Did the crisis induce credit rationing for French SMEs?

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A B S T R A C T

This paper focuses on the access of independent French SMEs to bank lending and analyzes whether the observed evolution of credit to SMEs over the recent period was "demand driven" as a result of the decrease in firms' activity and investment projects or was "supply driven" with an increase in credit "rationing" stemming from a more cautious behavior of banks. Based on a sample of around 60,000 SMEs, we come to the conclusion that, despite the stronger standards used by banks when granting credit, French SMEs do not appear to have been strongly affected by credit rationing since 2008. This result goes against the common view that SMEs suffered from a strong credit restriction during the crisis but is perfectly in line with the results of several surveys about the access to finance of SMEs recently conducted in France.

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1. Introduction

In December 2010, in France, the total outstanding stock of credit to nonfinancial businesses amounted to 810 billion Euros, 1.6% more than it was just one year before. This evolution is to be compared with that observed the year before (−1.1% in 2009) after a quite long period during which the outstanding amount of credit increased by more than 10% per year (see Fig. 1). The decrease in the distribution of credit in 2009 was stronger for short term credit, with a year-to-year decrease as high as 18% in August 2009. However, one must keep in mind that short term credit accounts for only around 10% of the total outstanding stock of credit to nonfinancial businesses (Observatoire des entreprises, 2011). There is a debate about the factors underlying this evolution of the distribution of credit to nonfinancial firms in the recent period. This evolution can be explained by a restricted access to credit, banks being more selective in their credit granting, taking into account the increased risk they had to face. But it may also be explained by worse prospects for firms as a result of the crisis: investment and cash flow decreased. Thus firms claimed that banks became more restrictive while banks argue that this evolution of bank lending was essentially demand driven.

In this paper, we precisely aim to assess whether the observed evolution of loans to French SMEs was driven by banks' loan supply or by firms' demand. For that purpose, we estimate a disequilibrium model on a sample of 60,000 firms observed over the years 2000–2010. Our supply and demand model specification essentially follows the models previously estimated by Ogawa and Suzuki (2000), Atanasova and Wilson (2004), Shikimi (2005), and more recently, by Carbo-Valverde et al. (2009). However, we add to this literature by paying a special attention to the consequences of the existence of firms with no loan. Indeed, no interest rate is observed in this case so that a demand function including a firm-specific interest rate cannot be estimated for these firms. To tackle this problem, Ogawa and Suzuki (2000) and Atanasova and Wilson (2004) have considered that the impact of interest rates on loan demand can be accounted for by year dummies.[1] Shikimi (2005) and Carbo-Valverde et al. (2009) adopted a different approach: they explicitly included a firm-specific interest rate in their model and thus restricted their estimation sample to firms with loans. However, one cannot rule out that firms that obtained a loan are not necessarily representative of the whole universe of firms. In this paper, we address this potential sample selection problem by explicitly taking this selection process into account in our estimation procedure. Two main conclusions can be drawn from our estimates. First, even during the financial crisis, credit rationing remained quite limited for

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[1] Although we could not find in those papers any explicit indication about whether firms with zero loan were kept in the sample used for estimation.
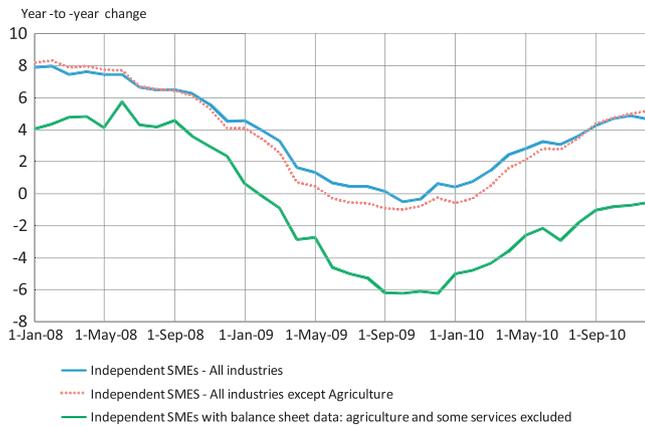
Year -to -year change

Fig. 1. Bank loans to SMEs growth rate between 2008 and 2010. (*Source*: Banque de France FIBEN, Credit Register database.2.)

French SMEs. Even though banks decreased their loan supply by adopting more restrictive lending standards, especially regarding weaker firms, firms' demand for new loans decreased even more strongly due to the deterioration of the economic environment. This result is in line with the low rationing estimates obtained from surveys that have been implemented recently about firms' access to finance (e.g. the ECB SAFE survey, 2009, 2010a, 2010b, 2011). Second, allowing for the endogenous selection of firms does have an impact on the estimation results: the magnitude of most parameters in the model increase quite significantly. In particular, the estimated elasticity of demand to the interest rate strongly increases when selection is taken into account. These estimates changes lead to an increase in the estimated extent of credit rationing, which however remains at a low level.

In the next section, we present our model and the econometric procedure and state how they relate to the existing literature. Our data are presented in Section 3. Section 4 is devoted to the presentation and discussion of our econometric results and Section 5 to our estimates of credit rationing. Finally, we assess the consequences of accounting or not for the likely endogenous selection of the sample in Section 6. Section 7 concludes.

2. Modelling and estimating the extent of credit rationing

While the consequences of financial constraints on firms' real decisions regarding e.g. their physical investments or their engagement into R&D activities have been widely studied in the literature (e.g. see Fazzari et al., 1988; Kaplan and Zingales, 1997; Bond et al., 2010; Hall and Lerner, 2010, among many others), the empirical literature about the microeconomic assessment of these financial constraints and in particular of a possible firms' credit rationing is quite sparse. Ogawa and Suzuki (2000), Atanasova and Wilson (2004), Shikimi (2005), and more recently Carbo-Valverde et al. (2009) as well as Rottmann and Wollmershäuser (2010) are among the few papers that aimed at assessing the existence of a possible credit rationing at the microeconomic level.[2] Except for the last paper, these papers borrow from the disequilibrium literature that initially grew up in the 1980s for assessing the possible existence of credit rationing at the macroeconomic level (e.g. see Laffont and Garcia, 1977).

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[2] Two other recent studies by Steijvers (2008) and Alexandre and Buisson (2010) are also available. However, the econometric methodology on which they rely is inappropriate because they estimate the demand and supply functions assuming the market to be in equilibrium, i.e. as if the observed quantity was always equal to both the demand and supply of loans. Their results are then questionable.

2.1. The demand and supply functions

Basically, a disequilibrium model is made of three equations (e.g. see Laffont and Garcia, 1977):

(1) a demand equation for new loans (NL_d^*):

$$NL_d^* = f_d(X_d b_d;\ u_d)$$

(2) a supply equation for new loans (NL_s^*), sometimes denominated as a "credit ceiling" equation:

$$NL_s^* = f_s(X_s b_s;\ u_s)$$

where X_d (resp. X_s) represent the explanatory factors of the demand for (resp. supply of) loans, b_d and b_s their coefficients and u_d and u_s the unobserved factors that may respectively affect the demand and supply of loans, which may be correlated with each other.

(3) an equation linking the observed quantity of loans to the unobserved supply and demand. The most common approach assumes that the quantity observed is the minimum of supply and demand:

$$NL^{obs} = \min\left(NL_d^*, NL_s^*\right).$$

This system of equations can be estimated using the maximum likelihood principle (see Maddala and Nelson, 1974).

We assume that the demand for new loans, NL_d^*, depends on the following factors:

- the size of the firm; smaller firms are indeed expected to rely more on bank loans than larger ones which may have an easier access to other external finance. While previous papers accounted for the size of the firm through the reciprocal of their total assets (Atanasova and Wilson, 2004; Shikimi, 2005, and Carbo-Valverde et al., 2009) or of their capital stock (Ogawa and Suzuki, 2000), we have taken a different approach here. To allow for more general non-linearities, we use four size dummies corresponding respectively to very small SMEs (total assets ⩽0.5 Million €), small SMEs (0.5 Million €<total assets ⩽1 Million €), medium SMEs (1 Million €<total assets ⩽2 Millions €) and large SMEs (total assets >2 Millions €).
- the financing needs; while previous papers used sales to account for the financing needs generated by the firm activity, we introduce two other variables: first, the amount of needs of working capital (over total assets, as measured in firms' accounts), to account for needs in short-term financing; and the amount of investment, over total assets, to account for needs in long-term financing. These two variables may clearly be endogenous so that we tackle this problem in the econometric estimation procedure (see below);
- the amount of internal resources. We follow previous papers and measure internal resources by the firm's cash-flow over its total assets;
- the amount of other sources of external finance available. These are taken into account through non-bank financial debt on the one hand, and accounts payable on the other hand, both divided by total assets. The former variable includes funds received from associates as well as market finance, though market finance is quite unlikely to be important for SMEs (in this respect, we slightly differ from Ogawa and Suzuki (2000) and Atanasova and Wilson (2004) who include a variable accounting for the firm access to financial markets). Accounts payable allow for the role of trade credit as a possible alternative source of short-term finance (Carbo-Valverde et al., 2012).