Bulletin
de la Banque de France
233/1 - JANUARY-FEBRUARY 2021

BANQUE DE FRANCE
EUROSYSTÈME

Credit and financing

The financial health of VSEs-SMEs: an essential determinant of their credit access

Since 2012, the Banque de France has carried out a quarterly survey of very small enterprises (VSEs) and small and medium-sized enterprises (SMEs) to assess their access to bank credit. The vast majority of demand for investment loans is met, with an average of 91% of VSEs and SMEs having their loan application approved in the period 2012-20. For cash loans excluding lines of credit, the success rate for loan applications is lower at 76% over the same period, but has followed an upward trajectory since 2012. In addition, the introduction of the state-guaranteed loan (SGL) scheme led to a marked rise in the success rate for applications in 2020, especially for VSEs. The main criteria used to determine access to credit are financial (solvency, self-financing and liquidity ratios). These factors outweigh all non-financial considerations (size, sector and age of the firm).

Mathilde Gerardin
Sectoral Surveys and Statistics Directorate

Théo Nicolas *
Data and Analytical Services Directorate

JEL codes
E51, G32

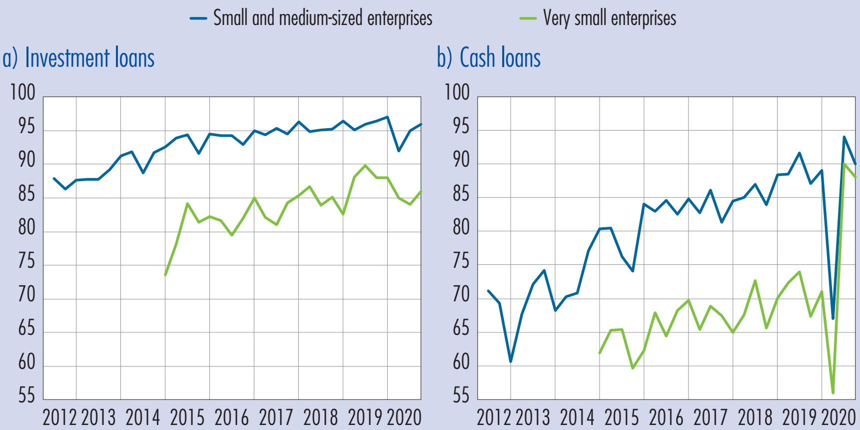
* Currently working in the Research and Risk Analysis Directorate (General Secretariat of the *Autorité de contrôle prudentiel et de résolution*)

94%
share of VSEs-SMEs that obtained more than 75% of the amount of investment credit that they requested in the third quarter of 2020

89%
share of VSEs-SMEs that obtained more than 75% of the amount of cash loans that they requested in the third quarter of 2020

Approvals of investment and cash loans by firm size

(%)



Sources: Banque de France and the *Fédération des centres de gestion agréés* (FCGA), survey on access to bank financing for companies.
Key: In the third quarter of 2020, 86% of applications for investment loans and 88% of applications for cash loans from VSEs were successful.
Note: Quarterly data, not seasonally adjusted. VSEs have been included in the survey since the fourth quarter of 2014.

1 Since 2012, VSEs-SMEs have found it easier to access credit

France's 3.81 million VSEs and SMEs account for nearly half the jobs and wealth produced by all the nation's businesses. They are a genuine driving force behind the economy, but they have limited access to financial markets and instead have to rely on credit in order to expand.[1] To assess these financial constraints, since the second quarter of 2012 the Banque de France has conducted a quarterly survey of over 8,500 enterprises to collect data on their access to bank financing (see Box 1).

BOX 1

The Banque de France survey on the access to bank financing of companies in France

Since the second quarter of 2012, the Banque de France has carried out a quarterly survey of manufacturing, services and construction firms to assess their access to bank financing (Guinouard et al., 2013). Close to 6,700 heads of standalone VSEs and SMEs are questioned on their applications for financing, the responses obtained and the loan terms offered by their banks. The survey panel is meaningful in size and remains relatively constant from one quarter to the next, making it possible to monitor how credit access evolves over time. Data on VSEs are enriched with information provided under a partnership with the *Fédération des centres de gestion agréés* (FCGA – Federation of Approved Management Centres), which also questions its members on their credit access.

The questionnaire comprises three sections, each covering a specific type of loan, together with a question on the evolution of the overall cost of financing and a question on any new guarantees requested by banks. The three loan types are lines of credit, cash loans and investment loans. They are mutually exclusive and are defined as follows:

- line of credit (or available credit): a contract allowing a firm to borrow funds made available by its bank at any time ("drawing rights");
- cash loan: a one-off loan to cover a liquidity shortage. Unlike lines of credit, they are not negotiated and set up in advance;
- investment loan: a loan used to finance major expenditures. Investment loans include equipment loans, which are used to finance intangible and tangible assets excluding real estate.

This article focuses on cash loans and investment loans which are assessed quarterly. These are new loans, unlike credit lines which may be renewed annually.

Since the second quarter of 2015, the survey has also included twice yearly questions to measure self-censorship behaviour. This is where a business leader decides not to request any credit as he/she expects the terms of the loan to be too strict. This phenomenon is marginal, accounting for only 1-2% of firms that did not request credit, and this proportion has remained stable over time.

The Banque de France's quarterly *STAT INFO* collection is published in the month following the end of the quarter and comments on the main results of the survey and how they have evolved. The data are not weighted or seasonally adjusted.

All time series can be found in the *Webstat* database.

1 The classification used here is based on whether the firm is autonomous in its borrowing, and on the number of employees: SMEs are defined as standalone firms with between 10 and 249 employees, and VSEs are standalone firms with fewer than 10 employees.

The size of the survey panel, and the fact that it remains relatively constant from one quarter to the next, makes it possible to monitor applications for and approvals of financing over time.

The vast majority of demand for investment loans is met

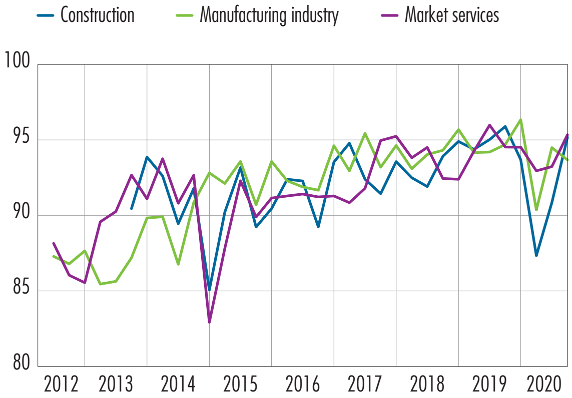
Investment loans are mainly used to finance equipment (means of transport, premises, office equipment, etc.) or real estate. On average, 18% of VSEs-SMEs apply to their banks for this type of financing in any given quarter. This proportion remained stable from 2012 to 2019, but then declined in 2020 (11% on average over the first three quarters) as firms chose to defer their investment decisions on account of the crisis. These loan applications are mostly accepted and the success rate has followed an upward trajectory: on average over the period, 91% of applications for investment loans were successful (a loan is deemed to have been granted if the firm obtains at least 75% of the amount requested).

Some firms request more investment loans than others to finance their activities. Firm size appears to be a significant factor in determining the need for investment loans: 15% of SMEs applied for an investment loan in the third quarter of 2020 compared with 6% of VSEs. For firms in manufacturing, construction and market services, the sector of activity also appears to play a role: over the entire period, 24% of VSEs-SMEs in the manufacturing industry applied for investment loans, compared with 16% of construction firms and 15% of services firms. Firms with the highest Banque de France ratings[2] also tend to ask for more investment loans – the proportion applying is on average 6 percentage points higher than for firms with the lowest ratings.

With regard to bank loan approvals, the sector of activity of the applicant firm does not appear to play a significant role (see Chart 1). In contrast, firm size is always a factor: from the fourth quarter of 2014 to the fourth quarter of 2019, an average of 95% of applications for loans from SMEs were successful, compared with 83% for VSEs (see Chart 2). Similarly, firms with the highest Banque de France ratings had a success rate

C1 Approvals of investment loans in the construction, manufacturing and market services sectors

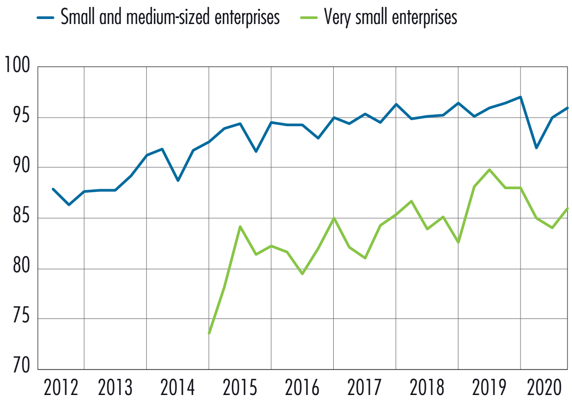
(%)



Sources: Banque de France and the *Fédération des centres de gestion agréés* (FCGA), survey on access to bank financing for companies.
Key: In the third quarter of 2020, 94% of applications for investment loans from VSEs-SMEs in the manufacturing industry were successful.
Note: Quarterly data, not seasonally adjusted.
Only manufacturing, services and construction firms are represented. The survey also covers firms in other sectors (agriculture, wholesale and retail trade, etc.). Construction firms have been included in the survey since the third quarter of 2013 and VSEs since the fourth quarter of 2014.

C2 Approvals of investment loans by firm size

(%)

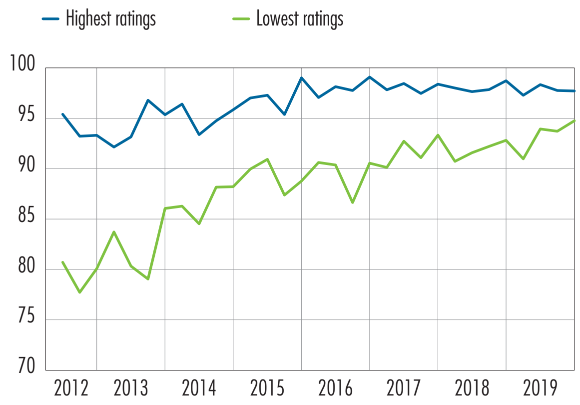


Sources: Banque de France and the *Fédération des centres de gestion agréés* (FCGA), survey on access to bank financing for companies.
Key: In the third quarter of 2020, 86% of applications for investment loans from VSEs were successful.
Note: Quarterly data, not seasonally adjusted. VSEs have been included in the survey since the fourth quarter of 2014.

2 According to the Banque de France rating hierarchy (for further details go to: *https://entreprises.banque-france.fr/cotation-des-entreprises/comprendre-la-cotation-banque-de-france/comprendre-la-cote-de-credit*).

C3 Approvals of investment loans by credit rating

(%)



Source: Banque de France, survey on access to bank financing for companies.
Key: In the fourth quarter of 2019, 96% of applications for investment loans from VSEs-SMEs with the lowest ratings were successful.
Note: Quarterly data, not seasonally adjusted. Only firms rated by the Banque de France are included. Prior to 2020, "highest ratings" refers to the ratings "excellent" (3++), "very good" (3+), "good" (3) and "quite good" (4+), and "lowest ratings" refers to all other ratings (for further details, see *https://entreprises.banque-france.fr/sites/default/files/media/2018/06/21/banque-de-france-cotation-recto-verso_0.pdf*).

of nearly 100%, while those with lower ratings had a success rate of close to 90% (see Chart 3).

However, it is not possible from this initial descriptive analysis to separate the size effect from the credit rating effect, as the largest SMEs are also generally those with the best ratings.

Access to cash loans is more selective but is improving

To cover any unforeseen financing needs, firms can apply to their bank for a cash loan (cash facility, invoice factoring, Daily sale of receivables, etc.). Until the end of 2019, these types of request were less common than applications for investment loans: on average, only 7% of VSEs-SMEs said they submitted an application for a cash loan in any given quarter (excluding credit lines already granted). This proportion remained very stable before the crisis, but rose markedly in 2020 in the context of the Covid-19 crisis. At its high point, the share of VSEs-SMEs who said they had applied for a cash loan (including an SGL) in the previous three months rose to 36% in the second quarter of 2020.

Unlike investment loans, access to cash loans is more selective: only 76% of applications for these loans are successful, which is 15 percentage points lower than for investment loans. However, the success rate for cash loans has been rising steadily since the survey was launched, and this trend accelerated markedly in 2020 with the introduction of SGLs: the success rate rose from 71% in the second quarter of 2012 to 83% in the fourth quarter of 2019, and then to 89% in the third quarter of 2020.

With regard to **demand**, the divergences between different firm types are smaller than for investment loans. For example, there is little variation in the need for cash loans according to firm size or sector of activity. However, demand for cash loans from firms with lower ratings is 6 percentage points higher on average than for firms with the best ratings.

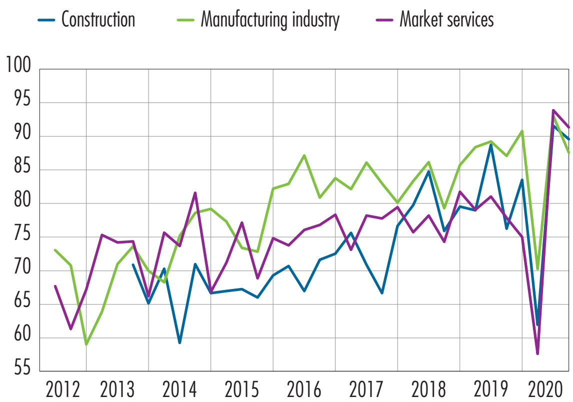
Regarding **success rates** for cash loan applications, the results are also slightly different to those for investment loans. For firms in manufacturing, construction and market services, access to cash loans varies markedly depending on the sector. From the third quarter of 2013 to the end of 2017, firms in the construction sector had a 69% success rate on average compared with 75% for services firms and 79% for manufacturing firms (see Chart 4 below).

There has also been a catch-up effect since 2018, with construction firms averaging a success rate of 81% over the period 2018-20, compared with 86% for manufacturing and 79% for services.

The low point reached in the first quarter of 2020 in the success rate for cash loans reflects the large number of applications received that were still pending (around 30%) at end-March 2020, when the SGL scheme was being implemented. The upturn in the second quarter reflects the fact that the majority of these loans were ultimately approved.

C4 Approvals of cash loans in the construction, manufacturing and market services sectors

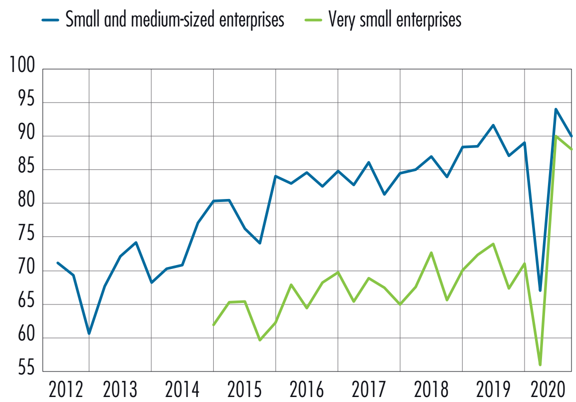
(%)



Sources: Banque de France and the *Fédération des centres de gestion agréés* (FCGA), survey on access to bank financing for companies.
Key: In the third quarter of 2020, 88% of applications for investment loans from VSEs-SMEs in the manufacturing industry were successful.
Note: Quarterly data, not seasonally adjusted.
Only manufacturing, services and construction firms are shown. The survey also covers firms in other sectors (agriculture, wholesale and retail trade, etc.). Construction firms have been included in the survey since the third quarter of 2013.

C5 Approvals of cash loans by firm size

(%)



Sources: Banque de France and the *Fédération des centres de gestion agréés* (FCGA), survey on access to bank financing for companies.
Key: In the third quarter of 2020, 88% of applications for cash loans from VSEs were successful.
Note: Quarterly data, not seasonally adjusted. VSEs have been included in the survey since the fourth quarter of 2014.

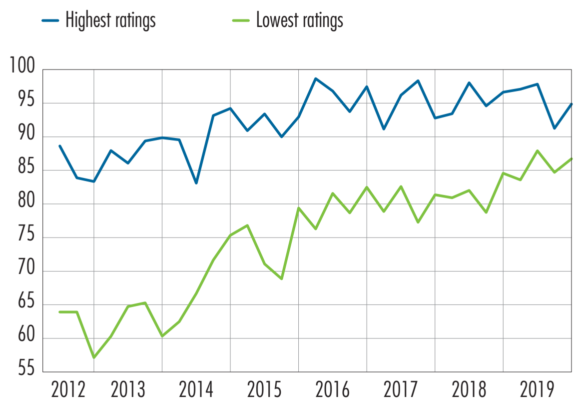
As in the case of investment loans, firm size remains a major determinant of access to cash loans, although the divergences are more marked: 69% of applications from VSEs were successful on average over the period 2014-19, whereas for SMEs the average rate was 84% (see Chart 5).

Prior to the crisis, firms with lower Banque de France ratings had significantly less access to cash loans, as the average success rate for their applications was some 15 percentage points lower than for higher-rated firms (see Chart 6). However, this gap shrank to 8 percentage points in the fourth quarter of 2019 (success rate of 87% for the lowest-rated firms).

While it is clear that the vast majority of demand for investment loans and, to a lesser extent, cash loans, is met, it is nonetheless useful to take a more in-depth look at the factors influencing loan approvals. The next section proposes a way of modelling these determinants (especially the financial ones) using tax return data, i.e. the financial data recorded in a firm's accounts and submitted annually to the tax authorities.

C6 Approvals of cash loans by credit rating

(%)



Source: Banque de France, survey on access to bank financing for companies.
Key: In the third quarter of 2019, 87% of applications for cash loans from VSEs-SMEs with the lowest ratings were successful.
Note: Quarterly data, not seasonally adjusted. Only firms rated by the Banque de France are included. Prior to 2020, "highest ratings" refers to the ratings "excellent" (3++), "very good" (3+), "good" (3) and "quite good" (4+), and "lowest ratings" refers to all other ratings (for further details, see *https://entreprises.banque-france.fr/sites/default/files/media/2018/06/21/banque-de-france-cotation-recto-verso_0.pdf*).

2 Between 2012 and 2019, financial variables were the main determinants of credit access

Using a "ceteris paribus" econometric approach, it is possible to analyse the financial and non-financial determinants of credit constraints and to isolate their respective effects (see Box 2 and Appendices 2 and 3).

A high self-financing capacity reduces the risk of a credit constraint

Three financial variables appear to play a decisive role in explaining credit constraints. These are the solvency ratio, the self-financing ratio (self-financing capacity or SFC) and the liquidity ratio (see Table a in Appendix 1). The higher a VSE or SME's SFC, solvency ratio or liquidity ratio, the less likely it is to be constrained in its access to investment or cash loans. For cash loans, the SFC has a much more significant impact than the liquidity ratio. The standard deviation of the self-financing ratio is 6.5%, so an increase of 1 percentage point in this ratio reduces the probability of a firm facing a cash loan constraint by an average of 23 basis points.

Sector and age have limited but differentiated effects, and firm size is not a determining factor

The age of a VSE-SME mainly affects its ability to access cash loans and has a considerably smaller impact than financial variables. Firm size, by contrast, has no effect at all. With regard to the sector of activity, market services firms are less likely to be constrained than manufacturing firms, regardless of loan maturity. The same is also true for firms in the construction industry, but only with regard to investment loans. The sector of activity thus has a significant impact on investment loan constraints, a finding that did not show up in Chart 1. The economic environment is also an important factor. Compared with 2012, financing conditions have improved considerably since 2017 for cash loans.

The Banque de France rating completes the information provided by financial ratios

Assuming identical characteristics, the higher a firm's credit rating, the less likely it is to face an investment loan constraint.[3] The rating provides qualitative information that complements the firm's financial ratios (see Cahn et al., 2020). Firm size in turn is non-significant in determining access to investment loans. These results relate to the period 2012-19, and can be updated once financial data for 2020 becomes available. This future work will make it possible to identify the factors determining credit access during the Covid-19 crisis.

3 To separate out the effects of size and rating on credit access, a binary explanatory variable set at 1 for a high Banque de France rating and 0 otherwise is added to the specification.

BOX 2

Modelling credit constraints

Variables to be explained

Constraints on cash loans and investment loans are measured by a binary variable that takes the value 1 if the firm is constrained and 0 if it is not. In our study, a firm is considered to be constrained if at least one of the following three conditions is met: (i) its application for a cash loan (investment loan) has been refused at least once over the year; (ii) it has received less than 75% of the loan amount requested at least once over the year; (iii) it has refused a loan offer because the interest rate was too high at least once over the year.

Explanatory variables

To explain the financing constraints, we chose six variables describing the characteristics of SMEs:[1]

- the self-financing ratio, calculated as the ratio of a firm's self-financing capacity to its total assets (lagged by one year);
- the liquidity ratio, which is the ratio of cash to total assets (lagged by one year);
- the solvency ratio, which is the ratio of own funds to total assets (lagged by one year);
- the Banque de France rating;
- total assets (in log form, lagged by one year);
- the age of the firm (in log form);
- the sector of activity (manufacturing industry, construction, services).

For demand for credit, the same explanatory variables were used, along with two "exclusion restriction" variables: the ratio of investment to value added for investment loans, and the share of non-bank financing in the total balance sheet for cash loans.

1 Given that a bank bases its decision to grant a loan on a firm's past balance sheet, the income statement and balance sheet variables were all lagged by one year. This lag also gets around the problem of inverse causality in our estimations.

References

Cahn (C.), Girotti (M.) and Salvadè (F.) (2020)
"The informational value of credit ratings in the bank/firm relationship", *Banque de France Bulletin*, No. 227/3, January-February.
Download the document

Guinouard (F.), Kremp (E.) and Randriamisaina (M.) (2013)
"Access to credit of SMEs and MTEs: decline in supply or lower demand? Lessons learned from a new quarterly business survey", *Banque de France Quarterly Selection of Articles* No. 30, Summer, pp. 21-33.
Download the document

Heckman (J. J.) (1979)
"Sample selection bias as a specification error", *Econometrica*, vol. 47, No. 1, Econometric Society, pp. 153-161.

Nicolas (T.) (2019)
"How do short-term financial constraints affect SMEs' long-term investment: evidence from the working capital channel", *Banque de France Working Papers*, No. 731, October.
Download the document

Popov (A.) and Udell (G. F.) (2012)
"Crossborder banking, credit access, and the financial crisis", *Journal of International Economics*, vol. 87, No. 1, Elsevier, pp. 147-161.

Appendix 1
Details of the data used

FIBEN data from company financial statements

The financial statements are collected by the Banque de France's branch network as part of the process for rating non-financial corporations. Documents are collected from all firms doing business in France with a turnover exceeding EUR 0.75 million and bank debt surpassing EUR 0.38 million. This represents a third of all firms taxed under the BIC "bénéfice industriel et commercial" (industrial and commercial profits) and BRN "bénéfice réel normal" (real and normal profits) regimes. The number of firms contained in the database has increased considerably over the past few years. At the end of 2018 the figure stood at around 315,000 (see Table b).[1]

Ta Number of balance sheets available in FIBEN and number of firms questioned in the credit access survey

(number)

Year	Number of balance sheets collected	Number of companies surveyed
2012	313,497	4,277
2013	290,053	5,547
2014	293,369	5,464
2015	298,017	5,658
2016	304,237	5,798
2017	310,839	5,881
2018	315,251	6,066
2019	90 203	6,105

Source: Banque de France, survey on access to bank financing for companies and FIBEN.

Banque de France survey on SMEs' access to financing

Tb Proportion of firms constrained each year over the period 2012-2019

(%)

Year	Cash loan constraints	Investment loan constraints
2012	18.13	5.29
2013	15.67	5.96
2014	13.84	5.84
2015	13.00	4.34
2016	8.10	3.33
2017	8.74	2.83
2018	8.17	2.79
2019	6.36	3.17

Source: Banque de France, survey on access to bank financing for companies.

1 For 2019, around 90,000 balance sheets were available as not all had been entered into the database at the time of writing of this article.

Appendix 2
Results of the estimations

Determinants of constraints for cash loans and investment loans

(Average marginal effects)

Dependent variable:	The firm is constrained on a cash loan	The firm is constrained on an investment loan	
Self-financing ratio $_{t-1}$			
	-0.227***	-0.052***	-0.025
	(0.081)	(0.020)	(0.018)
Liquidity ratio $_{t-1}$			
	-0.135***	-0.038***	-0.024***
	(0.031)	(0.009)	(0.009)
Solvency ratio $_{t-1}$			
	-0.094***	-0.058***	-0.049***
	(0.033)	(0.009)	(0.008)
Rating $_t$			
Lowest ratings[a)]	-	-	Ref.
Highest ratings	-	-	-0.013***
			(0.002)
Total assets (log)$_{t-1}$			
	-0.002	0	0.001
	(0.002)	(0.001)	(0.001)
Age (log)$_t$			
	-0.007***	-0.001	-0.005
	(0.003)	(0.001)	(0.001)
Sector$_t$			
Manufacturing industry[a)]	Ref.	Ref.	Ref.
Services	-0.009***	-0.007***	-0.006***
	(0.003)	(0.002)	(0.002)
Construction	-0.002	-0.012***	-0.013***
	(0.003)	(0.003)	(0.003)
Fixed annual effects			
2012[(b)]	Ref.	Ref.	Ref.
2013	-0.003	0.006	0.006*
	(0.007)	(0.003)	(0.003)
2014	-0.004	0.008**	0.008**
	(0.007)	(0.003)	(0.004)
2015	0.003	0.004	0.004
	(0.007)	(0.003)	(0.003)
2016	-0.016	0	0
	(0.010)	(0.003)	(0.003)
2017	-0.016*	0.002	0.001
	(0.009)	(0.003)	(0.003)
2018	-0.016*	0.001	0.001
	(0.010)	(0.003)	(0.003)
2019	-0.021*	0.002	0.002
	(0.012)	(0.004)	(0.004)
Observations Total	27,718	27,731	27,289
Selected	4,044	11,725	11,283

Sources: Banque de France (survey on access to bank financing for companies and FIBEN), authors' calculations.
Note: Robust standard deviations are indicated in brackets.
***: $p < 0.01$; **: $p < 0.05$; *: $p < 0.10$ where p is the p-value.
a) Reference category against which all other categories are measured.
b) Reference year against which all other years are measured.

Appendix 3
Probit model incorporating a Heckman selection stage

In addition to data from the Banque de France survey on small and medium-sized enterprises' (SMEs') access to financing, the econometric analysis also uses balance sheet and income statement data from the FIBEN database (see Appendix 1). By merging the two databases, from the initial 9,701 firms, we obtained a final sample of 8,076 SMEs for cash and investment loans for the period 2012-19. Table b in Appendix 1 shows the evolution of the percentage of firms facing a constraint for each type of loan.

We estimated the probability that a firm applying for a cash or investment loan will be financially constrained, depending on its characteristics (the variables used are described at the end of this appendix). The sample of firms applying for a loan is not a random sub-sample of the population of firms (Popov and Udell, 2012; Nicolas, 2019). To account for this selection bias, we used a Heckman two-stage procedure to incorporate information on firms that do not apply for a loan. Binary variable D takes the value 1 if the firm applies for a loan, and 0 if it does not; the value of D is determined using the following latent variable:

$$d_{it} = \rho Z_{it} + e_{it}$$

where Z_{it} contains relevant variables for the use of bank credit and e_{it} is the idiosyncratic error term that follows a normal law with a mean of 0 and a variance of σ. The variable *D* is equal to 1 if d > 0 and 0 otherwise.

The second-stage regression can now be updated by adding the term $\sigma \frac{\varphi(d)}{\Phi(d)}$ to the model explanatory variables, where $\frac{\varphi(d)}{\Phi(d)}$ is the inverse of the Mills ratio (Heckman, 1979) derived from the first stage. The identification relies on the exclusion restriction assumption which requires that d_{it} be estimated using a set of variables that is at least one variable larger than the set of variables in the second stage. In addition, the exclusion variables cannot be correlated with the explained variable. In the second stage, the following probit model is estimated:

$$Contrainte_{it} = \beta_1 X_{it} + \beta_2\, \sigma \frac{d}{\Phi(d)} + \gamma_j + \gamma_t + e_{it}$$

where $Contrainte_{it}$ is a binary variable equal to 1 if the firm is considered to be constrained on a cash loan (investment loan) and 0 otherwise; X_{it} is a matrix of the financial and non-financial characteristics of the firm; $\frac{\varphi(d)}{\Phi(d)}$ is the selection term for the first stage of the regression, and e_{it} is an idiosyncratic error term. Lastly, fixed sector effects γ_j and time effects γ_t are also added.

Published by
Banque de France

Managing Editor
Gilles Vaysset

Editor-in-Chief
Corinne Dauchy

Editor
Nelly Noulin

Translator/English Editor
Vicky Buffery

Technical production
Studio Creation
Press and Communication

ISSN 1952-4382

To subscribe to the Banque de France's publications
https://publications.banque-france.fr/en
"Subscription"