BANCA D'ITALIA

EUROSISTEMA

Temi di Discussione

(Working Papers)

Disentangling demand and supply in credit developments: a survey-based analysis for Italy

by Paolo Del Giovane, Ginette Eramo and Andrea Nobili

June 2010

Number 764

BANCA D'ITALIA
EUROSISTEMA

Temi di discussione

(Working papers)

Disentangling demand and supply in credit developments: a survey-based analysis for Italy

by Paolo Del Giovane, Ginette Eramo and Andrea Nobili

Number 764 - June 2010

The purpose of the Temi di discussione *series is to promote the circulation of working papers prepared within the Bank of Italy or presented in Bank seminars by outside economists with the aim of stimulating comments and suggestions.*

The views expressed in the articles are those of the authors and do not involve the responsibility of the Bank.

Editorial Board: Alfonso Rosolia, Marcello Pericoli, Ugo Albertazzi, Daniela Marconi, Andrea Neri, Giulio Nicoletti, Paolo Pinotti, Marzia Romanelli, Enrico Sette, Fabrizio Venditti.
Editorial Assistants: Roberto Marano, Nicoletta Olivanti.

DISENTANGLING DEMAND AND SUPPLY IN CREDIT DEVELOPMENTS: A SURVEY-BASED ANALYSIS FOR ITALY

by Paolo Del Giovane*, Ginette Eramo* and Andrea Nobili*

Abstract

This paper combines qualitative information from the Eurosystem Bank Lending Survey with micro-data on loan quantities and prices for the participating Italian banks to assess the role of supply and demand factors in credit developments, with a focus on the 2007-09 financial crisis. Both demand and supply have played a relevant role, especially for lending to enterprises, in the whole sample period and during the crisis. A counterfactual exercise shows that the effect of supply factors on the growth of lending to firms was strongest after the Lehman collapse. On average, over the crisis period the negative effect on the annualized quarter-on-quarter growth rate of the panel banks' lending to enterprises can be estimated in a range of 2.2 to 3.1 percentage points, depending on the specification. About one fourth of the total supply effect can be attributed to costs related to the banks' balance sheet position, the rest to their perception of credit risk.

JEL Classification: E30, E32, E51.
Keywords: credit growth; supply tightening; financial crisis.

Contents

* Bank of Italy, Economic Outlook and Monetary Policy Department.
Contacts: paolo.delgiovane@bancaditalia.it; ginette.eramo@bancaditalia.it; andrea.nobili@bancaditalia.it

1. Introduction[1]

The sharp slowdown in bank lending between 2008 and 2009 in the major developed countries, including Italy, raises important questions. To what extent was it the result of macroeconomic forces and their effects on credit demand by firms and households, or instead of a tightening of banks' credit supply standards? If a significant supply restraint did occur, did it take place through price changes or through non-price rationing? And was it related mainly to credit risk developments or to changes in banks' balance sheet conditions and to their difficulties in raising funds in the market?

All of these questions are related to a more general issue that, though the object of a large body of research, remains far from settled, namely how to disentangle supply and demand effects on credit developments, given that the latter always reflect the combination of these two forces. This is a crucial issue for policymakers, as changes in credit dynamics – especially when they are exceptional, as in the period considered – can have different effects on economic activity and require different monetary policy responses depending on whether they originate from demand or supply shocks.[2]

However, disentangling the contribution of supply and demand factors using "hard data" on loans and other macro-variables is difficult. Changes in both prices and quantities reflect shifts in credit demand and supply curves, which in turn are potentially affected by business cycle fluctuations and changes in the monetary policy stance (see Bernanke and Gertler 1995, Kiyotaki and Moore 1997, and Bernanke et al. 1996, among others).

This paper assesses the relative role of supply and demand factors in shaping credit developments in Italy, with a focus on the sharp slowdown of 2008-09. It also examines, for the entire sample period and specifically for the crisis period, the role of the various factors behind changes in credit standards, distinguishing between factors relating to the cost of

[1] We thank Ugo Albertazzi, Paolo Angelini, Daniel Dichter, Eugenio Gaiotti, Hannah Sabine Hempell, Angela Maddaloni, Domenico Marchetti, Fabio Panetta, José-Luis Peydró, Carlotta Rossi, Federico Signoretti, Stefano Siviero, Eliana Viviano and other participants in seminars at the Bank of Italy and the European Central Bank for useful comments and discussions. The views expressed in this paper are ours alone and do not necessarily reflect those of the Bank of Italy.

[2] Reinhart and Rogoff (2008, 2009) compare major post–World War II episodes in the developed world and find that the aftermath of banking crises is typically characterized by a sharp fall in output and employment and a dramatic increase in the real value of government debt. The analysis carried out by the IMF (2009) also suggests that recessions associated with financial crises have been historically more severe and protracted than other recessions. Bassanetti et al. (2009) show that all of the most severe recessions in Italy since 1970 were associated with a sharp slowdown in credit to the private sector and a tightening of supply conditions.

funds and balance sheet constraints on the one hand and factors connected to borrowers' creditworthiness and banks' risk perception on the other.[3]

The analysis has been carried out by combining qualitative information from the Eurosystem Bank Lending Survey (BLS) – the quarterly survey on credit conditions carried out since the end of 2002 in all countries of the euro area– with micro-data on loan quantities and prices for the Italian banks participating in the survey.[4] We use each bank's survey responses on loan supply and demand conditions (though with no disclosure of individual answers) together with data on its lending during the sample period to non-financial firms and to households for house purchases, and on the respective individual loan interest rates.

This approach differentiates our paper from previous studies based on the BLS or other lending surveys, all of which use aggregate data both for survey information and for credit developments.[5]

For the euro area, de Bondt et al. (2010) carry out a country-panel analysis, showing that the BLS responses on supply standards and demand help explain the growth in bank loans to enterprises, as well as real GDP growth and non-residential investment growth. Hempell and Kok Sorensen (2009) use the same methodology and data to carry out an analysis that focuses on the crisis period and also examines the relative importance of the various factors behind supply restraints. Maddaloni, Peydró and Scopel (2009) focus on the effects of monetary policy on credit standards. Ciccarelli, Maddaloni and Peydró (2009) assess, inter alia, the effects on economic activity of credit supply and demand shocks as captured by the BLS indicators.

For the United States, Lown, Morgan and Rohatgi (2000) and Lown and Morgan (2002, 2006), using macro-data from the Senior Loan Officer Opinion Survey of Bank Lending Practices (carried out by the Federal Reserve System since 1967), show that

[3] Related evidence is provided by Panetta and Signoretti (2010), who present a broad discussion of the relative role of supply and demand factors in credit developments in Italy during the crisis, and Caivano, Rodano and Siviero (2010) and Gaiotti (2010), who estimate the impact of credit supply factors on firms' investment decisions and economic growth in Italy, also focusing on the crisis period.

[4] The survey includes questions on lending standards, loan demand, specific terms and conditions in the provision of loans (such as price and non-price supply conditions), and factors driving loan supply and demand. The results are published regularly by the European Central Bank (ECB) for the euro area as a whole and by the Eurosystem national central banks for the respective countries. A detailed description of the survey can be found in Berg et al. (2005).

[5] To our knowledge, the only previous attempt to use individual banks' data together with the BLS information is the study by Hempell (2004) on Germany. However, it considers a very short sample period (only eight quarters) which, as the author remarks, did not permit a sensible econometric analysis.

changes in credit supply standards help to predict loan growth and economic activity, and that a sharp tightening of credit standards has preceded virtually all economic recessions.

As an alternative to the use of a cross-country panel, our approach also allows us to enlarge the number of observations and circumvent the limits deriving from the shortness of the BLS sample period. Moreover, it has another important advantage in that loan developments and survey responses relate to the same panel of banks, while all other studies consider, in various ways, the relationship between the survey responses of a panel of banks and credit developments for the entire banking system. Although national panels in the BLS or in other surveys are designed to be representative of the respective national systems, the correspondence is inevitably approximate, which can potentially affect the results. In the case of Italy, the panel of banks participating in the BLS is quite large, as it corresponds to more than 60 per cent of the total system in terms of outstanding loans to enterprises and to households for house purchases; however, it is mostly representative of large banks, and lending developments for these banks do not necessarily coincide with those for the entire Italian banking system. During the financial crisis, in particular, the slowdown in lending was sharper for these banks than for smaller banks. This suggests that we can obtain more reliable results by using lending data for the same panel of banks that participate in the BLS.

The paper is organized as follows. Section 2 describes the data and presents descriptive evidence. Section 3 illustrates the main findings for both lending to enterprises and to households for house purchases. The subsequent three sections focus on lending to enterprises, in the light of their sharper deceleration during the financial crisis and their stronger estimated relationship with the BLS indicators. Specifically, Section 4 examines the relative importance of the different factors involved in the changes of credit standards. Section 5 conducts a counterfactual exercise to assess the relative importance of demand and supply determinants during the financial crisis, and of “pure supply” vs. “perception of risk” determinants. Section 6 presents a robustness check on the relationship between loan growth and BLS information and its possible interpretative implications. Section 7 concludes.

2. BLS indicators and credit developments in Italy: data and descriptive evidence

This section provides information on the data used in the paper and some descriptive statistics.

The study is carried out on data for the panel of Italian banking groups (henceforth “banks”) participating in the BLS, which are among the largest in the country. The effects of

mergers, which over time had tended to reduce their number, has been offset by subsequent additions. As a result, the dataset consists of an unbalanced panel of 11 Italian banks involved in the survey (with a maximum of 8 banks per quarter, including the more recent period) over a sample period of 29 quarters (from the fourth quarter of 2002 to the fourth quarter of 2009), providing a total of 207 observations. For both loans to enterprises and mortgage loans to households, the outstanding amounts granted by the banks participating in the survey corresponded at the time of the study (end of 2009) to around 60 per cent of the total provided by the whole Italian banking system.

Figure 1. Loans to enterprises: Italian banks in the BLS panel and total banking system
(annualized quarter-on-quarter growth rate; percentage points)

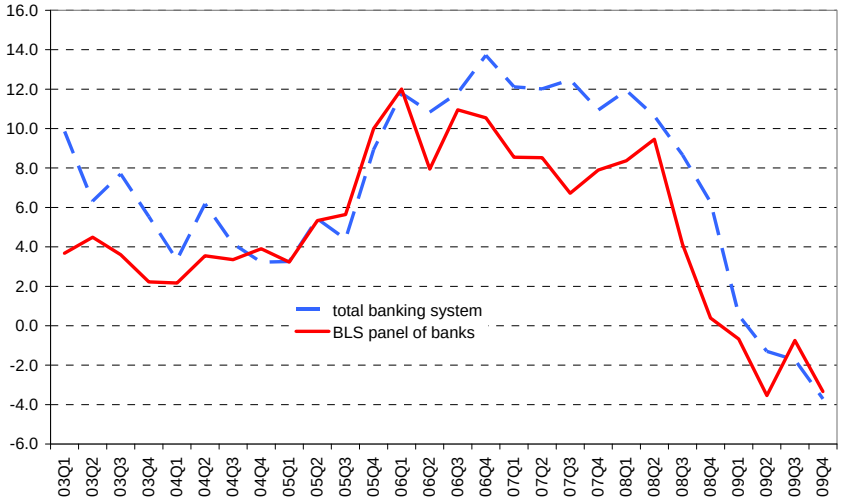
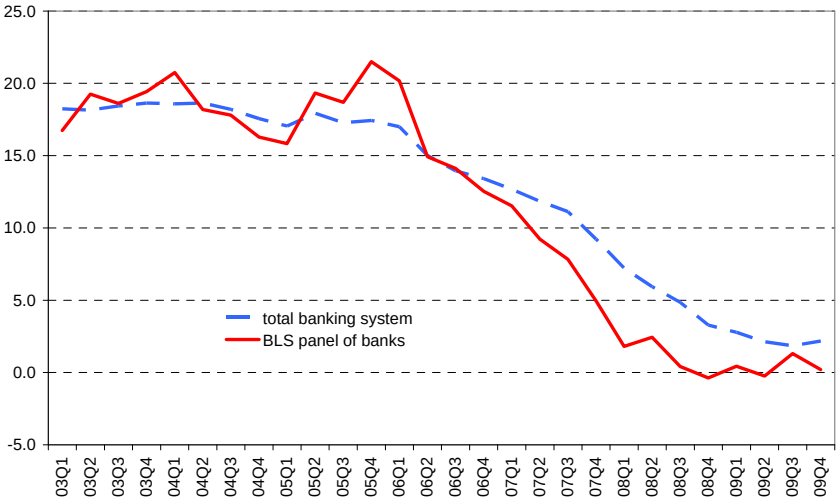


Figure 2. Mortgage loans to households: Italian banks in the BLS panel and total banking system
(annualized quarter-on-quarter growth rate; percentage points)



Figures 1 and 2, which report the growth rates of bank loans to enterprises and households for both the panel of banks and the overall Italian system, show that the pattern of credit dynamics for the banks in the BLS panel is similar to that for the system as a whole, although the rate of growth is lower over most of the sample period, especially in the case of enterprises and during the financial crisis.

As to the information provided by the Italian component of the BLS, Table 1 gives descriptive statistics for the indicators of supply and demand conditions for, respectively, loans to enterprises and mortgage loans to households.[6] They are reported for the whole period considered and separately for the pre-crisis period (2002Q4–2007Q2) and the crisis period (2007Q3–2009Q4), and, within the latter, also for the post-Lehman period (2008Q3–2009Q4). The table reports the frequency of individual banks' answers concerning supply conditions and their assessments of demand developments; all answers refer to the changes in the previous three months.

In the case of loans to enterprises, considering the entire period, a large majority of individual banks' responses fall in the "unchanged" category. Answers reporting that supply conditions had eased (either considerably or somewhat) are almost absent. Many responses indicate "tightened somewhat", while very few indicate "tightened considerably". Notable differences emerge when we split the sample period: during the crisis 40 per cent of the answers fall in the "tightened" category, compared with less than one fourth in the pre-crisis period. As to the demand assessments, no extreme answers were observed; the frequency of responses indicating a "decrease" doubled in the crisis period with respect to the previous one.

Considering mortgage loans to households, over the entire sample period a large majority of answers on supply conditions indicate "unchanged", while extreme answers are absent. The percentage of answers reporting a "tightening" rises considerably when we move from the pre-crisis to the crisis period (from 7 per cent to 34 per cent). Almost 40 per cent of the answers indicate a decrease in demand during the crisis, compared with a very low percentage in the pre-crisis period.

[6] The survey also has sections that were not used in this study. They include questions on consumer credit and other lending to households and forward-looking questions regarding banks' expectations of the evolution of credit standards and demand conditions over the next three months. The complete questionnaire can be found on the ECB and the Bank of Italy websites.

Table 1 – BLS responses on supply and demand conditions: descriptive statistics
(frequency of responses and, in brackets, percentages with respect to total in each period)

a) loans to enterprises

Supply					Demand				
	Whole period	Pre-crisis 02Q4-07Q2	During crisis 07Q3-09Q4	of which 08Q3-09Q4		Whole period	Pre-crisis 02Q4-07Q2	During crisis 07Q3-09Q4	of which 08Q3-09Q4
1="eased considerably"	0 *(0.0)*	0 *(0.0)*	0 *(0.0)*	0 *(0.0)*	1="decreased considerably"	0 *(0.0)*	0 *(0.0)*	0 *(0.0)*	0 *(0.0)*
2="eased somewhat"	3 *(1.4)*	2 *(1.5)*	1 *(1.3)*	1 *(2.1)*	2="decreased somewhat"	28 *(13.5)*	12 *(9.2)*	16 *(21.1)*	15 *(31.3)*
3="basically unchanged"	150 *(72.5)*	105 *(80.2)*	45 *(59.2)*	26 *(54.2)*	3="basically unchanged "	136 *(65.7)*	88 *(67.2)*	48 *(63.2)*	26 *(54.2)*
4="tightened somewhat"	51 *(24.6)*	21 *(16.0)*	30 *(39.5)*	21 *(43.8)*	4="increased somewhat"	43 *(20.8)*	31 *(23.7)*	12 *(15.8)*	7 *(14.6)*
5="tightened considerably"	3 *(1.4)*	3 *(2.3)*	0 *(0.0)*	0 *(0.0)*	5="increased considerably"	0 *(0.0)*	0 *(0.0)*	0 *(0.0)*	0 *(0.0)*
Total observations	207 *(100.0)*	131 *(100.0)*	76 *(100.0)*	48 *(100.0)*	Total observations	207 *(100.0)*	131 *(100.0)*	76 *(100.0)*	48 *(100.0)*

b) mortgage loans to households

Supply					Demand				
	Whole period	Pre-crisis 02Q4-07Q2	During crisis 07Q3-09Q4	of which 08Q3-09Q4		Whole period	Pre-crisis 02Q4-07Q2	During crisis 07Q3-09Q4	of which 08Q3-09Q4
1="eased considerably"	0 *(0.0)*	0 *(0.0)*	0 *(0.0)*	0 *(0.0)*	1="decreased considerably"	4 *(1.9)*	0 *(0.0)*	4 *(5.3)*	2 *(4.2)*
2="eased somewhat"	21 *(10.1)*	18 *(13.7)*	3 *(3.9)*	1 *(2.1)*	2="decreased somewhat"	31 *(15.0)*	6 *(4.6)*	25 *(32.9)*	18 *(37.5)*
3="basically unchanged"	151 *(72.9)*	104 *(79.4)*	47 *(61.8)*	30 *(62.5)*	3="basically unchanged "	107 *(51.7)*	70 *(53.4)*	37 *(48.7)*	19 *(39.6)*
4="tightened somewhat"	35 *(16.9)*	9 *(6.9)*	26 *(34.2)*	17 *(35.4)*	4="increased somewhat"	60 *(29.0)*	50 *(38.2)*	10 *(13.2)*	9 *(18.8)*
5="tightened considerably"	0 *(0.0)*	0 *(0.0)*	0 *(0.0)*	0 *(0.0)*	5="increased considerably"	5 *(2.4)*	5 *(3.8)*	0 *(0.0)*	0 *(0.0)*
Total observations	207 *(100.0)*	131 *(100.0)*	76 *(100.0)*	48 *(100.0)*	Total observations	207 *(100.0)*	131 *(100.0)*	76 *(100.0)*	48 *(100.0)*

In the BLS, banks are also asked to respond to more detailed questions concerning the factors that affected their decisions on credit standards and the specific terms and conditions for approving loans, and their assessment of the determinants of the demand for loans. Concerning the factors behind changes in credit standards, banks are asked to rate the importance of the cost of funds and balance sheet constraints, pressure from competition, and perception of risk, choosing their answers on a scale of five options (from "contributed considerably to tightening of credit standards" to "contributed considerably to easing of credit standards").[7] Terms and conditions concern prices, quantities and other non-price

[7] For loans to enterprises, banks' cost of funds and balance sheet constraints are further differentiated into cost related to the bank's capital position, bank's ability to access market financing, and bank's liquidity position; pressure from competition may be related to other banks, to non-banks, or to market financing; perception of risk may concern expectations regarding general economic activity, industry or firm-specific outlook, or risk on collateral demanded. For mortgage loans to households, the question refers to cost of funds

conditions. Responses can be chosen among the same five options available for the general question (i.e. from "tightened considerably" to "eased considerably").[8]

Detailed descriptive evidence on the answers to these specific questions is reported in the Appendix (Tables A1-A6). The main facts, in particular concerning the crisis period, can be summarized as follows.

For loans to enterprises:

i) Both in the pre-crisis and in the crisis period the most important factors determining the tightening of credit standards were the perception of credit risk (Table A1). The importance of factors relating to the bank's balance sheet position and ability to access finance rose during the crisis but remained less important than risk considerations.

ii) The tightening of supply conditions during the crisis took place through changes in both margins and credit availability (Table A2). The frequency of responses of "tightened somewhat" for both margins on average loans and margins on riskier loans rose considerably. The percentage of answers indicating a reduction in the size of loans or credit lines remained lower by comparison but showed a sharp increase.

iii) According to the banks' assessments the weakness of demand during the crisis period was mainly attributable to less need to finance fixed investment and to a lower requirement for mergers and acquisitions and corporate restructuring (Table A3).

For mortgage loans to households:

iv) Perceptions of risk were the leading factor in the tightening; a smaller role was played by the cost of funds and balance sheet constraints (Table A4).

v) The tightening of credit standards during the crisis period occurred mainly through increases in margins on riskier loans and reductions in the loan-to-value ratio (Table A5).

vi) Housing market prospects, which had contributed to higher demand during the pre-crisis period, provided a negative contribution during the crisis (Table A6).

---

and balance sheet constraints with no further specification, pressure from competition from other banks and from non-banks, and perception of risk relating to the general economic outlook or housing market prospects.

[8] More precisely, price conditions refer to the interest rate margins on, respectively, average loans and riskier loans; quantity conditions to the size of the loan or credit line; other non-price conditions to non-interest rate charges, collateral requirements, loan covenants and maturity for loans to enterprises and to collateral requirements, loan-to-value ratio, maturity and non-interest rate charges for mortgage loans to households.

Figures 3 and 4 provide descriptive evidence on the relationship between the evolution of the BLS indicators of supply and demand conditions in Italy and the growth in loans to enterprises and mortgage loans to households (which will be the object of the econometric investigation presented in the following sections). The sharp slowdown in lending to enterprises during the financial crisis went along with a fall in the BLS demand indicator and a tightening of supply conditions, the latter being particularly strong in the last two quarters of 2008, the most acute phase of the crisis. The slowdown in mortgage loans to households, which began in 2006 and then continued at a broadly constant pace, was accompanied by a decline in the BLS demand indicator until 2008Q3 and by a tightening of credit standards from the second half of 2007 onwards.

Figure 3. BLS indicators and loans to enterprises in Italy

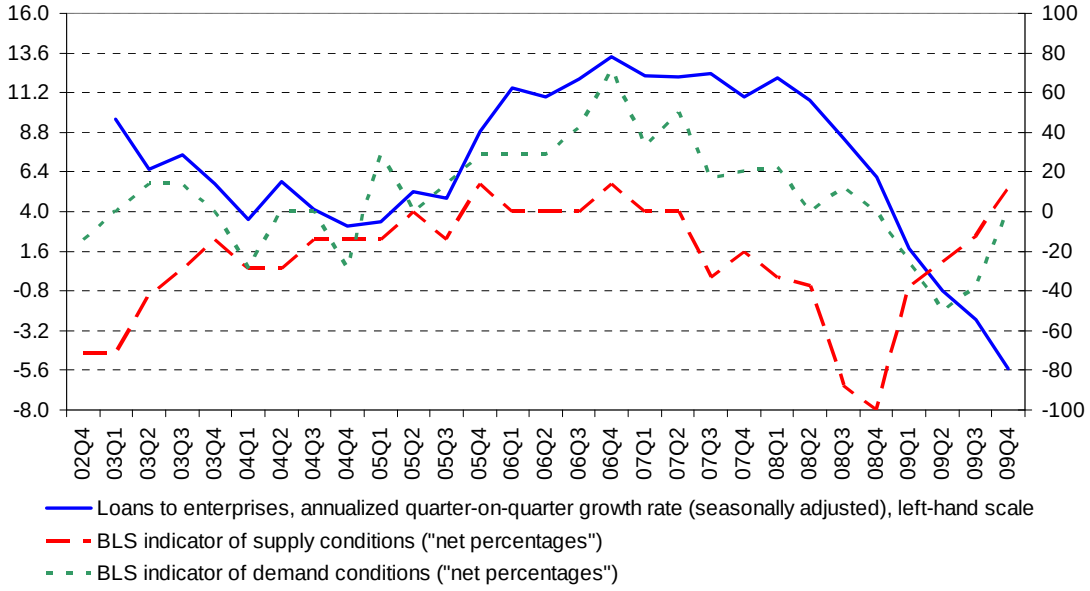
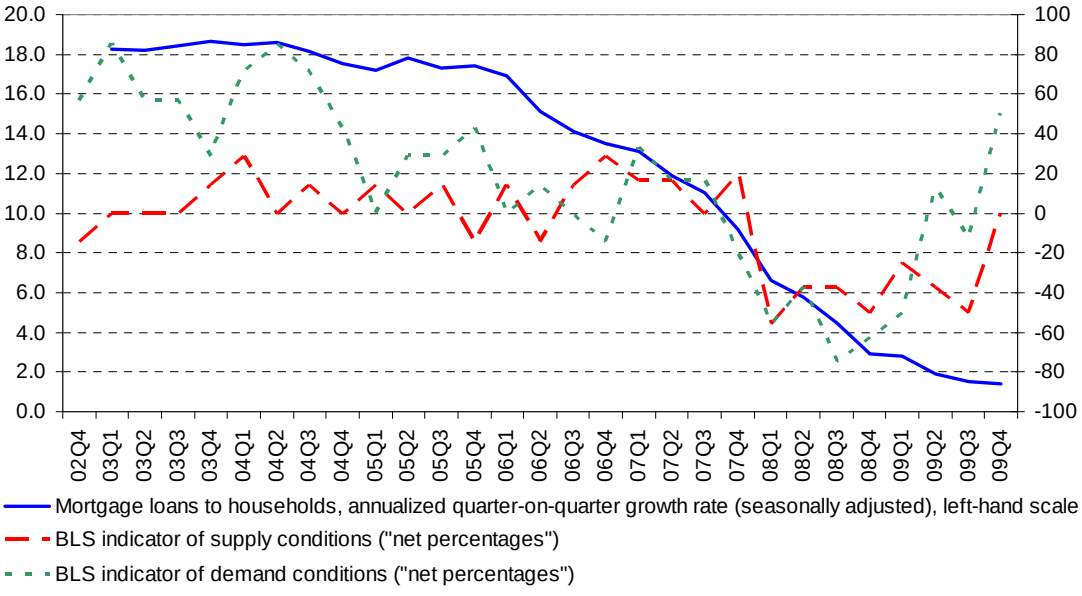


Figure 4. BLS indicators and mortgage loans to households in Italy



A general caveat, which applies to our study, as to any other analysis based on a survey, is that the quality of the results depends on the veracity of the respondents' answers. In the case of lending surveys, it is typically thought that banks may be inclined to report tighter credit standards than the ones they actually apply. This hypothesis originates from the empirical observation that in the Senior Loan Officer Opinion Survey indications of "tightening" have historically outnumbered those of "easing"; it also reflects the consideration that banks, as regulated institutions, may have an incentive to report tighter policies than those actually implemented if they fear that the information could be exploited for supervisory purposes, especially when the survey is conducted by the supervisory authority (Schreft and Owens 1991). By contrast, in a crisis period such as the recent one, banks can be exposed to public criticism and political pressure, being regarded as responsible for a credit crunch that hurts the economy, and thus might have an incentive to portray their policies as less restrictive than they actually are, even though the results of the survey are only published as aggregate data for the entire panel, with no disclosure of individual answers. This issue is explored further in Section 4.

3. Information content of BLS indicators: empirical evidence

The econometric analysis on the information content of BLS indicators is carried out on an unbalanced panel of 11 Italian banks and a sample period of 29 quarters (2002Q4-2009Q4), by estimating regressions of the following general form:

$$\Delta Loans_{it} = \alpha_i + \beta(L)BLS\_S_{it} + \lambda(L)BLS\_D_{it} + \gamma X_t + \varepsilon_{it}, \quad (1)$$

where $\Delta Loans_{it}$ is the quarter-on-quarter (henceforth q-o-q) rate of growth in bank lending for bank *i* in the quarter *t*, alternatively for loans to enterprises and for mortgage loans to households;[9] BLS_S_i and BLS_D_i indicate, respectively, the indicators of supply and demand

[9] The data on loans are adjusted for the effects of securitization; this adjustment improves the economic significance of the dependent variable and is particularly important in the case of mortgage loans to households (due to the high proportion of securitized loans) and especially for the crisis period, due to the large amount of securitized loans, used as collateral in euro-area banks' refinancing operations with the Eurosystem. Seasonal patterns were taken into account by including a set of appropriate seasonal dummies in the estimated equation. This approach has been preferred to the use of more sophisticated routines owing to the relatively short time series available for some intermediaries included in the panel.

conditions obtained from the BLS for bank *i*;[10] *X* is a vector of other variables that can influence loan growth, including the interest rate on individual bank loans, the monetary policy rate and other macro variables usually included in estimated credit demand equations (nominal GDP, gross fixed capital formation and financing need in the case of loans to firms, house prices for mortgage loans to households; see respectively Casolaro et al. (2006) and Casolaro and Gambacorta (2005)). Fixed bank effects and (when appropriate) time dummies were also included in the estimated equations.

Since the BLS indicators are qualitative variables, BLS_S_i *and* BLS_D_i are defined as two vectors of dummy variables, each of which corresponds to one of the possible alternative answers in the survey. The relationship between credit growth and the BLS indicators can thus be written as follows:

$$\begin{aligned}\Delta loans_{it} = {} & \alpha_i + \beta_1(L)BLS\_S\_easedcons_{it} + \beta_2(L)BLS\_S\_easedsome_{it} + \\ & \beta_3(L)BLS\_S\_tightsome_{it} + \beta_4(L)BLS\_S\_tightcons_{it} + \\ & \lambda_1(L)BLS\_D\_decrcons_{it} + \lambda_2(L)BLS\_D\_decrsome_{it} + \\ & \lambda_3(L)BLS\_D\_incrsome_{it} + \lambda_4(L)BLS\_D\_incrcons_{it} + \gamma X_t + \varepsilon_{it}\end{aligned} \tag{2}$$

The dummies for credit supply conditions correspond to the following responses: 1="eased considerably"; 2="eased somewhat"; 3="tightened somewhat"; 4="tightened considerably". Those for credit demand conditions correspond to the following assessments: 1="decreased considerably"; 2="decreased somewhat"; 3="increased somewhat"; 4="increased considerably". For instance, $BLS\_S\_tightsome_{it}$ is a dummy variable which takes the value of 1 if at time *t* bank *i* reported that its credit standards had "tightened somewhat" in the previous three months and zero otherwise.

The expected sign is negative for $\beta_3, \beta_4, \lambda_1, \lambda_2$ and positive for $\beta_1, \beta_2, \lambda_3, \lambda_4$; the effects are expected to be larger for the banks' responses falling in the extreme modalities (when replies of this kind are actually observed, which is not always the case), i.e. we would expect that $|\beta_1| > |\beta_2|$, $|\beta_4| > |\beta_3|$, $|\lambda_1| > |\lambda_2|$ and $|\lambda_4| > |\lambda_3|$. It is important to notice that the supply and demand effects estimated on the basis of these variables provide an indication of effects which are captured by the BLS indicators, over and above those captured by the other variables included in the regression. This holds in particular for the indicator of demand conditions, since credit demand may be related to common macroeconomic developments whose influence should be captured by the level of interest rates, other macro-variables and

[10] Both the supply and the demand indicators may enter with the contemporaneous or lagged value. The lag order was chosen, trying a range between 0 and 4, on the basis of the fit of the regression.

the time dummies included in the regression. However, the evidence reported below indicates that the introduction of control variables does not significantly affect the estimation results for the BLS variables.[11]

It is worth noting that an alternative could be to include the cumulated levels of the BLS indicators, rather than the indicators themselves. As remarked in the methodological discussion in Section 6, this definition would indeed be more consistent with a literal reading of the BLS questions and answers, an important aspect that has not been addressed in previous work based on lending surveys, including recent studies on the BLS information for the euro area. However, as we show in the same section, the inclusion of the cumulated indicators provides unclear results or worsens the fit of the estimates (depending on the approach), which argues against following this alternative specification.

The results are reported in Table 2 for loans to enterprises and in Table 3 for mortgage loans to households. Column (a) refers to the specification that only includes the BLS indicators as regressors (i.e. $\gamma = 0$), column (b) to the regression that also includes the individual bank loan rate and macroeconomic variables[12] and column (c) to the regression that includes time dummies and excludes all macro variables. Columns (d) and (e) replicate the specifications of columns (a) and (b) but allow for possible changes in the relationship in the crisis period. This was done by including terms of interaction between the BLS supply or demand indicators and a crisis dummy variable (which takes value 1 for all quarters in the crisis period). As breakpoints, we considered alternatively the beginning of the financial crisis, in 2007q3, and the beginning of the most acute phase of the crisis, with the Lehman collapse, in 2008q3. For the first of these, none of the estimated coefficients of the interaction terms proved to be statistically significant for both categories of loans. Therefore the tables report only the additional effects for the post-Lehman period. Finally, individual bank fixed effects and seasonal dummies were included in all specifications.[13]

[11] We also controlled for the possibility that loan dynamics have been significantly affected by local demand developments, not necessarily captured by the national variables. We computed Herfinhdal indices of regional concentration for the lending activity of the banks belonging to the panel in the 20 Italian regions. Since they indicated the presence of a significant degree of regional concentration for some banks, we estimated regressions including interaction terms between individual bank dummies and regional demand indicators (using industrial firms' assessments on the development of, alternatively, orders and production, both taken from the monthly business survey carried out by the Institute for Studies and Economic Analysis - ISAE). The results obtained indicated no significant change in coefficients of the BLS supply and demand indicators.

[12] Specifications where the individual loan rate was replaced by the Eonia (as a variable representative of the monetary policy interest rate) or by the spread between these two rates were also estimated, with no significant change in the results.

[13] Excluding the individual bank fixed effects did not provide any significant change in the results.

Results for loans to enterprises

In the case of loans to enterprises, based on the regression which only includes the BLS indicators (Table 2, column a), both supply and demand conditions appear to have a statistically significant role. The results indicate that responses of a "tightened considerably" by all banks in the panel would be associated (with a one quarter lag) with a reduction in the q-o-q rate of growth of loans by 2.3 percentage points (corresponding to about 9 percentage points on an annual basis) with respect to the growth rate that would have been observed in the same quarter had all banks left their credit standards unchanged. The effect of a "tightened somewhat" change in credit standards is also highly significant and only slightly smaller in magnitude. The coefficient for the "eased somewhat" dummy (no "eased considerably" response was ever recorded) is not significant. As to demand conditions, both indications of "increased somewhat" and "decreased somewhat" for demand are significantly related to credit dynamics, as they are associated with, respectively, an increase in the (contemporaneous) q-o-q growth rate of loans of about 1.4 percentage points and a decrease in the same rate of growth of 0.9 percentage points.[14]

Column (b) shows that the coefficient of the individual bank loan rate is positive and significant. This result is in line with those obtained in other studies considering a monetary policy interest rate, including papers that also analyze the information content of bank lending surveys (Lown and Morgan 2006 for the US and de Bondt et al. 2010 for the euro area).[15] The estimated effects of all BLS variables decrease somewhat, but the changes are larger for the BLS demand indicator; in particular, the effect of "decreased somewhat" demand becomes non significant. Column (c) shows that even including time dummies the information content of the BLS variables remains appreciable, especially concerning supply conditions (with the "tightened somewhat" dummy still playing a significant role).

The results reported in columns (d) and (e) indicate that there are no significant changes in the estimated relationship during the crisis period. Although this suggests that there was no break in the relationship between BLS indicators and credit growth in the crisis

[14] Although the results are not perfectly comparable with those of de Bondt et al. (2010) for the euro area (in their case supply and demand conditions are collapsed in just two variables, corresponding to the respective net percentages), the magnitude of the estimated effects is of a similar order. For supply, the speed of transmission appears to be quicker (in the case of the area the maximum effect is recorded with a lag of three to four quarters).

[15] Alternative explanations have been given for this finding, referring in particular to inventory financing (Gertler and Gilchrist 1994) and banks' portfolio behaviour (Den Haan et al. 2007). The results of our estimates did not change significantly when we replaced the individual bank loan rate with the Eonia, which also proved to have a positive and statistically significant coefficient, or the spread between the two rates.

period, this result is to be interpreted with caution, given that the analysis is based on a very small number of observations for the crisis period.

All in all, the estimated relationships between the rate of growth of loans to enterprises and the BLS variables indicate that changes in supply conditions played an important role during the sample period and that this result is robust to the introduction of control variables. The relationship is apparently asymmetric (only "tightened" conditions enter significantly); however, this finding needs to be interpreted carefully, given that the banks have rarely reported an easing of credit standards. Demand factors, as captured by the BLS, also played a significant role, though the way they did is less clear when control variables are introduced.[16]

Results for mortgage loans to households

For mortgage loans to households, considering specification (a) in Table 3, only the dummies capturing demand conditions are significant, with the expected sign and a higher coefficient than in the case of loans to enterprises; the estimated coefficients indicate that a weakening in demand conditions reported by all banks in the panel would be associated with a reduction in the (contemporaneous) q-o-q rate of growth of loans of about 2.0 and 1.0 percentage points, respectively, for the "decreased considerably" and the "decreased somewhat" answers. BLS supply indicators are not shown to have played a significant role.

Columns (b) and (c) show that the coefficients of the BLS demand indicator become smaller and lose statistical significance once we include control variables. It is also interesting to notice that, contrary to what we observed for the case of loans to enterprises, the individual bank loan interest rate enters with a negative sign, suggesting that a demand effect prevails in its relationship with credit developments. House prices and nominal GDP growth also enter significantly with the expected sign. No change in the relationship is observed when we consider the crisis period separately (columns d and e).

[16] There are no substantial changes in the results if we collapse into just two dummies both the BLS indicator of supply conditions ("tightening" and "easing") and the indicator of demand conditions ("increasing" and "decreasing"), i.e. if we disregard the difference between the "somewhat" and "considerably" modalities. The results are also similar if we use one variable for both supply and demand (each taking values from 1 to 5, corresponding to the banks' answers to the BLS questions; i.e. implicitly assuming a linear relationship between loan growth and BLS answers).

Table 2. Estimated panel regressions for loans to enterprises
(sample period: 2002Q4 – 2009Q4)

Variables	(a)	(b)	(c)	(d)	(e)
BLS indicator of supply conditions					
tightened considerably	-2.30**	-2.16***	-1.85	-2.66***	-2.38***
	(-2.6)	*(-2.6)*	*(-1.4)*	*(-3.0)*	*(-2.8)*
tightened somewhat	-1.72***	-1.57***	-2.01***	-1.58**	-1.56**
	(-3.6)	*(-3.1)*	*(-3.3)*	*(-2.3)*	*(-2.3)*
eased somewhat	-0.53	-0.51	-0.55	-0.39	-0.49
	(-0.3)	*(-0.2)*	*(-0.3)*	*(-0.2)*	*(-0.2)*
BLS indicator of demand conditions					
decreased somewhat	-0.85*	-0.42	-0.10	-0.10	0.09
	(-1.8)	*(-0.9)*	*(-0.2)*	*(-0.2)*	*(0.2)*
increased somewhat	1.39***	1.10**	1.02*	1.39***	1.09**
	(2.6)	*(2.1)*	*(1.8)*	*(2.6)*	*(2.1)*
Control variables					
Individual bank loan rate		0.67***	0.75		0.65***
		(4.0)	*(1.3)*		*(3.6)*
Nominal GDP growth rate		0.22			0.22
		(0.8)			*(0.8)*
Change in financing needs		0.81			1.45
		(0.4)			*(0.6)*
Additional effect during the crisis					
BLS supply - tightened somewhat*Lehman				-0.24	0.06
				(-0.3)	*(0.1)*
BLS demand - decreased somewhat*Lehman				-1.47*	-1.07
				(-1.9)	*(-1.3)*
Constant term	2.38***	-1.45	-1.86	2.38***	-2.22
	(5.5)	*(-0.4)*	*(-1.2)*	*(5.4)*	*(-0.6)*
Fixed effects	yes	yes	yes	yes	yes
Seasonal dummies	yes	yes	yes	yes	yes
Time dummies	no	no	yes	no	yes
Observations	196	196	196	196	196
Adjusted R-squared	0.268	0.308	0.329	0.268	0.303

Notes: the dependent variable is the quarter-on-quarter rate of growth of loans to non-financial corporations granted by each Italian bank participating in the BLS. BLS variables are based on individual replies by the same banks. All regressors are included with contemporaneous values except for supply indicators, which are included with a 1-period lag. t-statistics in brackets; *, **, *** indicate statistical significance at the level of 10%, 5% and 1%, respectively.

Table 3. Estimated panel regressions for mortgage loans to households
(sample period: 2002Q4 – 2009Q4)

Variables	(a)	(b)	(c)	(d)	(e)
BLS indicator of supply conditions					
tightened somewhat	0.29	0.22	0.22	0.85	0.45
	(0.4)	*(0.3)*	*(0.3)*	*(0.9)*	*(0.5)*
eased somewhat	1.16	1.06	1.06	1.17	1.13
	(1.2)	*(1.3)*	*(1.3)*	*(1.2)*	*(1.4)*
BLS indicator of demand conditions					
decreased considerably	-2.03**	-1.31	0.31	-2.09*	-2.20**
	(-2.2)	*(-1.4)*	*(0.4)*	*(-1.8)*	*(-2.3)*
decreased somewhat	-1.00*	-0.18	-0.18	-1.10	-1.21*
	(-1.8)	*(-0.3)*	*(-0.4)*	*(-1.6)*	*(-1.7)*
increased somewhat	0.16	-0.68	-0.57	0.13	-0.78*
	(0.3)	*(-1.5)*	*(-1.1)*	*(0.3)*	*(-1.7)*
increased considerably	0.01	-1.36	-1.88	0.01	-1.52
	(0.0)	*(-0.4)*	*(-0.6)*	*(0.0)*	*(-0.5)*
Control variables					
Individual bank loan rate		-0.50**	-0.86		-0.50**
		(-2.4)	*(-1.0)*		*(-2.0)*
Nominal GDP growth rate		0.69***			0.88***
		(2.8)			*(3.2)*
House price growth rate		0.48***			0.53***
		(2.6)			*(2.6)*
Additional effect during the crisis					
BLS supply - tightened somewhat*crisis				-1.42	-0.82
				(-1.1)	*(-0.6)*
BLS demand - decreased considerably*crisis				0.79	2.30
				(0.5)	*(1.6)*
BLS demand - decreased somewhat*crisis				0.51	2.41*
				(0.5)	*(2.2)*
Constant term	3.79***	5.26***	2.81	3.81***	5.33***
	(5.2)	*(3.9)*	*(1.1)*	*(5.2)*	*(3.9)*
Fixed effects	yes	yes	yes	yes	yes
Seasonal dummies	yes	yes	yes	yes	yes
Time dummies	no	no	yes	no	no
Observations	207	200	200	200	200
Adjusted R-squared	0.044	0.115	0.253	0.034	0.115

Notes: the dependent variable is the quarter-on-quarter rate of growth of mortgage loans to households granted by each Italian bank participating in the BLS. BLS variables are based on individual replies by the same banks. All regressors are included with contemporaneous values. t-statistics in brackets; *, **, *** indicate statistical significance at the level of 10%, 5% and 1%, respectively.

4. "Pure supply" vs. "perception of risk" effects: evidence for loans to enterprises

An important issue, in particular concerning credit developments during the financial crisis, is whether banks modified their credit standards because of changes in their own conditions (balance sheet constraints, ability to access market financing) or instead in reaction to the risks connected with economic developments and borrowers' creditworthiness. This analysis has significant policy implications, since both the effects of the supply tightening on credit dynamics and the appropriate policy reactions can depend on the factors driving it.

As described in Section 2, the BLS provides useful information to investigate this issue, as banks are asked not only the general question concerning changes in their credit standards, but also a further question concerning the importance of the various factors determining the changes in their supply policy, differentiating between: i) "cost of funds and balance sheet constraints" (with a further distinction between "costs related to bank's capital position", "banks' ability to access market financing" and "bank's liquidity position"); ii) "pressure from competition"; iii) "perception of risk" (in turn relating to "expectations regarding general economic activity", "industry or firm-specific outlook", or "risk on collateral demanded").

Although all factors will be considered in our empirical analysis, the first and third groups are the most relevant.[17] Factors belonging to the first group can unambiguously be interpreted as "pure" supply (or "credit crunch") factors. The case is less clear for the third group. A more prudent attitude on the part of banks may in fact be the proper reaction to the increase in borrowers' risk of default, in which case it cannot be characterized as a "credit crunch" factor. But it may also reflect a reduction in banks' ability or willingness to assess borrowers' creditworthiness properly, or an increase in banks' risk aversion beyond what is warranted by economic developments, in which case it can indeed be considered a "credit crunch" factor.

Bearing this distinction in mind, we run a regression of the q-o-q growth rate of loans to enterprises on the three categories of factors considered in the BLS. The factors related to "cost of funds and balance sheet constraints" are considered separately, while the information concerning "perception of risk" is collapsed into just one variable, independently of whether these perceptions refer to the expectations of general economic

[17] Motivations related to pressure from competition are almost never reported during periods of tightening.

developments, the industry or firm-specific outlook, or the risk on collateral.[18] For this variable, we distinguish between the replies "contributed considerably to a tightening" and "contributed somewhat to a tightening". This distinction was not necessary for the other factors, as they were never reported with the "considerably" qualification.[19]

The results, reported in Table 4, indicate that among factors relating to the banks' balance sheet constraints, only costs related to their capital position affected loan growth significantly (with a lag of two quarters). The perception-of-risk variable appears to have played an important role mainly during the crisis (with a lag of 1 quarter) and more clearly so when it is reported to have "contributed considerably to the tightening".

These results can be considered as complementary with respect to the findings for the overall supply indicator. In this regard, it is to be noted that in the BLS there is not always a clear correspondence between the banks' answers concerning the changes in their credit standards and replies concerning the factors behind these changes. In particular, there are cases in which a bank signals no change in its own overall supply policy but reports that a specific factor has contributed to a change. This suggests that the banks' replies concerning the specific factors are not always "conditional" on their answers on their overall supply policy (although this is what the formulation of the questionnaire would imply).

This issue is especially relevant for the analysis of the most recent part of the sample period. In the course of 2009 the number of banks reporting a further tightening began to decrease (as reflected in a marked reduction in the overall supply indicator), while at the same time around half of them continued to indicate that perception of risk considerations were still contributing to a restrictive supply policy until 2009q3. It is interesting to consider this apparently contradictory evidence in connection with two further observations.

First, in 2009 the BLS results for the Italian banks are somewhat in contrast with those obtained from national business surveys (contrary to what had been observed in the previous part of the crisis, when there had been a high correlation; Figure 5). While the banks' replies indicate that supply tightening continued at a progressively reduced pace and came to a halt

[18] When considered separately, the three "perception of risk" factors tend to offset each other, because of a strong collinearity, with perception related to general economic developments dominating in most of the specifications.

[19] In order to decide the indicators to be included and the lag order for each of them, we run preliminary regressions for the q-o-q growth rate of loans on each of the factors separately (with lags ranging from zero to four quarters), always controlling for BLS demand conditions.

at the end of the year, firms kept on signalling significant further tightening until the end of the year (at an almost unchanged pace with respect to June 2009), as indicated both by the survey carried out by ISAE (Institute for Studies and Economic Analyses) and by that conducted by the Bank of Italy and the daily *Il Sole 24 Ore*.[20]

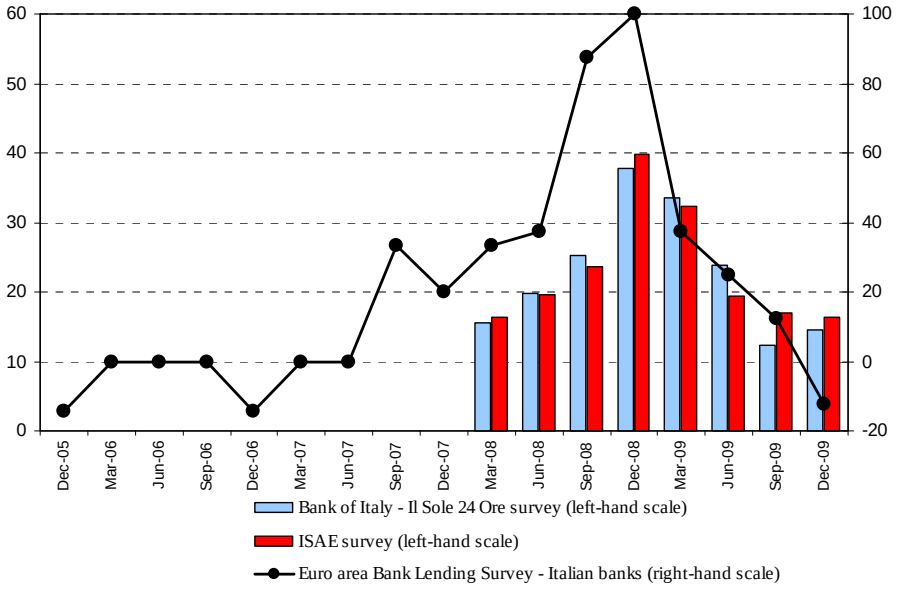
Table 4. Loans to enterprises and factors behind changes in credit standards
(sample period: 2002Q4 – 2009Q4)

	(a)	(b)	(c)	(d)	(e)	(f)
BLS factors behind changes in credit standards						
Costs related to bank's capital position						
contributed somewhat to tightening	-2.15***	-1.83**	-2.03***	-1.99***	-1.75***	-2.04***
Bank's ability to access market financing						
contributed somewhat to tightening	-0.82	-2.07	-2.23	-1.14	-2.28	-2.55
Bank's liquidity position						
contributed somewhat to tightening	-0.26	0.31	0.69	0.22	0.69	0.76
Pressure from competition						
contributed somewhat to easing	-0.43	-0.65	-1.20	-0.52	-0.88	-1.26
Perception of risk						
contributed considerably to tightening	-1.75*	-1.22	-1.22	-0.55	-0.31	-0.45
contributed somewhat to tightening	-0.01	0.39	0.44	-0.01	0.61	0.55
BLS indicator of demand conditions						
decreased somewhat	-1.20**	-0.88*	-0.55	-0.92**	-0.68	-0.46
increased somewhat	1.39***	1.15**	1.03*	1.40**	1.15**	1.03*
Control variables						
Individual bank loan rate		0.68***	0.68		0.55***	0.66
Nominal GDP		0.44			0.31	
Financing needs		2.05			5.22**	
Additional effect during the crisis						
Perception of risk						
contributed considerably to tightening * Lehman				-3.34***	-3.19**	-2.70**
contributed somewhat to tightening * Lehman				-1.29*	-1.68*	-1.30
Constant	2.31***	-3.47	-1.77	2.48***	2.41***	-1.23
Fixed effects	yes	yes	yes	yes	yes	yes
Time dummies	no	no	yes	no	no	yes
Observations	185	185	185	185	185	185
Adjusted R-squared	0.267	0.308	0.345	0.284	0.273	0.349

Notes: the dependent variable is the q-o-q growth rate of loans to enterprises. BLS specific factors are based on individual replies by the same banks. All regressors for supply conditions are included with a lag of one quarter, except for "costs related to bank's capital position" which is included with a lag of two quarters. "Perception of risk" is a dummy variable taking a value of 1 when banks indicate a change in credit standards stemming from at least one of the following factors: "expectations regarding general economic activity", "industry or firm-specific outlook", "risk on the collateral demanded". All the regressions include seasonal dummies and bank-specific fixed effects. *, **, *** indicate statistical significance at the level of 10%, 5% and 1%, respectively.

[20] A similar contrast is observed between the results of the BLS for the euro area and those of the survey of firms carried out by the ECB in cooperation with the European Commission twice a year since mid-2009 (ECB Survey on access to finance for small and medium-sized enterprises in the euro area).

Figure 5. Supply conditions for loans to enterprises: BLS and business surveys indicators
(net percentages)



Notes: for the BLS indicator, the net percentage of banks indicating a tightening in credit standards is reported; for business surveys, the net percentage of firms indicating a worsening in their access to credit is reported.

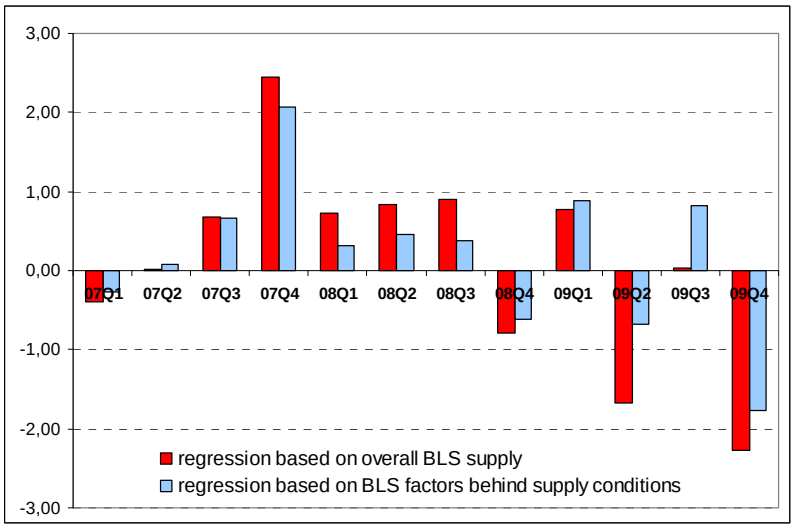
Secondly, in the same period the estimated regressions including the overall indicator of supply conditions produce large negative residuals in some quarters (2009Q2 and 2009Q4; Figure 6a), suggesting that part of the continuing sharp fall in loans to enterprises in this phase remains unexplained. Interestingly, replacing the overall supply indicator with the specific factors results in a significant reduction in the residuals (in particular in 2009Q2). This suggests that in this period the banks' answers on their perception of risk provided a more telling picture of the orientation of their policies than their answers on the overall tightening. It is to be noted, however, that a greater and more generalized improvement in the fit is obtained when we include the individual bank loan rate and macroeconomic indicators in the regression, corresponding to specification (e) in Table 4 (Figure 6b).

In the light of the evidence provided in this section, in Section 5 we use both the BLS overall indicator of supply conditions and the specific factor indicators, as well as specifications with and without control variables, to obtain more robust estimates of the importance of supply factors during the crisis.[21]

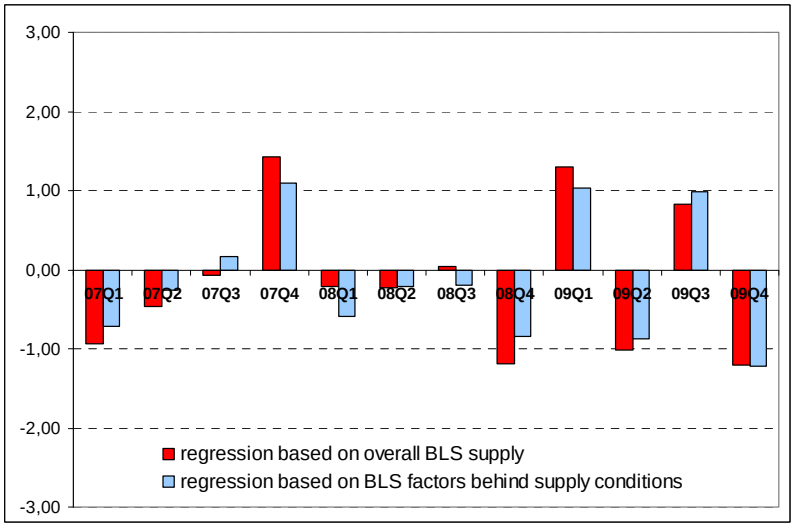
[21] As described in Section 2, in the BLS banks also provide responses about specific terms and conditions for approving loans, specifying whether changes in supply conditions took place through the size of loans or credit lines or through pricing. We investigated the information content of these answers by replacing in our regressions the overall supply indicator with the specific indicators for the various terms and conditions. The

Figure 6. Estimated residuals
(percentage points)

a) regression that only includes BLS indicators



b) regression that includes BLS indicators and control variables



5. The slowdown of credit during the financial crisis: supply tightening or lack in demand?

In order to assess the role played by supply and demand factors in the sharp slowdown of credit during the financial crisis, we performed a counterfactual exercise in which we compared the fitted values obtained from our estimates with those we would obtain had supply and demand conditions, as captured by the BLS, remained unchanged with respect to the pre-crisis period. This was done by using the estimated coefficients and setting the BLS

results (not reported but available from the authors upon request) indicate that only changes in the size of loans or credit lines played a significant role, though only in the regressions without control variables. The fit of the equation worsens with respect to the alternative specifications (i.e. including the overall indicator of supply

variables equal to their values in the second quarter of 2007, before the beginning of the financial crisis.[22]

We carried out this analysis considering both the indicator of overall supply conditions and the indicators of the specific factors behind them. The former is the main piece of information provided by this type of survey and the one we can expect banks to pay the greatest attention to when formulating their answers. It is also the one used in most of the existing empirical literature based on bank lending surveys. As discussed in Section 4, the latter piece of information allows us to disentangle the supply effects attributable to cost of funds and balance sheet conditions from those related to perception of risk. In addition, it offers useful complementary evidence in particular in cases in which the signals it provides do not coincide exactly with those of the overall indicator, possibly reducing the unexplained part of credit dynamics.

The results are reported in Figure 7a for the specification based on the overall supply indicator and in Figure 7b for the specification based on the specific factor indicators. In both cases the estimated regressions includes only BLS indicators (i.e. with no control variables; specification (a) in Table 2 and (d) in Table 4).

Figure 7a shows that the negative contribution of the supply factors to the q-o-q rate of growth of loans ranged between 0.3 and 0.7 percentage points until the third quarter of 2008; it rose sharply in the following quarters, especially after the Lehman collapse, reaching a maximum of 1.7 (about 7 percentage points on an annual basis) in the first quarter of 2009, when credit developments reflected (with a one-quarter lag) the maximum tightening recorded by the BLS supply indicator in the last quarter of 2008. In the following quarters the contribution remained negative, but decreased in absolute value, returning to pre-Lehman levels in 2009Q3 and to 0.2 percentage points (0.8 points in annualized terms) in 2009Q4. The negative contribution of demand factors was significant over the entire crisis period; it became larger following the Lehman collapse and remained sizeable for most of 2009, reaching a maximum in the second quarter (1.1 percentage points, or more than 4 points in annualized terms). On average, over the entire crisis period (2007Q3-2009Q4), the negative contributions of supply and demand factors to the annualized q-o-q rate of growth of loans to

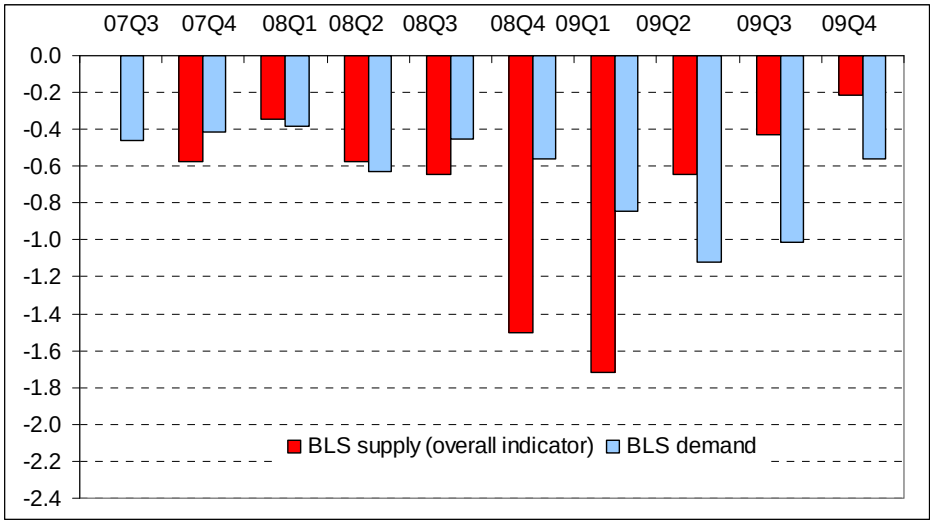
conditions or the specific indicators for the factors determining them), suggesting that this part of the survey does not provide especially valuable information.

[22] As a robustness check, the same exercise was carried out setting the BLS indicators at, alternatively, their "unchanged conditions" level or their pre-crisis average level (i.e. the average over the period 2002Q4-2007Q2).

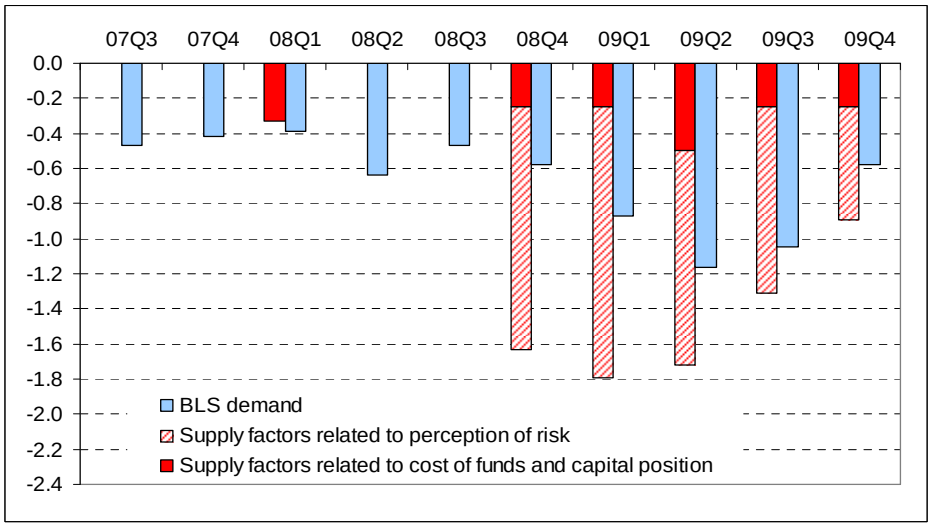
enterprises granted by the banks in the panel, as captured by the BLS indicators, amounted to 2.7 and 2.6 percentage points respectively.

Figure 7. Contributions of supply and demand factors to the q-o-q rate of growth of loans to enterprises estimated for the panel of Italian banks participating in the BLS
(percentage points)

a) regression that includes the overall BLS indicator of supply conditions



b) regression that includes the factors determining change in credit standards



Notes: this figure reports the results from the estimated regressions that include only BLS variables; results for the regressions that also include control variables are reported in the text.

Figure 7b indicates that supply factors related to risk perception played a major role, while factors related to the balance sheet position had a minor but non negligible impact, especially in the most acute phase of the crisis; on average, over the period considered, their effect was about one fourth of the entire effect attributable to supply factors.[23] The comparison with Figure 7a suggests that the contribution of supply factors to loan developments as captured by the two types of indicator is very similar during the most severe phase of the crisis. By contrast, differences emerge for the initial part of the period, when the tightening is only signalled by the overall indicator (except for 2008Q1), and for the last part (since 2009Q2), when the factor indicators – in particular related to perception of risk – signal a more persistent restriction than suggested by the overall indicator. On average, over the crisis period, the contribution of supply conditions resulting from this estimate is somewhat smaller than the one based on the overall indicator (2.3 per cent in annualized terms)

In order to test the robustness of our findings we carried out the same counterfactual exercise with alternative specifications including control variables (individual bank loan rate plus, alternatively, macroeconomic variables or time dummies, corresponding to specifications (b) and (c) in Table 2 and specifications (d) and (e) in Table 4). With respect to the regression that only includes the BLS indicators, these specifications generate a better fit at the expense of a less immediate interpretation, since it is impossible to determine whether the part of credit developments explained by the control variables should be attributed to supply or to demand effects.

As shown in Table 5, the results are similar across specifications. Considering all of them, the contribution of supply factors to the q-o-q rate of growth of loans to enterprises in the period 2007Q2-2009Q4 can be estimated to be negative by between 2.2 and 3.1 percentage points.

Table 5. Contribution of supply factors to the q-o-q rate of growth of loans to enterprises
(*percentage points; average contribution over the period 2007Q2-2009Q4 in annualized terms*)

Based on the BLS overall indicator of supply conditions			Based on factors behind changes in the BLS overall supply conditions		
Only BLS indicators	BLS indicators and micro/macro controls	BLS indicators, micro controls and time dummies	Only BLS indicators	BLS indicators and micro/macro controls	BLS indicators, micro controls and time dummies
-2.7	-2.4	-3.1	-2.3	-2.8	-2.2

[23] These results are consistent with those of Albertazzi and Marchetti (2010). Using individual data for both banks and firms, they find a significant role for supply factors in the credit slowdown in Italy in the two quarters immediately following the Lehman collapse. They also provide specific evidence indicating that the impact of capital constraints and liquidity shortage on the rate of growth in loans to firms in these quarters amounted to about 1 percentage point in annualized terms.

It should be noted that these estimates are for the panel of banks participating in the BLS, which are mainly large banks. Since the slowdown in lending to enterprises was sharper for them than for smaller banks, the question is whether this reflects some difference in the relative importance of supply factors. Evidence from the Regional Bank Lending Survey for Italy[24] suggests that this is not the case: on average, between the fourth quarter of 2008 and the end of 2009 the indicators of supply conditions for the medium-to-large banks and for small banks do not differ significantly (while a more marked worsening of demand conditions was reported by the former). On this evidence, we conclude that the estimates of the supply effects we have obtained for the BLS panel do substantially hold for the entire Italian banking system.

6. Robustness: empirical analysis using the cumulated BLS indicators

In this section we consider the possibility that the relationship between loan growth and BLS information may be better captured using a different empirical specification from the one used in Section 3.

Consider, for instance, the case in which the BLS supply indicator signals a tightening. The coefficients estimated with the regressions carried out in Section 3 indicate how, on average (i.e. over the sample period and for the whole panel of banks participating in the survey), the q-o-q growth in loans is affected by a tightening in the same quarter or in a previous one, compared with the growth rate that would have been observed had the BLS indicator signalled unchanged supply conditions. These results, however, do not tell us whether this effect varies depending on whether this is a first tightening or a further tightening following one or more quarters of restriction. In other words, it does not tell us whether what matters is only what the banks report concerning the change in their credit standards in the quarter considered or also what they had reported in the previous quarters. In the latter case, a stronger relationship should hold between the rate of growth in loans and the BLS supply indicator when the *cumulated level* of the latter is included in the regression.

Although this issue is very important for interpretation of the information provided by this type of survey, it has received little attention in the literature. The study by Schreft and

[24] This survey is carried out by the Bank of Italy regional branches on a panel of more than 400 banks, which include both medium-to-large and small banks. It was conducted for the first time at the beginning of 2009, referring to credit conditions in the fourth quarter of 2008; since mid-2009, it is carried biannually. It provides information with a breakdown by region, economic sector, firm size, and, most relevant to our purposes, bank size.

Owens (1991) is, to our knowledge, the only one that considers it explicitly, though without carrying out any specific empirical analysis. The authors notice that from 1967 to 1983 respondents in the Federal Reserve's Senior Loan Officer Opinion Survey almost never reported a net easing of standards on business loans. Based on the observation that the banks "report the change in lending standards over a three-month period, not how tight standards are at the survey data", they remark that "because the results show banks continuously tightening their standards from 1967 through 1983, if we take the survey results literally, lending standards would have been unbelievably stringent by late 1983" (p. 10). Apparently, they do not consider the possibility that banks provide answers that are inconsistent with the formulation of the question they are asked. Rather, they argue that this evidence "suggests that the survey responses might be biased" and that the bias might stem "from the incentive that regulated institutions have to report to their regulators a tightening of standards, especially when their reports are not made anonymously".

Interestingly, this issue also applies to the BLS results. As in the Senior Loan Officer Opinion Survey, in the BLS banks are asked to indicate how credit standards on their loans have changed over the last three months, not how tight standards are at the time of the survey. Moreover, the results indicate a clear predominance of tightening: for the euro area as a whole, only in 9 quarters out of a total of 29 since the survey was begun has the net percentage indicator signalled an easing of supply conditions, compared to 19 quarters in which it signalled a tightening; for the panel of Italian banks, this holds only in 3 quarters, against 20. This issue is especially important for the interpretation of supply conditions during the financial crisis, which we focus on. For both the euro area and Italy, in fact, we observe a series of consecutive restrictions beginning in 2007Q3, which reach the maximum intensity in the last quarter of 2008 but continue, although at a slower pace, in the following quarters too. Thus, according to a literal reading of the banks' answers, the degree of tightening at the end of 2009 would be significantly higher than it was at the peak of the financial crisis.

The interpretation of the answers on demand conditions is even more problematic: the banks are requested to indicate how the demand for loans has changed, apart from normal seasonal fluctuations, over the past three months. Given that the possible answers are expressed in terms of "increase" or "decrease", one would expect that an indicator in the "decreasing" territory is associated, ceteris paribus, to a contraction (i.e. a negative rate of growth) in credit, while an indicator in the "increasing" territory should be associated with a positive growth rate. However, even a simple descriptive examination of the relationship

between the BLS demand indicator and loans developments suggests that a literal reading of the banks' answers is problematic (quite often a negative BLS demand indicator is associated with a largely positive change in loans). This suggests that the banks' assessments on demand should be interpreted in terms of "acceleration" and "deceleration", rather than "increase" and "decrease". The analysis presented in this paper, based on the growth rate of loans as the dependent variable, is consistent with this interpretation.

Accordingly, we analyse how the relationship between developments in loans to enterprises and the BLS information is affected when we consider the cumulated level of the supply and demand indicators rather than the indicators themselves.[25]

To do this, we replace the dummies used in Section 3 with alternative dummies that capture the length of the phases of tightening/easing of credit standards, along with the phases of increase/decrease in demand conditions. For instance, the dummy for the "tightened somewhat" supply condition is replaced by the following four dummies (dummies for other supply conditions and for demand conditions are constructed similarly):

BLS_S_tightsome_1 = 1 in the first quarter in which the "tightened somewhat" reply is recorded

BLS_S_tightsome_2 = 1 when a "tightened somewhat" reply is recorded for the second consecutive quarter

BLS_S_tightsome_3 = 1 when a "tightened somewhat" change is recorded for the third consecutive quarter

BLS_S_tightsome_4 = 1 when a "tightened somewhat" change is recorded for more than 3 consecutive quarters

The results, reported in Table 6, do not provide evidence of a clear relationship between the persistence of changes in supply and demand conditions and the estimated impact on the rate of growth in loans. The fact that the supply "tightened somewhat" condition affects credit growth significantly only when it is observed for more than two quarters could be seen as consistent with such a relationship, but the decrease in the coefficient after more than three quarters points in the opposite direction. Moreover, a set of F-test rejects the hypothesis that the estimated coefficients differ depending on the persistence of the tightening.[26]

[25] Results for mortgage loans to households are available from the authors upon request.

[26] Results for the "tightened considerably" dummies also do not provide clear evidence and should in any case be interpreted with caution, given that each of the three dummies considered takes the value of 1 only in one quarter.

Table 6. Estimated regressions for loans to enterprises with BLS cumulated indicators
(*sample period: 2002Q4 – 2009Q4*)

Variables	(a)	(b)	(c)
BLS indicator of supply conditions (in brackets: number of consecutive tightening/easing quarters)			
tightened considerably (1 quarter)	-3.01***	-2.48***	-2.26*
tightened considerably (2 quarters)	-0.74	-0.81	0.87
tightened considerably (3 quarters)	-4.97***	-5.01***	-5.61***
tightened somewhat (1 quarter)	-1.41	-1.66*	-1.84**
tightened somewhat (2 quarters)	-1.03	-0.80	-1.69*
tightened somewhat (3 quarters)	-2.72***	-2.50***	-2.92***
tightened somewhat (more than 3 quarters)	-2.32***	-1.76***	-1.88**
eased somewhat (1 quarter)	-0.55	-0.45	-0.59
BLS indicator of demand conditions (in brackets: number of consecutive decrease/increase quarters)			
decreased somewhat (1 quarter)	-0.96*	-0.63	-0.37
decreased somewhat (2 quarters)	0.72	1.26*	1.29
decreased somewhat (3 quarters)	-2.52	-1.97	-0.97
decreased somewhat (more than 3 quarters)	-1.42	-0.36	-0.23
increased somewhat (1 quarter)	1.43*	1.32*	0.98
increased somewhat (2 quarters)	1.56**	1.08	1.41*
increased somewhat (3 quarters)	1.20	0.75	0.70
increased somewhat (more than 3 quarters)	1.27	0.72	0.57
Control variables			
Individual bank loan rate		0.71***	0.80
Nominal GDP growth rate		0.20	
Change in financing needs		0.69	
Constant term	2.49***	-1.34	-1.83
Fixed effects	yes	yes	yes
Seasonal dummies	yes	yes	yes
Time dummies	no	no	yes
Observations	196	196	196
Adjusted R-squared	0.250	0.293	0.306

Notes: the dependent variable is the quarter-on-quarter rate of growth of loans to enterprises granted by each Italian bank participating in the BLS. BLS variables are based on individual replies by the same banks. All regressors are included with contemporaneous values except for supply indicators, which are included with a 1-period lag. t-statistics in brackets; *, **, *** indicate statistical significance at the level of 10%, 5% and 1%, respectively.

The results obtained above could be affected by degree-of-freedom problems, given the large number of parameters compared with the number of observations. Therefore we also addressed the same question in a more parsimonious framework, by collapsing the information into just one variable for the supply conditions and one variable for the demand

conditions, for both the BLS indicators and the corresponding cumulated indicators, implicitly assuming that a linear relationship holds between the various possible answers to each question. For instance, in the case of the supply indicator, the variable *BLS_S* takes a value of 1 to 5, corresponding to answers ranging from "eased considerably" to "tightened considerably", while the cumulated indicator is defined as follows:

$$(4)\ BLS\_S\_cum_{it} = \begin{cases} BLS\_S_{it} & \text{if t = 2002q4} \\ BLS\_S\_cum_{it-1} + BLS\_S_{it} & \text{if t > 2002q4} \end{cases}$$

The corresponding variables for the demand conditions are defined similarly.

The results are reported in Table 7. For the regression with the cumulated indicators the estimated coefficients for both the supply and the demand BLS indicators tend to loose statistical significance when the control variables are included; the fit of the equation is worse, compared to the regression with the BLS indices, for all the specifications considered.

Table 7. Comparison between estimated regressions based on BLS indicators and BLS cumulated indicators under the hypothesis of linearity among BLS response categories
(*sample period: 2002Q4 – 2009Q4*)

	With BLS indices			With BLS cumulated indices		
	(a)	(b)	(c)	(a')	(b')	(c')
BLS supply conditions	-1.42***	-1.26***	-1.42***	-0.24***	-0.23**	-0.15
BLS demand conditions	1.17***	0.83***	0.66*	0.29***	0.07	0.19
Control variables						
Individual bank loan rate		0.67***	0.85		0.69***	0.82
Nominal GDP growth rate		0.28			0.68**	
Change in financing needs		0.78			5.50	
Constant term	-5.32***	-7.58**	-8.29**	4.09***	-6.74	-0.64
Fixed effects	yes	yes	yes	yes	yes	yes
Seasonal dummies	yes	yes	yes	yes	yes	yes
Time dummies	no	no	yes	no	no	yes
Observations	196	196	196	196	196	196
Adjusted R-squared	0.270	0.310	0.324	0.194	0.258	0.279

Notes: the dependent variable is the quarter-on-quarter rate of growth of loans granted by each Italian bank participating in the BLS. BLS variables are based on individual replies by the same banks. All regressors are included with contemporaneous values except for the BLS supply indicator, which is included with a lag of one quarter. t-statistics in brackets; *, **, *** indicate statistical significance at the level of 10%, 5% and 1%, respectively.

All in all, these results indicate that there is a clear case for including the BLS indicators rather than their cumulated levels in the regression for loans to enterprises, though this implies that the interpretation of this information needs to be qualified with respect to a literal reading of the survey questions and answers. Indeed, our results suggest that banks'

responses may largely reflect their assessment of the distance between the degree of tightness of their own credit standards in the reference quarter and some "benchmark" condition they are likely to have in mind rather than their assessment of the actual change in the degree of tightness over the three months considered in each run of the survey.

7. Conclusions

In this paper we use the qualitative indicators of supply and demand conditions derived from the Italian part of the Eurosystem Bank Lending Survey to estimate the relationship between these factors and credit developments in Italy and to provide an assessment of the relative importance of supply and demand factors in the sharp fall in credit growth during the financial crisis. The dataset combines the qualitative information contained in the BLS with micro-data on quantities and prices of loans granted by the panel of Italian banks participating in the survey, as well as on other individual bank variables. The sample period goes from 2002Q4, the first quarter for which the BLS is available, to 2009Q4.

Part of the study considers both loans to enterprises and loans to households for house purchases, while a more in-depth investigation of the role of changes in credit standards and the factors behind them is only carried out for loans to enterprises, which we deem to be more important in the light of their sharp deceleration during the financial crisis (much stronger than the one observed for loans to households) and their stronger estimated relationship with the BLS indicators. In fact, BLS indicators for both supply and demand conditions prove to have a statistically significant role in explaining changes in lending to enterprises in Italy, and it appears to be robust to the introduction of various control variables. The relationship with the supply indicator appears to be asymmetric, as it is significant only when the indicators signal a tightening. However, this result needs to be interpreted with caution, given the very small number of responses indicating an easing of credit standards. As to the relative importance of the factors determining the changes in credit standards, costs related to the capital position and banks' risk perception (either in connection with expectations regarding general economic activity or industry or firm-specific outlook) appear to have played a major role. The latter were especially important during the crisis period.

A counterfactual exercise shows that both demand and supply factors had a significant negative impact on credit developments during the financial crisis, with supply effects peaking in 2008Q4 and 2009Q1. On average, over the period 2007Q3-2009Q4 the negative

contribution of supply factors to the annualized quarter-on-quarter rate of growth in loans to enterprises by the banks in the BLS panel is estimated to be between 2.2 to 3.1 percentage points, depending on the specification. About one fourth of this effect can be attributed to costs related to banks' balance sheet position; the rest is associated with banks' perception of credit risk.

References

Albertazzi, U. and D. J. Marchetti (2010), "Credit supply, flight to quality and evergreening: an analysis of bank-firm relationships after Lehman", Bank of Italy, Working Papers, No. 756.

Bassanetti, A., M. Cecioni, A. Nobili and G. Zevi (2009), "Le principali recessioni italiane: un confronto retrospettivo", Bank of Italy, Occasional Papers, No. 46.

Berg, J., van Rixtel A., Ferrando A., de Bondt G. and Scopel S. (2005), "The bank lending survey for the euro area", European Central Bank, Occasional Paper Series, No. 23.

Bernanke, B. S. and M. Gertler (1995), "Inside the black box: the credit channel of monetary policy transmission", *Journal of Economic Perspectives*, 9, 4, pp. 27-48.

Bernanke, B. S., M. Gertler and S. Gilchrist (1996), "The financial accelerator and the flight to quality", *Review of Economic and Statistics*, 78, 1, pp. 1-15.

Caivano, M., L. Rodano and S. Siviero (2010), "La trasmissione della crisi finanziaria globale all'economia italiana. Un'indagine controfattuale, 2008-2010", Bank of Italy, Occasional Papers, No. 64.

Casolaro, L., G. Eramo and L. Gambacorta (2006), "Un modello econometrico per il credito bancario alle imprese in Italia", *Moneta e Credito*, 59, pp. 83-151.

Casolaro, L. and L. Gambacorta (2005), "Un modello econometrico per il credito bancario alle famiglie in Italia", *Moneta e Credito*, 58, pp. 29-56.

Ciccarelli, M., A. Maddaloni and J. L. Peydró (2009), "Trusting the bankers: a new look at the credit channel and hints for the crisis", European Central Bank, mimeo.

de Bondt, G., A. Maddaloni, J. L. Peydró and S. Scopel (2010), "The euro area Bank Lending Survey matters: empirical evidence for credit and output growth", European Central Bank Working Paper Series, No. 1160.

Den Haan, W. J., S. W. Sumner and G. M. Yamashiro (2007), "Bank loan portfolios and the monetary transmission mechanism", *Journal of Monetary Economics*, 54, pp. 904-924.

Gaiotti, E. (2010), "Credit availability and investment in Italy: lessons form the "Great Recession", Bank of Italy, mimeo.

Gertler, M. and S. Gilchrist (1994), " Monetary policy, business cycles, and the behavior of small manufacturing firms", *Quarterly Journal of Economics*, 109(2), pp. 309-340.

Hempell, H.S. (2004), "New bank lending survey of the Eurosystem: interpretation and use of first results for Germany", *Journal of Business Cycle Measurement and Analysis*, 1, 3, pp. 387-408.

Hempell, H.S. and C. Kok Sorensen (2009), "The impact of supply constraints on bank lending in the euro area – crisis induced crunching?", European Central Bank, mimeo.

IMF (2009), “Is there a credit crunch?”, International Monetary Fund, *World Economic Outlook*, April, Box 1.1.

Kiyotaki, N. and J. Moore (1997), “Credit cycles”, *Journal of Political Economy*, 105, pp. 211-248.

Lown, C. and Morgan D. (2002), “Credit effects in the monetary mechanism, *Federal Reserve Bank of New York Economic Policy Review*, 8, pp. 217-235.

Lown, C. and Morgan D. (2006), “The credit cycle and the business cycle: new findings using the loan officer opinion survey”, *Journal of Money Credit and Banking*, 38, 6, pp. 1575-1597.

Lown, C., Morgan D. and Rohatgi S. (2000), “Listening to loan officers: the impact of commercial credit standards on lending and output”, *Federal Reserve Bank of New York Economic Policy Review*, 6, pp. 1-16.

Maddaloni, A., Peydró J.L. and Scopel S. (2009), “Does monetary policy affect bank credit standards? Evidence from the euro area bank lending survey”, European Central Bank Working Paper Series, forthcoming.

Panetta, F. and F.M. Signoretti (2010), “Domanda e offerta di credito in Italia durante la crisi finanziaria”, Bank of Italy, Occasional Papers, No. 63.

Schreft, S. L. and R. E. Owens (1991), “Survey evidence of tighter credit conditions: what does it means?”, Federal Reserve Bank of Richmond Working Paper Series, No. 91-5.

Appendix. Additional descriptive statistics

Table A1 - Factors behind changes in credit standards for loans to enterprises
(frequency of responses as a percentage of the total)

	1="contributed considerably to easing"	2="contributed somewhat to easing"	3="contributed to basically unchanged conditions"	4="contributed somewhat to tightening"	5="contributed considerably to tightening"	Total observations
A) Cost of funds and balance sheet constraints						
Cost related to bank's capital position						
Pre-crisis (02q4-07q2)	0.0	0.0	92.4	7.6	0.0	100
During crisis (07q3-09q4)	0.0	0.0	90.8	9.2	0.0	100
Whole period	0.0	0.0	91.8	8.2	0.0	100
Bank's ability to access market financing						
Pre-crisis (02q4-07q2)	0.0	0.8	99.2	0.0	0.0	100
During crisis (07q3-09q4)	0.0	0.0	93.4	6.6	0.0	100
Whole period	0.0	0.5	97.1	2.4	0.0	100
Bank's liquidity position						
Pre-crisis (02q4-07q2)	0.0	0.8	98.5	0.8	0.0	100
During crisis (07q3-09q4)	0.0	0.0	90.8	9.2	0.0	100
Whole period	0.0	0.5	95.7	3.9	0.0	100
B) Pressure from competition						
Competition from other banks						
Pre-crisis (02q4-07q2)	0.0	19.9	80.2	0.0	0.0	100
During crisis (07q3-09q4)	0.0	2.6	97.4	0.0	0.0	100
Whole period	0.0	13.5	86.5	0.0	0.0	100
Competition from non-banks						
Pre-crisis (02q4-07q2)	0.0	2.3	97.7	0.0	0.0	100
During crisis (07q3-09q4)	0.0	0.0	100	0.0	0.0	100
Whole period	0.0	1.5	98.6	0.0	0.0	100
Competition from market financing						
Pre-crisis (02q4-07q2)	0.0	0.8	98.5	0.8	0.0	100
During crisis (07q3-09q4)	0.0	0.0	100	0.0	0.0	100
Whole period	0.0	0.5	99.0	0.5	0.0	100
C) Perception of risk						
Expectations regarding general economic activity						
Pre-crisis (02q4-07q2)	0.0	1.5	60.3	37.4	0.8	100
During crisis (07q3-09q4)	0.0	1.3	52.6	39.5	6.6	100
Whole period	0.0	1.5	57.5	38.2	2.9	100
Industry or firm-specific outlook						
Pre-crisis (02q4-07q2)	0.0	0.8	47.3	45.8	6.1	100
During crisis (07q3-09q4)	0.0	1.3	43.4	48.7	6.6	100
Whole period	0.0	1.0	45.9	46.9	6.3	100
Risk on the collateral demanded						
Pre-crisis (02q4-07q2)	0.0	0.0	82.4	17.6	0.0	100
During crisis (07q3-09q4)	0.0	0.0	77.6	22.4	0.0	100
Whole period	0.0	0.0	80.7	19.3	0.0	100

Table A2 - Conditions and terms for approving loans or credit lines to enterprises

(frequency of responses as a percentage of the total)

	1="eased considerably"	2="eased somewhat"	3="basically unchanged"	4="tightened somewhat"	5="tightened considerably"	Total observations
A) Price						
Margin on average loan						
Pre-crisis (02q4-07q2)	0.0	13.0	66.4	20.6	0.0	100
During crisis (07q3-09q4)	0.0	2.6	51.3	46.1	0.0	100
Whole period	0.0	9.2	60.9	30.0	0.0	100
Margin on riskier loans						
Pre-crisis (02q4-07q2)	0.0	0.0	43.5	52.7	3.8	100
During crisis (07q3-09q4)	0.0	0.0	31.6	63.2	5.3	100
Whole period	0.0	0.0	39.1	56.5	4.4	100
B) Other conditions and terms						
Non-interest rate charges						
Pre-crisis (02q4-07q2)	0.0	0.0	83.2	16.8	0.0	100
During crisis (07q3-09q4)	0.0	0.0	88.2	11.8	0.0	100
Whole period	0.0	0.0	85.0	15.0	0.0	100
Size of the loan or credit line						
Pre-crisis (02q4-07q2)	0.0	0.0	85.5	14.5	0.0	100
During crisis (07q3-09q4)	0.0	2.6	67.1	30.3	0.0	100
Whole period	0.0	1.0	78.7	20.3	0.0	100
Collateral requirements						
Pre-crisis (02q4-07q2)	0.0	0.8	85.5	13.7	0.0	100
During crisis (07q3-09q4)	0.0	0.0	85.5	14.5	0.0	100
Whole period	0.0	0.5	85.5	14.0	0.0	100
Loan covenants						
Pre-crisis (02q4-07q2)	0.0	0.8	85.5	13.7	0.0	100
During crisis (07q3-09q4)	0.0	0.0	88.2	11.8	0.0	100
Whole period	0.0	0.5	86.5	13.0	0.0	100
Maturity						
Pre-crisis (02q4-07q2)	0.0	3.1	82.4	14.5	0.0	100
During crisis (07q3-09q4)	0.0	2.6	80.3	17.1	0.0	100
Whole period	0.0	2.9	81.6	15.5	0.0	100

Table A3 - Factors behind the change in loan demand by enterprises

(frequency of responses as a percentage of the total)

	1="contributed considerably to lower demand"	2="contributed somewhat to lower demand"	3="contributed to basically unchanged conditions"	4="contributed somewhat to higher demand"	5="contributed considerably to higher demand"	Total observations
A) Financing needs						
Fixed investment						
Pre-crisis (02q4-07q2)	1.5	18.3	59.5	19.9	0.8	100
During crisis (07q3-09q4)	2.6	35.5	54.0	7.9	0.0	100
Whole period	1.9	24.6	57.5	15.5	0.5	100
Inventories and working capital						
Pre-crisis (02q4-07q2)	0.0	18.3	58.0	22.9	0.8	100
During crisis (07q3-09q4)	0.0	14.5	68.4	14.5	2.6	100
Whole period	0.0	16.9	61.8	19.8	1.5	100
Mergers/acquisitions and corporate restructuring						
Pre-crisis (02q4-07q2)	0.0	9.2	71.8	19.1	0.0	100
During crisis (07q3-09q4)	1.3	29.0	60.5	9.2	0.0	100
Whole period	0.5	16.4	67.6	15.5	0.0	100
Debt restructuring						
Pre-crisis (02q4-07q2)	0.0	1.5	59.5	38.2	0.8	100
During crisis (07q3-09q4)	0.0	1.3	54.0	40.8	4.0	100
Whole period	0.0	1.5	57.5	39.1	1.9	100
B) Use of alternative finance						
Internal financing						
Pre-crisis (02q4-07q2)	0.0	6.1	81.7	12.2	0.0	100
During crisis (07q3-09q4)	0.0	2.6	88.2	9.2	0.0	100
Whole period	0.0	4.8	84.1	11.1	0.0	100
Loans from other banks						
Pre-crisis (02q4-07q2)	0.0	17.6	82.4	0.0	0.0	100
During crisis (07q3-09q4)	0.0	4.0	90.8	5.3	0.0	100
Whole period	0.0	12.6	85.5	1.9	0.0	100
Loans from non-banks						
Pre-crisis (02q4-07q2)	0.0	3.8	96.2	0.0	0.0	100
During crisis (07q3-09q4)	0.0	1.3	98.7	0.0	0.0	100
Whole period	0.0	2.9	97.1	0.0	0.0	100
Issuance of debt securities						
Pre-crisis (02q4-07q2)	0.0	9.2	80.2	10.7	0.0	100
During crisis (07q3-09q4)	0.0	2.6	93.4	4.0	0.0	100
Whole period	0.0	6.8	85.0	8.2	0.0	100
Issuance of equities						
Pre-crisis (02q4-07q2)	0.0	6.1	82.4	11.5	0.0	100
During crisis (07q3-09q4)	0.0	1.3	97.4	1.3	0.0	100
Whole period	0.0	4.4	87.9	7.7	0.0	100

Table A4 - Factors behind changes in credit standards for mortgage loans to households

(frequency of responses as a percentage of the total)

	1="contributed considerably to easing"	2="contributed somewhat to easing"	3="contributed to basically unchanged conditions"	4="contributed somewhat to tightening"	5="contributed considerably to tightening"	Total observations
A) Cost of funds and balance sheet constraints						
Pre-crisis (02q4-07q2)	0.0	0.8	98.5	0.8	0.0	100
During crisis (07q3-09q4)	0.0	1.3	85.5	13.2	0.0	100
Whole period	0.0	1.0	93.7	5.3	0.0	100
B) Pressure from competition						
Competition from other banks						
Pre-crisis (02q4-07q2)	0.0	11.5	88.6	0.0	0.0	100
During crisis (07q3-09q4)	0.0	10.5	89.5	0.0	0.0	100
Whole period	0.0	11.1	88.9	0.0	0.0	100
Competition from non-banks						
Pre-crisis (02q4-07q2)	0.0	3.1	96.9	0.0	0.0	100
During crisis (07q3-09q4)	0.0	4.0	96.0	0.0	0.0	100
Whole period	0.0	3.4	96.6	0.0	0.0	100
C) Perception of risk						
Expectations regarding general economic activity						
Pre-crisis (02q4-07q2)	0.0	1.5	90.1	8.4	0.0	100
During crisis (07q3-09q4)	0.0	1.3	63.2	32.9	2.6	100
Whole period	0.0	1.5	80.2	17.4	1.0	100
Housing market prospects						
Pre-crisis (02q4-07q2)	0.0	4.6	92.4	3.1	0.0	100
During crisis (07q3-09q4)	0.0	1.3	67.1	29.0	2.6	100
Whole period	0.0	3.4	83.1	12.6	1.0	100

Table A5 - Conditions and terms for approving mortgage loans to households

(frequency of responses as a percentage of the total)

	1="contributed considerably to easing"	2="contributed somewhat to easing"	3="contributed to basically unchanged conditions"	4="contributed somewhat to tightening"	5="contributed considerably to tightening"	Total observations
A) Cost of funds and balance sheet constraints						
Pre-crisis (02q4-07q2)	0.0	0.8	98.5	0.8	0.0	100
During crisis (07q3-09q4)	0.0	1.3	85.5	13.2	0.0	100
Whole period	0.0	1.0	93.7	5.3	0.0	100
B) Pressure from competition						
Competition from other banks						
Pre-crisis (02q4-07q2)	0.0	11.5	88.6	0.0	0.0	100
During crisis (07q3-09q4)	0.0	10.5	89.5	0.0	0.0	100
Whole period	0.0	11.1	88.9	0.0	0.0	100
Competition from non-banks						
Pre-crisis (02q4-07q2)	0.0	3.1	96.9	0.0	0.0	100
During crisis (07q3-09q4)	0.0	4.0	96.0	0.0	0.0	100
Whole period	0.0	3.4	96.6	0.0	0.0	100
C) Perception of risk						
Expectations regarding general economic activity						
Pre-crisis (02q4-07q2)	0.0	1.5	90.1	8.4	0.0	100
During crisis (07q3-09q4)	0.0	1.3	63.2	32.9	2.6	100
Whole period	0.0	1.5	80.2	17.4	1.0	100
Housing market prospects						
Pre-crisis (02q4-07q2)	0.0	4.6	92.4	3.1	0.0	100
During crisis (07q3-09q4)	0.0	1.3	67.1	29.0	2.6	100
Whole period	0.0	3.4	83.1	12.6	1.0	100

Table A6 - Factors behind the change in mortgage loan demand by households

(frequency of responses as a percentage of the total)

	1="contributed considerably to lower demand"	2="contributed somewhat to lower demand"	3="contributed to basically unchanged conditions"	4="contributed somewhat to higher demand"	5="contributed considerably to higher demand"	Total observations
A) Financing needs						
Housing market prospects						
Pre-crisis (02q4-07q2)	0.0	7.6	66.4	24.4	1.5	100
During crisis (07q3-09q4)	4.0	36.8	54.0	5.3	0.0	100
Whole period	1.5	18.4	61.8	17.4	1.0	100
Consumer confidence						
Pre-crisis (02q4-07q2)	0.0	6.1	83.2	10.7	0.0	100
During crisis (07q3-09q4)	4.0	32.9	59.2	4.0	0.0	100
Whole period	1.5	15.9	74.4	8.2	0.0	100
Non-housing related consumption expenditure						
Pre-crisis (02q4-07q2)	0.0	6.9	88.6	3.8	0.8	100
During crisis (07q3-09q4)	0.0	17.1	77.6	5.3	0.0	100
Whole period	0.0	10.6	84.5	4.4	0.5	100
B) Use of alternative finance						
Household savings						
Pre-crisis (02q4-07q2)	0.0	0.8	77.1	22.1	0.0	100
During crisis (07q3-09q4)	0.0	9.2	80.3	10.5	0.0	100
Whole period	0.0	3.9	78.3	17.9	0.0	100
Loans from other banks						
Pre-crisis (02q4-07q2)	0.0	1.5	94.7	3.8	0.0	100
During crisis (07q3-09q4)	0.0	0.0	96.0	4.0	0.0	100
Whole period	0.0	1.0	95.2	3.9	0.0	100
Other sources of finance						
Pre-crisis (02q4-07q2)	0.0	0.0	95.3	4.7	0.0	100
During crisis (07q3-09q4)	0.0	0.0	97.4	2.6	0.0	100
Whole period	0.0	0.0	96.1	3.9	0.0	100

RECENTLY PUBLISHED "TEMI" (*)

N. 737 – *The pro-competitive effect of imports from China: an analysis of firm-level price data*, by Matteo Bugamelli, Silvia Fabiani and Enrico Sette (January 2010).

N. 738 – *External trade and monetary policy in a currency area*, by Martina Cecioni (January 2010).

N. 739 – *The use of survey weights in regression analysis*, by Ivan Faiella (January 2010).

N. 740 – *Credit and banking in a DSGE model of the euro area*, by Andrea Gerali, Stefano Neri, Luca Sessa and Federico Maria Signoretti (January 2010).

N. 741 – *Why do (or did?) banks securitize their loans? Evidence from Italy*, by Massimiliano Affinito and Edoardo Tagliaferri (January 2010).

N. 742 – *Outsourcing versus integration at home or abroad*, by Stefano Federico (February 2010).

N. 743 – *The effect of the Uruguay round on the intensive and extensive margins of trade*, by Ines Buono and Guy Lalanne (February 2010).

N. 744 – *Trade, technical progress and the environment: the role of a unilateral green tax on consumption*, by Daniela Marconi (February 2010).

N. 745 – *Too many lawyers? Litigation in Italian civil courts*, by Amanda Carmignani and Silvia Giacomelli (February 2010).

N. 746 – *On vector autoregressive modeling in space and time*, by Valter Di Giacinto (February 2010).

N. 747 – *The macroeconomics of fiscal consolidations in a monetary union: the case of Italy*, by Lorenzo Forni, Andrea Gerali and Massimiliano Pisani (March 2010).

N. 748 – *How does immigration affect native internal mobility? New evidence from Italy*, by Sauro Mocetti and Carmine Porello (March 2010).

N. 749 – *An analysis of the determinants of credit default swap spread changes before and during the subprime financial turmoil*, by Antonio Di Cesare and Giovanni Guazzarotti (March 2010).

N. 750 – *Estimating DSGE models with unknown data persistence*, by Gianluca Moretti and Giulio Nicoletti (March 2010).

N. 751 – *Down the non-linear road from oil to consumer energy prices: no much asymmetry along the way*, by Fabrizio Venditti (March 2010).

N. 752 – *Information technology and banking organization*, by Sauro Mocetti, Marcello Pagnini and Enrico Sette (March 2010).

N. 753 – *The pricing of government-guaranteed bank bonds*, by Aviram Levy and Andrea Zaghini (March 2010).

N. 754 – *Misure di valore aggiunto per le scuole superiori italiane: i problemi esistenti e alcune prime evidenze*, by Piero Cipollone, Pasqualino Montanaro and Paolo Sestito (March 2010).

N. 755 – *Asset-based measurement of poverty*, by Andrea Brandolini, Silvia Magri and Timothy M. Smeeding (March 2010).

N. 756 – *Credit supply, flight to quality and evergreening: an analysis of bank-firm relationships after Lehman*, by Ugo Albertazzi and Domenico J. Marchetti (April 2010).

N. 757 – *A note on rationalizability and restrictions on belief*, by Giuseppe Cappelletti (April 2010).

N. 758 – *A non-parametric model-based approach to uncertainty and risk analysis of macroeconomic forecasts*, by Claudia Miani and Stefano Siviero (April 2010).

(*) Requests for copies should be sent to:
Banca d'Italia – Servizio Studi di struttura economica e finanziaria – Divisione Biblioteca e Archivio storico – Via Nazionale, 91 – 00184 Rome – (fax 0039 06 47922059). They are available on the Internet www.bancaditalia.it.

2007

S. SIVIERO and D. TERLIZZESE, *Macroeconomic forecasting: Debunking a few old wives' tales*, Journal of Business Cycle Measurement and Analysis , v. 3, 3, pp. 287-316, **TD No. 395 (February 2001).**

S. MAGRI, *Italian households' debt: The participation to the debt market and the size of the loan*, Empirical Economics, v. 33, 3, pp. 401-426, **TD No. 454 (October 2002).**

L. CASOLARO. and G. GOBBI, *Information technology and productivity changes in the banking industry*, Economic Notes, Vol. 36, 1, pp. 43-76, **TD No. 489 (March 2004).**

G. FERRERO, *Monetary policy, learning and the speed of convergence*, Journal of Economic Dynamics and Control, v. 31, 9, pp. 3006-3041, **TD No. 499 (June 2004).**

M. PAIELLA, *Does wealth affect consumption? Evidence for Italy*, Journal of Macroeconomics, Vol. 29, 1, pp. 189-205, **TD No. 510 (July 2004).**

F. LIPPI. and S. NERI, *Information variables for monetary policy in a small structural model of the euro area*, Journal of Monetary Economics, Vol. 54, 4, pp. 1256-1270, **TD No. 511 (July 2004).**

A. ANZUINI and A. LEVY, *Monetary policy shocks in the new EU members: A VAR approach*, Applied Economics, Vol. 39, 9, pp. 1147-1161, **TD No. 514 (July 2004).**

D. JR. MARCHETTI and F. Nucci, *Pricing behavior and the response of hours to productivity shocks*, Journal of Money Credit and Banking, v. 39, 7, pp. 1587-1611, **TD No. 524 (December 2004).**

R. BRONZINI, *FDI Inflows, agglomeration and host country firms' size: Evidence from Italy*, Regional Studies, Vol. 41, 7, pp. 963-978, **TD No. 526 (December 2004).**

L. MONTEFORTE, *Aggregation bias in macro models: Does it matter for the euro area?*, Economic Modelling, 24, pp. 236-261, **TD No. 534 (December 2004).**

A. NOBILI, *Assessing the predictive power of financial spreads in the euro area: does parameters instability matter?*, Empirical Economics, Vol. 31, 1, pp. 177-195, **TD No. 544 (February 2005).**

A. DALMAZZO and G. DE BLASIO, *Production and consumption externalities of human capital: An empirical study for Italy*, Journal of Population Economics, Vol. 20, 2, pp. 359-382, **TD No. 554 (June 2005).**

M. BUGAMELLI and R. TEDESCHI, *Le strategie di prezzo delle imprese esportatrici italiane*, Politica Economica, v. 23, 3, pp. 321-350, **TD No. 563 (November 2005).**

L. GAMBACORTA and S. IANNOTTI, *Are there asymmetries in the response of bank interest rates to monetary shocks?*, Applied Economics, v. 39, 19, pp. 2503-2517, **TD No. 566 (November 2005).**

P. ANGELINI and F. LIPPI, *Did prices really soar after the euro cash changeover? Evidence from ATM withdrawals*, International Journal of Central Banking, Vol. 3, 4, pp. 1-22, **TD No. 581 (March 2006).**

A. LOCARNO, *Imperfect knowledge, adaptive learning and the bias against activist monetary policies*, International Journal of Central Banking, v. 3, 3, pp. 47-85, **TD No. 590 (May 2006).**

F. LOTTI and J. MARCUCCI, *Revisiting the empirical evidence on firms' money demand*, Journal of Economics and Business, Vol. 59, 1, pp. 51-73, **TD No. 595 (May 2006).**

P. CIPOLLONE and A. ROSOLIA, *Social interactions in high school: Lessons from an earthquake*, American Economic Review, Vol. 97, 3, pp. 948-965, **TD No. 596 (September 2006).**

L. DEDOLA and S. NERI, *What does a technology shock do? A VAR analysis with model-based sign restrictions*, Journal of Monetary Economics, Vol. 54, 2, pp. 512-549, **TD No. 607 (December 2006).**

F. VERGARA CAFFARELLI, *Merge and compete: strategic incentives for vertical integration*, Rivista di politica economica, v. 97, 9-10, serie 3, pp. 203-243, **TD No. 608 (December 2006).**

A. BRANDOLINI, *Measurement of income distribution in supranational entities: The case of the European Union*, in S. P. Jenkins e J. Micklewright (eds.), Inequality and Poverty Re-examined, Oxford, Oxford University Press, **TD No. 623 (April 2007).**

M. PAIELLA, *The foregone gains of incomplete portfolios*, Review of Financial Studies, Vol. 20, 5, pp. 1623-1646, **TD No. 625 (April 2007).**

K. BEHRENS, A. R. LAMORGESE, G.I.P. OTTAVIANO and T. TABUCHI, *Changes in transport and non transport costs: local vs. global impacts in a spatial network*, Regional Science and Urban Economics, Vol. 37, 6, pp. 625-648, **TD No. 628 (April 2007).**

M. BUGAMELLI, *Prezzi delle esportazioni, qualità dei prodotti e caratteristiche di impresa: analisi su un campione di imprese italiane*, v. 34, 3, pp. 71-103, Economia e Politica Industriale, **TD No. 634 (June 2007).**

G. ASCARI and T. ROPELE, *Optimal monetary policy under low trend inflation*, Journal of Monetary Economics, v. 54, 8, pp. 2568-2583, **TD No. 647 (November 2007).**

R. GIORDANO, S. MOMIGLIANO, S. NERI and R. PEROTTI, *The Effects of Fiscal Policy in Italy: Evidence from a VAR Model*, European Journal of Political Economy, Vol. 23, 3, pp. 707-733, **TD No. 656 (January 2008).**

B. ROFFIA and A. ZAGHINI, *Excess money growth and inflation dynamics*, International Finance, v. 10, 3, pp. 241-280, **TD No. 657 (January 2008).**

G. BARBIERI, P. CIPOLLONE and P. SESTITO, *Labour market for teachers: demographic characteristics and allocative mechanisms*, Giornale degli economisti e annali di economia, v. 66, 3, pp. 335-373, **TD No. 672 (June 2008).**

E. BREDA, R. CAPPARIELLO and R. ZIZZA, *Vertical specialisation in Europe: evidence from the import content of exports*, Rivista di politica economica, v. 97, 3, pp. 189, **TD No. 682 (August 2008).**

2008

P. ANGELINI, *Liquidity and announcement effects in the euro area*, Giornale degli Economisti e Annali di Economia, v. 67, 1, pp. 1-20, **TD No. 451 (October 2002).**

P. ANGELINI, P. DEL GIOVANE, S. SIVIERO and D. TERLIZZESE, *Monetary policy in a monetary union: What role for regional information?*, International Journal of Central Banking, v. 4, 3, pp. 1-28, **TD No. 457 (December 2002).**

F. SCHIVARDI and R. TORRINI, *Identifying the effects of firing restrictions through size-contingent Differences in regulation*, Labour Economics, v. 15, 3, pp. 482-511, **TD No. 504 (June 2004).**

L. GUISO and M. PAIELLA,, *Risk aversion, wealth and background risk*, Journal of the European Economic Association, v. 6, 6, pp. 1109-1150, **TD No. 483 (September 2003).**

C. BIANCOTTI, G. D'ALESSIO and A. NERI, *Measurement errors in the Bank of Italy's survey of household income and wealth*, Review of Income and Wealth, v. 54, 3, pp. 466-493, **TD No. 520 (October 2004).**

S. MOMIGLIANO, J. HENRY and P. HERNÁNDEZ DE COS, *The impact of government budget on prices: Evidence from macroeconometric models*, Journal of Policy Modelling, v. 30, 1, pp. 123-143 **TD No. 523 (October 2004).**

L. GAMBACORTA, *How do banks set interest rates?*, European Economic Review, v. 52, 5, pp. 792-819, **TD No. 542 (February 2005).**

P. ANGELINI and A. GENERALE, *On the evolution of firm size distributions*, American Economic Review, v. 98, 1, pp. 426-438, **TD No. 549 (June 2005).**

R. FELICI and M. PAGNINI, *Distance, bank heterogeneity and entry in local banking markets*, The Journal of Industrial Economics, v. 56, 3, pp. 500-534, **No. 557 (June 2005).**

S. DI ADDARIO and E. PATACCHINI, *Wages and the city. Evidence from Italy*, Labour Economics, v.15, 5, pp. 1040-1061, **TD No. 570 (January 2006).**

S. SCALIA, *Is foreign exchange intervention effective?*, Journal of International Money and Finance, v. 27, 4, pp. 529-546, **TD No. 579 (February 2006).**

M. PERICOLI and M. TABOGA, *Canonical term-structure models with observable factors and the dynamics of bond risk premia*, Journal of Money, Credit and Banking, v. 40, 7, pp. 1471-88, **TD No. 580 (February 2006).**

E. VIVIANO, *Entry regulations and labour market outcomes. Evidence from the Italian retail trade sector*, Labour Economics, v. 15, 6, pp. 1200-1222, **TD No. 594 (May 2006).**

S. FEDERICO and G. A. MINERVA, *Outward FDI and local employment growth in Italy*, Review of World Economics, Journal of Money, Credit and Banking, v. 144, 2, pp. 295-324, **TD No. 613 (February 2007).**

F. BUSETTI and A. HARVEY, *Testing for trend*, Econometric Theory, v. 24, 1, pp. 72-87, **TD No. 614 (February 2007).**

V. CESTARI, P. DEL GIOVANE and C. ROSSI-ARNAUD, *Memory for prices and the Euro cash changeover: an analysis for cinema prices in Italy*, In P. Del Giovane e R. Sabbatini (eds.), The Euro Inflation and Consumers' Perceptions. Lessons from Italy, Berlin-Heidelberg, Springer, **TD No. 619 (February 2007).**

B. H. HALL, F. LOTTI and J. MAIRESSE, *Employment, innovation and productivity: evidence from Italian manufacturing microdata*, Industrial and Corporate Change, v. 17, 4, pp. 813-839, **TD No. 622 (April 2007).**

J. SOUSA and A. ZAGHINI, *Monetary policy shocks in the Euro Area and global liquidity spillovers*, International Journal of Finance and Economics, v.13, 3, pp. 205-218, **TD No. 629 (June 2007).**

M. DEL GATTO, GIANMARCO I. P. OTTAVIANO and M. PAGNINI, *Openness to trade and industry cost dispersion: Evidence from a panel of Italian firms*, Journal of Regional Science, v. 48, 1, pp. 97-129, **TD No. 635 (June 2007).**

P. DEL GIOVANE, S. FABIANI and R. SABBATINI, *What's behind "inflation perceptions"? A survey-based analysis of Italian consumers*, in P. Del Giovane e R. Sabbatini (eds.), *The Euro Inflation and Consumers' Perceptions. Lessons from Italy*, Berlin-Heidelberg, Springer, **TD No. 655 (January 2008).**

R. BRONZINI, G. DE BLASIO, G. PELLEGRINI and A. SCOGNAMIGLIO, *La valutazione del credito d'imposta per gli investimenti*, Rivista di politica economica, v. 98, 4, pp. 79-112, **TD No. 661 (April 2008).**

B. BORTOLOTTI, and P. PINOTTI, *Delayed privatization*, Public Choice, v. 136, 3-4, pp. 331-351, **TD No. 663 (April 2008).**

R. BONCI and F. COLUMBA, *Monetary policy effects: New evidence from the Italian flow of funds*, Applied Economics , v. 40, 21, pp. 2803-2818, **TD No. 678 (June 2008).**

M. CUCCULELLI, and G. MICUCCI, *Family Succession and firm performance: evidence from Italian family firms*, Journal of Corporate Finance, v. 14, 1, pp. 17-31, **TD No. 680 (June 2008).**

A. SILVESTRINI and D. VEREDAS, *Temporal aggregation of univariate and multivariate time series models: a survey*, Journal of Economic Surveys, v. 22, 3, pp. 458-497, **TD No. 685 (August 2008).**

2009

F. PANETTA, F. SCHIVARDI and M. SHUM, *Do mergers improve information? Evidence from the loan market*, Journal of Money, Credit, and Banking, v. 41, 4, pp. 673-709, **TD No. 521 (October 2004).**

M. BUGAMELLI and F. PATERNÒ, *Do workers' remittances reduce the probability of current account reversals?*, World Development, v. 37, 12, pp. 1821-1838, **TD No. 573 (January 2006).**

P. PAGANO and M. PISANI, *Risk-adjusted forecasts of oil prices*, The B.E. Journal of Macroeconomics, v. 9, 1, Article 24, **TD No. 585 (March 2006).**

M. PERICOLI and M. SBRACIA, *The CAPM and the risk appetite index: theoretical differences, empirical similarities, and implementation problems*, International Finance, v. 12, 2, pp. 123-150, **TD No. 586 (March 2006).**

U. ALBERTAZZI and L. GAMBACORTA, *Bank profitability and the business cycle*, Journal of Financial Stability, v. 5, 4, pp. 393-409, **TD No. 601 (September 2006).**

S. MAGRI, *The financing of small innovative firms: the Italian case*, Economics of Innovation and New Technology, v. 18, 2, pp. 181-204, **TD No. 640 (September 2007).**

S. MAGRI, *The financing of small entrepreneurs in Italy*, Annals of Finance, v. 5, 3-4, pp. 397-419, **TD No. 640 (September 2007).**

V. DI GIACINTO and G. MICUCCI, *The producer service sector in Italy: long-term growth and its local determinants*, Spatial Economic Analysis, Vol. 4, No. 4, pp. 391-425, **TD No. 643 (September 2007).**

F. LORENZO, L. MONTEFORTE and L. SESSA, *The general equilibrium effects of fiscal policy: estimates for the euro area*, Journal of Public Economics, v. 93, 3-4, pp. 559-585, **TD No. 652 (November 2007).**

R. GOLINELLI and S. MOMIGLIANO, *The Cyclical Reaction of Fiscal Policies in the Euro Area. A Critical Survey of Empirical Research*, Fiscal Studies, v. 30, 1, pp. 39-72, **TD No. 654 (January 2008).**

P. DEL GIOVANE, S. FABIANI and R. SABBATINI, *What's behind "Inflation Perceptions"? A survey-based analysis of Italian consumers*, Giornale degli Economisti e Annali di Economia, v. 68, 1, pp. 25-52, **TD No. 655 (January 2008).**

F. MACCHERONI, M. MARINACCI, A. RUSTICHINI and M. TABOGA, *Portfolio selection with monotone mean-variance preferences*, Mathematical Finance, v. 19, 3, pp. 487-521, **TD No. 664 (April 2008).**

M. AFFINITO and M. PIAZZA, *What are borders made of? An analysis of barriers to European banking integration*, in P. Alessandrini, M. Fratianni and A. Zazzaro (eds.): The Changing Geography of Banking and Finance, Dordrecht Heidelberg London New York, Springer, **TD No. 666 (April 2008).**

G. FERRERO and A. NOBILI, *Futures contract rates as monetary policy forecasts*, International Journal of Central Banking, v. 5, 2, pp. 109-145, **TD No. 681 (June 2008).**

L. ARCIERO, C. BIANCOTTI, L. D'AURIZIO and C. IMPENNA, *Exploring agent-based methods for the analysis of payment systems: A crisis model for StarLogo TNG*, Journal of Artificial Societies and Social Simulation, v. 12, 1, **TD No. 686 (August 2008).**

A. CALZA and A. ZAGHINI, *Nonlinearities in the dynamics of the euro area demand for M1*, Macroeconomic Dynamics, v. 13, 1, pp. 1-19, **TD No. 690 (September 2008).**

L. FRANCESCO and A. SECCHI, *Technological change and the households' demand for currency*, Journal of Monetary Economics, v. 56, 2, pp. 222-230, **TD No. 697 (December 2008).**

G. ASCARI and T. ROPELE, *Trend inflation, taylor principle, and indeterminacy*, Journal of Money, Credit and Banking, v. 41, 8, pp. 1557-1584, **TD No. 708 (May 2007).**

S. COLAROSSI and A. ZAGHINI, *Gradualism, transparency and the improved operational framework: a look at overnight volatility transmission*, International Finance, v. 12, 2, pp. 151-170, **TD No. 710 (May 2009).**

M. BUGAMELLI, F. SCHIVARDI and R. ZIZZA, *The euro and firm restructuring*, in A. Alesina e F. Giavazzi (eds): Europe and the Euro, Chicago, University of Chicago Press, **TD No. 716 (June 2009).**

B. HALL, F. LOTTI and J. MAIRESSE, *Innovation and productivity in SMEs: empirical evidence for Italy*, Small Business Economics, v. 33, 1, pp. 13-33, **TD No. 718 (June 2009).**

2010

S. MAGRI, *Debt maturity choice of nonpublic Italian firms* , Journal of Money, Credit, and Banking, v.42, 2-3, pp. 443-463, **TD No. 574 (January 2006).**

S. NERI and A. NOBILI, *The transmission of US monetary policy to the euro area*, International Finance, v. 13, 1, pp. 55-78, **TD No. 606 (December 2006).**

M. IACOVIELLO and S. NERI, *Housing market spillovers: evidence from an estimated DSGE model*, American Economic Journal: Macroeconomics, v. 2, 2, pp. 125-164, **TD No. 659 (January 2008).**

A. B. ATKINSON and A. BRANDOLINI, *On analysing the world distribution of income*, World Bank Economic Review , v. 24, 1 , pp. 1-37, **TD No. 701 (January 2009).**

A. BRANDOLINI, S. MAGRI and T. M SMEEDING, *Asset-based measurement of poverty*, Journal of Policy Analysis and Management, v. 29, 2 , pp. 267-284, **TD No. 755 (March 2010).**

FORTHCOMING

L. MONTEFORTE and S. SIVIERO, *The Economic Consequences of Euro Area Modelling Shortcuts*, Applied Economics, **TD No. 458 (December 2002).**

M. BUGAMELLI and A. ROSOLIA, *Produttività e concorrenza estera*, Rivista di politica economica, **TD No. 578 (February 2006).**

G. DE BLASIO and G. NUZZO, *Historical traditions of civicness and local economic development*, Journal of Regional Science, **TD No. 591 (May 2006).**

R. BRONZINI and P. PISELLI, *Determinants of long-run regional productivity with geographical spillovers: the role of R&D, human capital and public infrastructure*, Regional Science and Urban Economics, **TD No. 597 (September 2006).**

E. IOSSA and G. PALUMBO, *Over-optimism and lender liability in the consumer credit market*, Oxford Economic Papers, **TD No. 598 (September 2006).**

G. FERRERO, A. NOBILI and P. PASSIGLIA, *Assessing Excess Liquidity in the Euro Area: The Role of Sectoral Distribution of Money*, Applied Economics, **TD No. 627 (April 2007).**

A. CIARLONE, P. PISELLI and G. TREBESCHI, *Emerging Markets' Spreads and Global Financial Conditions,* Journal of International Financial Markets, Institutions & Money, **TD No. 637 (June 2007).**

Y. ALTUNBAS, L. GAMBACORTA and D. MARQUÉS, *Securitisation and the bank lending channel*, European Economic Review, **TD No. 653 (November 2007).**

F. BALASSONE, F. MAURA and S. ZOTTERI, *Cyclical asymmetry in fiscal variables in the EU*, Empirica, **TD No. 671 (June 2008).**

M. BUGAMELLI and F. PATERNÒ, *Output growth volatility and remittances,* Economica, **TD No. 673 (June 2008).**

F. D'AMURI, O. GIANMARCO I.P. and P. GIOVANNI, *The labor market impact of immigration on the western german labor market in the 1990s,* European Economic Review, **TD No. 687 (August 2008).**

A. ACCETTURO, *Agglomeration and growth: the effects of commuting costs,* Papers in Regional Science, **TD No. 688 (September 2008).**

L. FORNI, A. GERALI and M. PISANI, *Macroeconomic effects of greater competition in the service sector: the case of Italy,* Macroeconomic Dynamics, **TD No. 706 (March 2009).**

Y. ALTUNBAS, L. GAMBACORTA, and D. MARQUÉS-IBÁÑEZ, *Bank risk and monetary policy,* Journal of Financial Stability, **TD No. 712 (May 2009).**

V. DI GIACINTO, G. MICUCCI and P. MONTANARO, *Dynamic macroeconomic effects of public capital: evidence from regional Italian data,* Giornale degli economisti e annali di economia, **TD No. 733 (November 2009).**

F. COLUMBA, L. GAMBACORTA and P. E. MISTRULLI, *Mutual Guarantee institutions and small business finance,* Journal of Financial Stability, **TD No. 735 (November 2009).**

A. GERALI, S. NERI, L. SESSA and F. M. SIGNORETTI, *Credit and banking in a DSGE model of the Euro Area,* Journal of Money, Credit and Banking, **TD No. 740 (January 2010).**

L. FORNI, A. GERALI and M. PISANI, *The macroeconomics of fiscal consolidations in euro area countries,* Journal of Economic Dynamics and Control, **TD No. 747 (March 2010).**