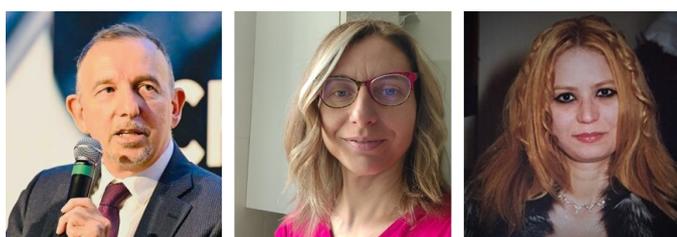


## Bank lending to small firms: metamorphosis of a financing model\*



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*Keywords: bank lending channel, credit constraints, SME financing, bank risk-taking*

*JEL codes: G21, G32, G3*

*The paper on which this note is based analyses the Italian credit market before and after the 2008-2013 double-dip recession to assess the role of the banking channel in the reduction of loans to small businesses in the first years of the recovery (2014-2017). The econometric analysis estimates the changes in loan supply distinctly for micro, small, medium-sized and large companies, identifying different shocks for different types of customers borrowing from the same bank.*

*The results show that after the double-dip recession, banks have become more selective in granting loans to firms in all size categories except for the large one. Tighter credit standards for micro-enterprises have been applied mainly by larger banks and those with weaker balance sheets. These intermediaries may have encountered greater difficulties in providing financing to more opaque firms and with high fixed costs in relation to a low volume of operations.*

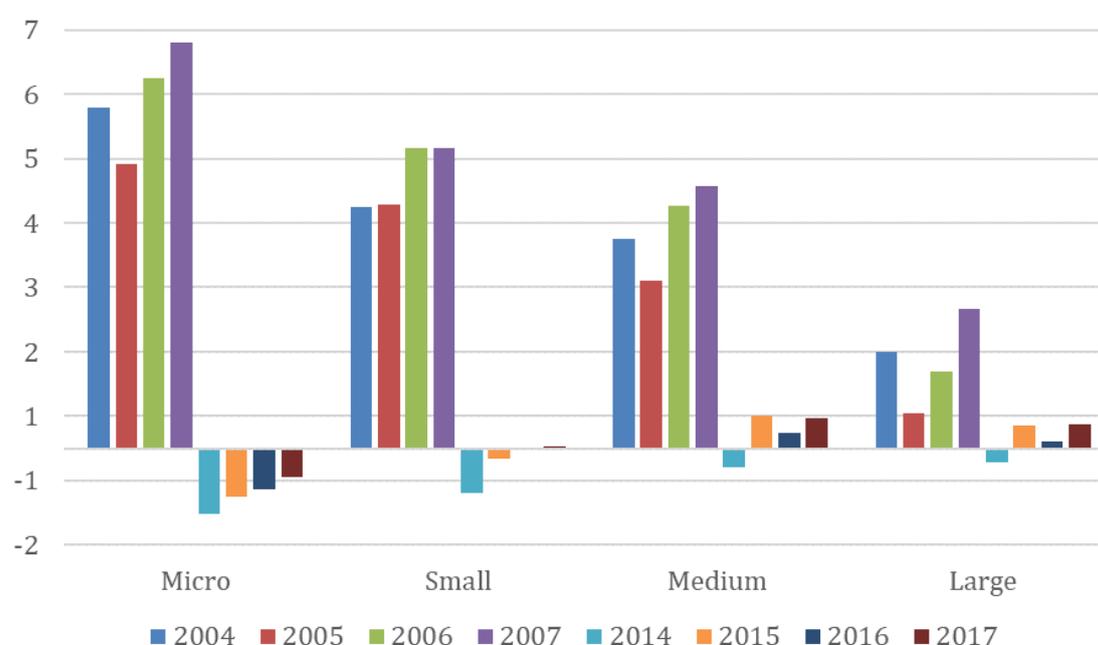
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\*Authors' note: The opinions expressed in this column are our own and not necessarily those of Banca d'Italia or the Eurosystem.

Since the burst of the global financial crisis in 2008, close linkages between recessions and vulnerabilities in the financial sector led to severe credit market disruption. Banking systems in many countries faced a sequence of shocks, not least liquidity strains and tensions in government bond markets, coupled with significant developments in regulation and supervision. These events triggered relevant changes in their activity; notably on the lending side, a sharp increase in risk aversion resulted in a stiffening of credit standards and a drop in business loans (Ivashina and Scharfstein, 2010; Bassett et al., 2014; Acharya et al., 2018; Cole, 2018). Small and medium enterprises (SMEs) bore the brunt of credit constraints (OECD, 2019), and evidence pointing at a major impact on their activity is widespread (Chodorow-Reich, 2014; Siemer, 2019; Chen et al., 2017; Bord et al., 2021), adversely affecting the pace of recovery.

In Italy the economic recovery following the double-dip recession, which was triggered by the global financial crisis and was fuelled by the euro-area sovereign debt crisis (hereinafter referred to as the great recession), was accompanied by a very weak growth in bank credit that differed greatly according to firm size (figure 1).<sup>1</sup>

**Figure 1: Loan growth to non-financial corporations by firm size  
(as a percentage of firms' total assets)**



Source: calculations based on Bank of Italy and Cerved data.

<sup>1</sup>In accordance with Commission Recommendation 2003/361/EC, SMEs employ fewer than 250 persons and have either an annual turnover or annual balance sheet total not exceeding EUR 50 million and EUR 43 million respectively. In particular, micro-firms and small businesses employ, respectively, fewer than 10 and 50 persons and have either an annual turnover or annual balance sheet total not exceeding EUR 2 and EUR 10 million. In our sample, their weight in terms of granted loans during the period 2014-2017 was 21 per cent for micro-firms, 20 for small ones, 22 for medium-sized ones and 37 for large companies.

Our paper (Finaldi, Nigro, and Pastorelli, 2022) investigates the changes in credit supply to firms occurred in Italy between pre- and post-crisis periods (2004-07 and 2014-17), with a particular focus on the heterogeneous impact of supply shocks within SMEs. In fact, this group of firms is usually treated as a single category, whereas we disentangle very different patterns for micro, small and medium-sized firms. Based on a large matched bank-firm dataset,<sup>2</sup> we analyse: (i) whether and to what extent idiosyncratic bank supply shocks differ before and after the great recession, (ii) whether they have a different impact across firm size, and (iii) whether these effects can be linked to banks' characteristics and balance sheet conditions.

## Challenges for the identification of the model

The identification of supply shocks implies a number of methodological challenges, not least the need to disentangle demand and supply effects on credit developments without relying on a one-off exogenous event given the broad time span analysed. In addition, it is deemed necessary to take into account very small business, which generally borrow from one bank and are therefore mechanically excluded from studies that use multiple bank relationships to identify credit supply shocks. This is a crucial point, as our sample includes about half of micro-firms with just one bank relationship (compared to less than 15 per cent for larger companies), which makes them more exposed to credit supply shocks (Ongena and Smith, 2000). Since micro-firms have other unique characteristics, such as lower profitability and higher risk, we need to break down the analysis of SMEs, taking into due account the differences between micro, small and medium-sized enterprises.

To address these challenges, we borrow from the model proposed by Degryse et al. (2019), which regresses bank-firm credit growth on a set of bank-time dummies, given 'firm cluster-time' dummies as control for credit demand. Firm cluster-time dummies are defined by the interaction terms 'industry-province-size-time', which allow to include single-lender companies in the estimates, in contrast to the alternative approach based on firm-time dummies. We add to this model a twist to the bank-time dummies in a way that the latter can also vary across firm size; this change relaxes the standard assumption of homogeneous supply shocks among borrowers from the same bank and allows us to feature different types of companies among SMEs. Moreover, differently from Degryse et al. (2019), we add a number of firms' observables to better control for credit demand and credit-worthiness.

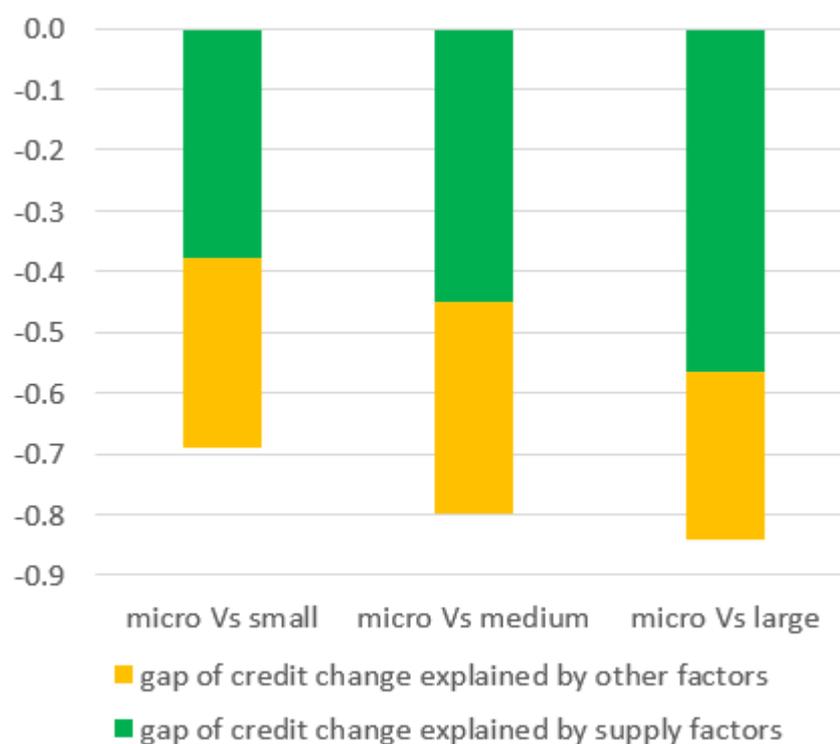
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<sup>2</sup>The analysis is based on around 730,000 matched bank-firm data per year referred to 255,000 non-financial Italian limited companies and over 800 financial intermediaries (of which near 500 banks accounting for nearly 90 per cent of total credit). For the sake of simplicity in the following we use the term 'bank' to indicate a financial intermediary, either bank or other financial companies. Outstanding loan amounts are drawn from the Italian Central Credit Register, which is managed by the Bank of Italy; annual non-financial firms' balance sheet and income statement data are taken from the Cerved database; Bank of Italy's supervisory reports are also used to include information on banks' annual balance sheets and income statements at the individual level.

## Results on the bank propensity to lend to non-financial companies

Our main results show that bank propensity to lend to firms has considerably deteriorated during the 2014-2017 Italian recovery for all size classes with the exception of large companies. In particular, credit supply has declined mainly for micro-enterprises, whereas before the crisis it did not differ significantly across firms. We estimate that after the great recession, supply factors explain more than two thirds of the difference in credit change to micro-enterprises compared to large companies and more than half with respect to small and medium-sized ones (figure 2). Importantly, this 'supply gap' against the micro-firms is persistently negative and significant over all four years of the recovery period. These findings are robust to different measures for loan demand and to specific controls for firm's riskiness, identified by ex-ante balance sheet credit score.

**Figure 2: Gap in changes in lending between micro-businesses and other firms (years 2014-2017)**



*Source:* calculations based on Bank of Italy and Cerved data.

*Notes:* percentage points; average differences in changes in loans granted between micro-businesses and other firms (small, medium and large). The changes in loans are normalised by the firms' total assets; the supply component is estimated using the model proposed in Finaldi, Nigro, and Pastorelli (2022).

We round out the analysis by highlighting the correlation between credit supply shocks estimated for the different size classes and specific bank features during the recovery period 2014-2017, via a linear regression model. Our findings show that negative credit supply shocks to micro-firms are especially large for banks that experienced higher recapitalisation needs during the crisis (measured by the change in the Tier 1 ratio between 2007 and 2013) and for those with lower profitability. Our model also suggests which type of banks may have diversified more their credit policies according to firm size. We find that the difference in credit supply shocks between micro-enterprises and other firms is positively correlated with bank size, increases both in the ratio of non-performing loans to outstanding loans and in the Tier 1 ratio, and lower access to interbank funding.

## Policy implications

Our results point to structural changes in bank lending policies after the great recession, with a significant supply shift towards large firms. On the one hand, lending to small and micro-enterprises may imply higher costs, due to the opaqueness to external investors and the fixed costs of banks' screening processes; in a persistent low interest rate environment, some banks may not have been able to adjust their cost structure and activity – also by resorting to new technologies – to offset the adverse effects of low rates on profitability and capital, ending up cutting more costly loans of small amount. Amidst increasing profitability concerns, intermediaries with less solid balance sheets conditions may have become less prone to finance in particular micro-companies. On the other hand, micro-firm opaqueness and the uncertainty surrounding the estimated levels of their default probability may have induced more risk averse banks to be cautious, *ceteris paribus*, to extend credit to these companies.

The study bears relevant policy implications. As micro-firms are more exposed to the effects of exogenous shocks affecting the banking system, credit allocation could benefit from the reduction of information asymmetries. In this direction, public intervention could aim at stimulating micro-firms' transparency, standardising information delivered to market participants and promoting financial education for less alphabetised enterprises. The effects of such policies would potentially be well-suited for countries like Italy, characterised by the high fragmentation of the business landscape in small production units. To address these concerns, reforms aimed at creating more favorable conditions for growth are needed. ■

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