specific outlook”, “expectations regarding general economic activity” and the “risk on collateral demanded”; the “competition” factor encompasses competition from “other banks”, “non-banks” and “market financing”; the “balance sheet constraints” factor encompasses “costs related to bank’s capital position”, “bank’s ability to access market financing” and “bank’s liquidity position”. The net percentages reported for the three groups of contributing factors are simple averages of the underlying factors.

lending respectively are derived.<sup>17</sup> These factors, as taken from the bank lending survey, can be interpreted as pure credit-supply effects,<sup>18</sup> whereas the bank lending survey factors concerning the perception of risk, for example, could also contain demand-side elements.

It is found that bank balance sheet constraints, in particular “costs related to bank’s capital position”, tend to have a significant negative impact on banks’ (new business) lending to

15 See A. R. Mian and A. Sufi, “The Consequences of Mortgage Credit Expansion: Evidence from the U.S. Mortgage Default Crisis,” *Quarterly Journal of Economics*, forthcoming.

16 See also H. S. Hempell, “Credit constraints in the euro area? – Bankers’ perceptions”, *Kredit und Kapital*, Vol. 40, No 1, 2007.

17 Controlling for the business cycle and other demand-side factors, e.g. by including investment, interest rates, house prices and the inflation rate, as well as bank lending survey information on demand developments, in the regression.

18 They refer to “costs related to bank’s capital position”, “bank’s ability to access market financing” and “bank’s liquidity position” in the case of loans to non-financial corporations and to “cost of funds and balance sheet constraints” in the case of housing loans, each measured in net percentages (i.e. the percentage of banks reporting a contribution to the tightening of credit standards by the respective factor minus the percentage of banks reporting a contribution to the loosening of credit standards).

non-financial corporations, as taken from the MFI interest rate statistics, even after controlling for various demand-side factors.<sup>19</sup>

Supply-side constraints are found to be particularly important in the case of corporate lending. The estimates with respect to total new business loans to non-financial corporations (excluding overdrafts) suggest that a net tightening of 1 percentage point in credit standards due to banks' cost of capital would result in a decline of 0.1% in new business lending.<sup>20</sup>

The financial turmoil has weakened the capital bases of many banks, and the sharp declines in their stock prices have compelled banks to face pronounced rises in their cost of capital. These developments have also been reflected in the answers to the bank lending survey, where a significant percentage of banks have reported that their capital position has contributed substantially to the net tightening of credit standards. On the basis of the estimated importance of supply-side constraints, the reported net tightening points to non-negligible effects on the supply of bank loans in the coming quarters.

Notably, the estimated coefficient on "banks' cost of capital" is larger and more significant for larger loans (i.e. loans of more than €1 million) to non-financial corporations, whereas it is statistically not significant for smaller loans (i.e. loans below €1 million). This could reflect the fact that large loans are particularly costly in terms of capital allocation, especially under the current circumstances where capital bases are being eroded and banks find it difficult to pass on credit risk. Small loans to non-financial corporations are found to be a little less constrained by supply-side factors. Nonetheless, the estimated coefficient on "banks' access to market funding" is found to be negative and statistically significant, which suggests that, especially in recent quarters, banks may have found it increasingly difficult to obtain market-based funding for their lending, for example by issuing collateralised loan obligations (CLOs).<sup>21</sup>

Higher risk perceptions impact positively on the volume of new lending to enterprises; this holds for overall lending, as well as for large loans, while they remain insignificant for small loans. Such findings might indicate an increase in demand for bank loans from enterprises during periods when internal financing is scarce or when alternative financing via financial markets is more difficult.

A generally somewhat more pronounced impact of supply-side constraints on larger loans is consistent with the answers to the bank lending survey, which show that the net tightening of credit standards applied to loans to enterprises was more pronounced for large firms than for small and medium-sized enterprises (SMEs) at the beginning of the financial market turmoil. Furthermore, cost of funds and balance sheet constraints affected the tightening of credit standards to a greater extent for large firms than for SMEs, indicating a greater importance of supply-side restrictions for lending to large enterprises. However, since mid-2008, the net tightening of credit standards applied to loans to SMEs has caught up markedly. This process of catching up, although largely driven by risk-related factors, i.e. factors related to the overall deterioration of the economic outlook, implies that it remains unclear whether SMEs or large corporations will be hit harder by banks' supply constraints in the course of 2009. The catching

19 This finding is in line with other studies exploring the importance of capital on banks' lending decisions. See, for example, L. Gambacorta and P. Mistrulli, "Does bank capital affect lending behaviour?", *Journal of Financial Intermediation*, Vol. 13, 2004; R. P. Kishan and T. P. Opiela, "Bank capital and loan asymmetry in the transmission of monetary policy", *Journal of Banking and Finance*, Vol. 30, 2006; F. Boissay and C. Kok Sørensen, "The stabilising effects of risk-sensitive capital management", *ECB Working Paper*, forthcoming; and ECB, "Deleveraging and resilience among large and complex banking groups in the euro area", *Financial Stability Review*, December 2008.

20 This is consistent with the recent finding that demand-side factors have not been able to fully explain actual corporate loan growth in the euro area in recent years; see C. Kok Sørensen, D. Marqués Ibañez and C. Rossi, "Modelling loans to non-financial corporations in the euro area", *ECB Working Paper*, No 989, 2008.

21 Thus, according to the Dealogic database, in April 2009 the annualised issuance of euro-denominated CLOs stood at around €20 billion, compared with €60 billion in mid-2007.

up was also reflected in the data on bank lending rates from the MFI interest rate statistics, which have shown a renewed widening of spreads for small loans versus larger loans since the last few months of 2008.

In the case of lending to households for house purchase, the impact of “pure” supply-side constraints is somewhat more difficult to detect. Although the “cost of funds and balance sheet constraints” factor negatively affects mortgage lending, the coefficient of the regression is not statistically significant. The overall size of such an effect would be somewhat lower than in the case of enterprises, given similarly sized coefficients but lower bank lending survey net percentages. At the same time, factors contributing to a tightening of credit standards that reflect competition from other banks and banks’ expectations for the general economic outlook are found to be negatively and highly significantly related to new business lending for house purchase, as taken from the MFI interest rate statistics. The latter also indicates, apart from the high statistical significance, a high economic relevance, as the current respective bank lending survey net percentage is rather high. These results indicate that, for housing loans in particular, risk-related factors can be expected to substantially impact on new business volumes.

#### CONCLUDING REMARKS

The results of an econometric analysis based on the answers to the bank lending survey for the euro area show that bank lending standards are pro-cyclical and are considerably softened in the upturn of the business cycle. Moreover, low levels of short-term rates and high levels of securitisation lower standards even further.

In the downturn of the cycle, on the other hand, constraints on the balance sheets of the banks lead to a tightening of lending standards, which has significant implications for credit and, potentially, also for output growth.

The two phases seem to be connected. If lending standards are too soft in the upturn of the cycle,

risk is built up. The accumulation of risk seems to be connected to the availability of liquidity, but also to the possibility of transferring risks to third parties through financial innovation.

When the risk materialises, banks’ capital and liquidity positions are usually affected and banks react by tightening standards. This, in turn, may have amplifying effects on the real economy, which can lead to “second-round” effects on banking sector stability.