

A demand approach to borrower discouragement: empirical analysis in a bank-based economy

Ginés Hernández-Cánovas
M^a Camino Ramón-Llorens
Johanna Koëter-Kant

Abstract

Borrower discouragement has traditionally been analyzed under the paradigm of credit denied firms, where the focus is placed on supply restrictions at the expense of demand limitations. We take a different approach and analyze borrower discouragement in terms of the strategic decisions made by the firm's managers and their influence on the demand for financing. Our hypothesis is that SMEs whose managers seek growth or improvement in their business performance participate more in the banking market than those showing contentment with their current business situation. We use a survey data set of 837 Spanish SMEs with a self-declared need for additional debt but where some of them decide not to apply for credit. Our results show that SMEs that undertake an active role in R&D activities and that achieve improvements in the operating performance of their business are less likely to be discouraged from applying for a loan.

Key words: Discouragement, SMEs financing; financial constraints

JEL Classifications: G21, G30, G32

* Please direct all correspondence to: Ginés Hernández-Cánovas, Faculty of Business Administration, C/ Real n°3, 30201 Cartagena, Spain. gines.hernandez@upct.es_+34 968325761.
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1. **Introduction**

The aim of this paper is to shed additional light into the puzzling question of why firms do not apply for bank financing even when they are in need of additional credit. This phenomenon, known as borrower discouragement, has received little attention in the literature. Most research on financial constraints has either excluded discouraged borrowers from the analyses or combined them with inappropriate groups such as denied firms. However, recent evidence shows the existence of significant differences between discouraged and denied firms which calls for separation of these two groups when carrying out an analysis of credit availability (Cole, 2010). We also observe that in papers analyzing discouraged borrowers as an independent group, models and explanatory variables closely resemble those used to explain the determinants of credit denial. As a consequence, factors limiting the demand for resources have been neglected by an overreliance on arguments which attempt to explain small firm financing problems solely in terms of lack of access to supply of credit (Hutchinson, 1995).

The objective of our paper is to show that where discouraged firms appear to experience under-funding, a significant part of the explanation may be traced to strategic decisions made by the firm's managers (Hutchinson, 1995). Our hypothesis is that SMEs seeking growth or improvement in their business performance participate more in the banking market than those showing contentment with their current business situation. Using a survey data-set of 837 Spanish SMEs, we analyze the association between borrower discouragement and prior firm's strategic decisions, while controlling for firm and owner characteristics. We show that SMEs that undertake an active role in research and development activities and that achieve improvements in the operating performance of their business are less likely to be discouraged from applying for a loan.

Our sample perfectly suits our purpose for several reasons. First, discouraged SMEs are, compared to large discouraged firms, less likely to resort to alternative sources of financing and, therefore, more likely to be financially constrained. Second, most of the existing empirical research provides evidence for discouraged borrowers operating in market-based economies. Spain is a bank based economy where SMEs have limited access to capital markets thus, making bank credit their main external source of financing.

We proceed as follows. In section 2 we discuss previous literature and provide the motivation for our study. In section 3 we present the data and method. In section 4 we show and discuss the results, while in section 5 we conclude.

2. Theory and Hypotheses Development

Applying conventional wisdom to the SME environment implies that these firms are separate individual utility maximizers where growth and improvement are the natural expectation (Berger and Udell, 1998). However, a shortage of financing due to asymmetric information problems creates a finance gap for SMEs (Ang, 1992) which may restrict their ambitions. SMEs would then be financially frustrated by a combination of market failure and credit rationing (Stiglitz and Weiss, 1981; Storey, 1994). They would give up seeking loans because they expect either high costs for getting loans, or very low credit limits (Chakravarty and Xiang, 2013). However, Vos et al. (2007) argue that reduced participation of SMEs in capital markets originates from both, a desire to retain control and a lack of growth ambitions. They suggest that there are few SMEs desiring external capital and that growth-oriented SMEs are more likely to access external finance than those who are less interested in growth. As a consequence, they state that financial contentment would be the main reason why SMEs do not participate more in capital markets.

Our hypothesis in this paper is that SMEs seeking growth or improvement in their business performance participate more in the banking market than those showing contentment

with their current business situation. Supporting this view, the analysis carried out by Vos et al. (2007) shows that high growth firms are more likely to apply for external loans than low-growth firms. Existing literature indicates that most SMEs do not go for rapid growth (Hakim, 1989), but those with an above average growth have better access to external finance (Storey, 1994). Using innovation to proxy for growth opportunities, Xiang et al. (2012) argue that SMEs with growth opportunities are more likely to exhaust internal funds and require external funds. Therefore, we expect that managers undertaking strategic decisions aimed at improving their business performance and growth are less likely to be discouraged from applying for a loan.

Following existing literature, we also try to characterize discouraged borrowers based on those firm and entrepreneur characteristics that proxy for the existence of imperfect screening by banks and positive application costs for borrowers. For example, older and larger firms have more assets to use as collateral and there is more publicly available information about them. This reduces asymmetric information problems and, hence, screening and monitoring costs incurred by banks. From the demand side, the longer the firm has been in business the more efficient turns out to be when applying for a loan, while application costs borne by large companies, compared to small firms, are proportionately smaller (Vos et al, 2007; Freel et al., 2012). In addition, young and small firms have different self-screening issues related to credit application (Chakravarty and Xiang, 2013). Results provided by Vos et al. (2007), Han et al. (2009), Cole (2010), Xiang et al. (2011), Freel et al. (2012) and Chakravarty and Xiang (2013) show that larger firms are less likely to be discouraged, and Vos et al. (2007) and Chakravarty and Xiang (2013) show that fear of denial reduces as firms mature. Therefore, we would expect that older and larger borrowers are less discouraged from applying for a loan.

According to Freel et al. (2012), growth in the recent past should be negatively associated with success in loan applications because it might signal the existence of cash constraints and collateral difficulties, leading borrowers to be discouraged. However, a positive past performance might be associated with an optimistic outlook and reduce borrower discouragement. Vos et al. (2007) and Xiang et al. (2011) do not find a significant association between past growth and borrower discouragement.

There are two arguments regarding the association between family ownership and discouragement (Freel et al., 2012). On the one hand, family firms are more financially conservative and, therefore, more likely to be discouraged than non-family firms. On the other hand, if family firms are lacking the resources they need, they may show lower levels of discouragement. Results provided by Freel et al. (2012) support the second association, whereas Vos et al. (2007) show that family ownership do not influence borrowers discouragement.

If bank's officers welcome educated firms' managers and self-confidence of firms' managers increases with education, we could expect borrower discouragement and firm's management education to be negatively correlated as in Vos et al. (2007); Freel et al., (2012); and Chakravarty and Xian (2013).

Exporters and importers have greater financing needs and are the more easily monitored and successful firms (Brown et al., 2011), which may reduce discouragement. However, banks may consider that firms involved in international trade are riskier because they are usually associated with growth ambition and market uncertainty (Xiang et al., 2012), which may reduce their acceptance likelihood and discourage them from applying for a loan.

According to Han et al. (2009), the establishment of strong firm-bank relationships might have opposite effects on borrower discouragement. On the one hand, private information gathered along the relationship helps the bank to better assess borrower quality,

reducing screening errors and discouragement. On the other hand, high quality borrowers can be trapped into the bank relationship (hold-up problem) where no competitive loan terms are offered, but exorbitant changing costs to uninformed banks discouraged borrower from applying for financing. Existing empirical evidence shows that discouragement reduces with the number of sources of financial services (Han et al., 2009; Cole, 2010; Chakravarty and Xiang, 2013) and for firms with an established relationship with their bank (Freel et al., 2012).¹

3. **Data and Method**

3.1. *Data*

The initial sample uses two data sources. First, financial statement information for the years 2007 and 2008 comes from the database SABI². Second, firm and owner specific characteristics are obtained from the 2009 Survey on Small and Medium-Sized Enterprises provided by the Economic Observatory for Firms of the Region of Murcia, in Spain. From the 900 checked and approved interviews that available in the survey, there are 837 observations that contain information about loan application process.

3.2. *Method*

To assess the determinants of discouragement in our sample of SMEs we estimate logistic regressions in the following form:

¹ As stated by Han et al. (2009), there are several alternative explanations for this negative association between discouragement and number of banking relationships. Firms working with multiple banks might be of higher quality, which reduces the fear of denial. Firms working with more than one bank can make repeated applications from different lenders. There might even be a causal problem here since lower discouragement can motive the existence of multiple banking relationships.

² Elaborated by Bureau Van Dijk, SABI contains comprehensive information on companies in Spain and Portugal.

$$DB_i = \Phi [\alpha_0 + \beta_1 SV_i + \beta_2 BR_i + \beta_3 FSC_i + \varepsilon_i] \quad (1)$$

Where i represents the i^{th} firm in the sample; DB_i proxies whether firm i is a discouraged borrower, SV_i is a vector of strategic variables; BR_i represents the banking relationship variables; FSC_i represents the set of firm-specific control variables and ε_i is the residual.

3.2.1. The dependent variable

To create the dependent variable we use the Survey in which managers are asked whether the firm has applied for a loan during the last three months. The possible answers are categorized as follows: (1) Yes; (2) No, we haven't because the firm doesn't need it; (3) No, we haven't because even though we need the funds we did not expect to obtain the loan. Using these answers, we build a dummy variable, discouraged borrower, which is given a value of one when option 3) is chosen and zero when option 1) is chosen.

Out of the 848 firms answering this question, 529 have a desire for additional credit, and 63 are discouraged borrowers. This represents a 7.43% of discouraged borrowers over the whole sample. Empirical evidence provided by Chandler (2010) shows that discouraged borrowers in 2004 represent a 0.51% of their sample of Canadian SMEs. Levenson and Willard (2000) estimate that 4.22% of US SMEs in their sample are discouraged in 1987-88, whereas in the US Survey of Small Business Finances the percentage of discouraged borrowers is 14.8% in 1993, 15.7% in 1998 and 10.5% in 2003 (Cole, 2013). According to the survey of Italian firms run in 1998 and 2001 by Mediocredito, 3.4% of Italian borrowers are discouraged (Angelini and Generale, 2005). In the UK, Freel et al. (2012) report a 8.13% of discouraged borrowers in 2005 for their sample of small firms. Using the 2004 and 2005 BEEPS conducted in five Western European countries, Brown et al. (2011) show that 7.23% of firms in their sample are discouraged from applying for a loan, decreasing that percentage

to the 6.3% for the subsample of Spanish firms.³ We can conclude that the percentage of discouraged borrowers in our sample falls into the average statistics provided by the above studies.

1. The independent variables

Below we describe the explanatory variables utilized in our analysis. Table I provides detailed definitions of all the variables, while table II shows the correlations.

Strategic variables

In this section we define the survey variables describing strategic decisions that firms have already taken. Table III contains the means for these variables.

First, we define seven dummy variables taking on the value one if firms have made certain changes in their products and services, manufacturing processes, or management systems during the last year and zero otherwise. In Table III, Panel A, we observe that changes related to the manufacturing process and the products and services sold by the company are the most common improvements. For example, 47.9% of firms declare that they have made changes in their existing products or services and acquired new equipment, whereas changes in management systems have been carried out by less than 30 percent of companies in our sample. Therefore, it seems that tangible improvements are preferred to organization changes.

Second, using a liker scale ranging from 1 (totally disagreement) to 5 (totally agreement), we define five variables containing the firm's opinion regarding their entrepreneurship orientation. Table III, Panel B, shows that firms in our sample adopt a

³ The 2004/2005 Business Environment and Enterprise Performance Survey (BEEPS) was administered jointly by the World Bank and the EBRD (European Bank for Reconstruction and Development). The five Western European countries in their sample are Germany, Greece, Ireland, Portugal and Spain.

proactive attitude towards risk (3.582) and that top management favors research and development activities (3.362). However, the imitation of the actions carried out by the firm (2.898) and the propensity to take on risky projects with a high potential (2.574) are the least common practices.

Third, we build nine dummy variables that take on the value one if during the last two years firms have carried out one of the research and development activities included in the survey and zero otherwise. In table III, Panel C, we can see that firms in our sample have introduced new machinery and production equipment (53.5%), have undertaken some kind of technological cooperation with customers and/or suppliers (39.1%), and have considered alternative technologies for the firm (34.2%). However, only a small percentage of firms have cooperated in innovation with Universities (15.1%) and have participated in some research program from the European Union (4.8%).

Forth, we define twelve variables explaining the improvement during the last two years in different dimensions related to products and services, customers, markets and human resource management. Table III, Panel D, shows that the customer satisfaction (4.078) and the image of the firm and its products (4.052) are the most important improvements carried out by the firms in our sample. Highly valued are also the product/service quality (3.929), the staff organization (3.765) or the motivation and job satisfaction in the workplace (3.523). The least common improvements are related to the increases in both market share (2.970) and profitability (2.781).

Firm specific characteristics

To account for sample heterogeneity we include well known determinants of borrower discouragement linked to firm specific characteristics. Table IV contains means for these variables and mean test between applied and discouraged firms.

We define the variables Size and Age as the natural logarithm of the number of employees and the natural logarithm of the number of years that the firm has been in operations respectively. We measure the strength of the banking relationship using the variables Dispersion and Length. Dispersion equals the natural logarithm of one plus the number of banks the firm works with, and length equals the natural logarithm of one plus the number of years the firm has been working with its main bank. The logarithmic transformation of these variables is a monotonic transformation that does not alter the characteristic of the initial variable, and at the same time allows us to test whether the effect of the variable declines. For example, we expect variations in size or age to be more important to the discouragement of small and young firms than to the discouragement of large and old firms (Cole, 2013).

As provided in Table IV, on average, the firms in our sample are 21.087 years old and have 3.073 employees. However, there are significant differences between the two groups of study. According to our hypothesis, firms which apply for loans are older (21.515) and larger in size (3.156) as compared to firms that are discouraged. The table also indicates that firms work with an average of 4.798 banks. Besides, 16.407 is the average number of years that firms have been working with their main bank. Compared to applicants for loans, discouraged firms have fewer years of relationship with their main bank (14.771 vs 16.609) and work with a lower number of banks (3.642 vs 4.937) (Han et al., 2009; Cole, 2010; Chakravarty and Xiang, 2013). The results support most of the initial hypothesis. We define the variable Growth as the percentage variation in turnover between 2007 and 2008. We include the dummy variable Family which is equals to one when more than 50% of the firm's equities are held by a family group and zero otherwise. We define the dummy variable Education that equals one when the firm's general manager has at least an university degree. We build the

dummy variable International that equals one when the firm buys or sells a percentage of their products in foreign markets.

Table IV shows that on average, the firms of our sample are mainly family firms (73.8%) whose managers have an university degree level education (33.8%). Moreover, the firms operate in international markets (43.40%) and have a negative past growth (-6.1%). It is also observed that discouraged firms should have lower expectations of growth (-14.1%) than applicants (-5.2%) (Vos et al., 2007). Further, applicants for loans are more prone to sell or buy some of their products in international markets (45.71%) than discourage borrowers (24.56%).

We include three industry dummies to control for differences in transparency, tangibility of assets, and loan discouragement across activity sectors. Banks might be less willing to finance investments in knowledge-intensive sectors and in those relying more on softer assets. Firms in these sectors are, compared to firms in sectors with a larger use of physical assets or with a longer tradition in the economy, harder to screen and monitor (Freel et al., 2012). In addition, firms' perceptions of financial constraints changes across sectors (Westhead and Story, 1997, in Freel et al., 2012). We build the dummy variables Industry, Construction and Service that take on the value one when the firm belongs to the industry, construction or service sector respectively and zero otherwise. Finally, we include six dummies to control for the firm geographical location. Each variable takes on the value one if the firm operates in one of the six administrative areas that integrate the Region of Murcia, and zero otherwise. In the interest of brevity, the industry and the location dummies are not shown in the tables and their results are not discussed.

4. **Results**

4.1. *Factor analysis*

We conduct a factor analysis in order to reduce the large amount of information regarding the changes and improvements undertaken by the firm into a manageable number of variables without loss of important information.

Table V shows how each of the dimensions containing strategic variables are separately analyzed in order to reduce the number of variables in each one. The factors are extracted through principal analysis and rotated by means of Varimax, with Kaiser Normalization, when it is possible. An eigenvalue greater than 1 is used as a condition for extract factors. .

Table V, Panel A, contains the 7 variables that measure the changes and improvements not only in products and services but also in management systems made by the firm during the last year. These 7 variables are reduced into 1 factor which we call organizational change. The top loading items in this dimension are those related to the improvement or changes in sales management (40.61%), products and services (39.25%); production (39.22%), and in the supply management of the company (39.09%).

According to previous research, the entrepreneurial orientation of the firm is based on several components showing the competitive aggressiveness and proactiveness of the firm, its risk-taking and innovativeness (Lumpkin and Dess, 2001). Table V, Panel B, shows how our 5 entrepreneurship components are reduced into one factor which we named entrepreneurship orientation. The highest loadings are for the variables that indicate that the firm is highly competent in identifying new investment opportunities (49.72%), prone to take on risky projects with a high potential (45.05%) and the top management favour R&D activities (44.19%).

In Table V, Panel C, we perform a factor analysis with the 9 variables that proxy for the research and development activities carried out by the firm during the last two years. These variables are reduced into two factors which we call internal R&D and external R&D. Internal R&D, is made up of 4 variables describing the R&D activities internally carried out by the firm. As stated by previous literature, the internal R&D has a crucial influence on the innovation activity. Firms need to develop their internal R&D capability so as to improve the performance and innovativeness level of their products (Love and Mansury, 2007). In that regard, our results go into this direction and the highest values are for the variables which show that the firm considers alternative technologies (51.47%), introduces new machinery and production equipment (49.25%) and draws up an innovation plan (48.28%). The factor external R&D includes 4 variables showing that firms try to enhance the inflow of knowledge through R&D cooperation with sources of external knowledge, such as research institutions and universities (Chun and Mun, 2012). The highest values are for the variables indicating that the firm cooperates with universities (58.01%) (57.99%) or participates in European research programs (48.68%) and in innovation centers (45.93%).

The organizational culture of the firm can be defined as a set of values, beliefs, assumptions, and symbols that determine the way in which a firm handles its business and what constitute the manager's main focus (Barney 1986). In Panel D, Table V, we analyze the variables that indicate how the different dimensions related to the business have improved during the last two years. The 11 variables making this dimension up are reduced into 3 factors. The first one is named operating management and is compounded of 6 variables. The highest loadings are for the variables staff organization (43.96%), internal process efficiency (42.98%) and the customer satisfaction (40.05%). The second factor is named firm performance and it includes 3 variables, being the highest loading for the variables showing that the company increases in profitability (59.66%), productivity (55.74%) and market share

(55.35%). The last factor, named human resource management, is made up of the variables that indicate a reduction of the staff turnover (70.60%) and reduction of absenteeism (68.28%).

4.2. *Regression Analyses of Financial Discouragement*

Results in Table VI, Model 1, indicate that the likelihood of being discouraged decreases with the size of the firm, confirming previous evidence provided by Vos et al. (2007), Han et al. (2009) and Freel et al. (2012), among others. Applying for a loan is easier for large companies than for small firms because the former have more assets to pledge as collateral, suffer less asymmetric information problems, and incur in proportionally lower application costs. As in Han et al. (2009) and Cole (2010), we also find that discouragement reduces with the number of banks the firm works with. It seems that dispersed banking relationships help firms to find informed banks willing to offer loans on competitive terms. The location of the firm also seems to influence discouragement. Firms operating in the less developed areas one and three are more likely to be discouraged from applying for a loan than firms operating in the capital of the Region, which is the area that hosts most of the economic, financial and administrative activity of the Region.

In Models 2-5, Table VI, we add each group of strategic variables that we have extracted through our factor analysis in the four panels (A-D) of Table V. These variables allow us to proxy whether the managers of the company adopt a proactive approach to improve different operating aspects of the business and analyze their influence on the likelihood of being discouraged. According to our hypothesis, we expect a negative sign on the coefficient of these variables indicating that SMEs seeking growth or improvement in their business performance are less likely to be discouraged. In Model 2, we add the variable organizational change that summarizes the changes undertaken by the company in products and services, the manufacturing process, and their management. We obtain a negative and

significant coefficient, which indicates that managers that during the previous year have been involved in changes aimed at improving the manufacturing process of the company are less likely to be discouraged.

In Model 3 we analyze the variable entrepreneurship orientation. This variable summarizes whether the company adopts a leading role in their sector, supporting research and development activities, identifying new investment opportunities and being prone to risk. As expected, the coefficient on this variable is negative, but it is not statistically significant. Next, in Model 4 we include the variables external R&D and internal R&D. The variable external R&D proxies for the involvement of the company in research and development activities driven by universities, research centers and the European Union. While the variable internal R&D measures the commitment of the managers to stimulate research and development activities within the company or in cooperation with customers and suppliers. We obtain a negative and significant sign on the coefficient of the internal R&D variable. This indicates that SMEs that have committed their selves to impulse their own research and development activities during the two previous years are less likely to be discouraged from applying for a loan.

In Model 5 we analyze three variables that measure the evolution of the company in different operating aspects during the last two years. Our results show a negative and significant sign on the coefficient of the variables operating management and human resource management. Borrower discouragement reduces for SMEs that seek and achieve improvements in their business management that are translated into more efficient processes, higher products and services quality, better reputation, faster adaptability, and more stable employees.

Finally, in Model 6, table VI, we include all the strategic variables to check the robustness of our results. We observe that the variable organizational change becomes

insignificant, while the estimation of the remaining strategic variables are qualitative unchanged. This supports our hypothesis that SMEs seeking growth or improvement in their business performance are less likely to be discouraged from applying for a loan. As for the firm-specific and the banking relationship control variables, they remain unchanged in all the models after including the different sets of strategic variables.

5. **Summary and Conclusion**

This paper uses a survey data-set of 837 Spanish SMEs to analyze the association between borrower discouragement and prior firm's strategic decisions, while controlling for firm and owner characteristics. While existing literature has neglected factors limiting the demand for resources by an overreliance on arguments which attempt to explain the existence of discouraged borrowers solely in terms of lack of access to supply of credit. The objective of this paper is to show that factors limiting the demand for resources and, therefore, reducing the availability of funds, can be traced back to the firm manager's decision.

Our hypothesis is that managers that undertake strategic decisions seeking growth or improvement in their business performance participate more in the banking market than those showing contentment with their current business situation. Our results shows that SMEs that undertake an active role in research and development activities and that achieve improvements in the operating performance of their business are less likely to be discouraged from applying for a loan.

Who needs credit and who applies for credit is important for firms, prospective lenders and policymakers interested in the financial health of these firms. Credit constrained firms are less likely to invest in R&D and to introduce new products, possibly harming long-term economic growth. Knowing how important borrower discouragement is in Europe, is important for judging the priority which should be attached to government policies aimed at

reducing its effects. For example, policy makers could encourage the transparency about credit eligibility and conditions in order to reduce discouragement.

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Table I. Variables descriptions

Variable name	Description and source
<i>Dependent variables:</i>	
Discouraged	An indicator of the firm's discouragement, equals one when the firm doesn't apply for the loan because it fears rejection and zero if the firm applies for the loan.
<i>Location and industry dummies:</i>	
Industry dummies	Three industry dummies indicating the firm main activity. Each variable takes on the value one if the firm belongs to one of the following sectors: Manufacturing, Construction and Services; and zero otherwise.
Location dummies	Six location dummies indicating the firm geographical location. Each variable takes on the value one if the firm belongs to one of the six administrative areas that integrate the Region of Murcia.
<i>Firm specific variables</i>	
Size	A measure of the size of the firm, which equals the natural logarithm of the number of employees working in the firm in 2008
Age	A measure of the age of the firm, which equals the natural logarithm of the number of years that the firm has been in operation in 2008
Growth	A measure of growth opportunities, which equals the growth rate in net turn over between 2007 and 2008.
Family	A measure of the family ownership of the firm, which equals one when more than 50% of the firm's equities are held by a family group.
Education	A measure of the education of the general manager of the firm which equals one when the manager has at least a Bachelor Degree and zero otherwise.
International	A measure of the international activity of the firm, which equals one when the firm buys and/or sells their products in foreign markets and zero otherwise.
Dispersion	A measure of the strength of the relationship between the bank and the firm, which equals the natural logarithm of one plus the number of banks the firm works with.
Length	A measure of the strength of the relationship between the bank and the firm, which equals the natural logarithm of one plus the number of years the firm has been working with its main bank.

Table II. Correlations.

This table reports pairwise correlations. Definitions and sources of the variables are provided in table I.

	Discouraged	Dispersion	Length	Size	Age	Growth	Family	University	International	Organizational change	Entrepreneur orientation	Internal R&D	External R&D	Operating management	Firm performance
Discouraged															
Dispersion	-0.1546***														
Length	-0.0301	0.1120***													
Employee	-0.2159***	0.4113***	0.1873***												
Age	-0.0403	0.0974	0.7704***	0.2239***											
Growth	-0.0813*	0.0076	-0.0899*	0.05	-0.0915**										
Family	0.0269	0.0308	0.1626***	-0.04	0.1557***	-0.0154									
University	-0.0427	0.0323	0.0583*	0.1315***	0.0882**	0.0573	-0.0659*								
International	-0.1330***	0.1698***	0.1296***	0.2198***	0.1510***	0.0611*	0.1168***	0.0138							
Organizational change	-0.1469***	0.1301***	0.0778**	0.2567***	0.0786**	0.0242	0.0144	0.1039***	0.2295***						
Entrepreneur orientation	-0.1324***	0.0665*	0.0520	0.2137***	0.0355	0.0538	-0.0784**	0.1320***	0.1163***	0.3095***					
Internal R&D	-0.2107***	0.1686***	0.1344***	0.3181***	0.1117***	0.0823**	-0.0484	0.2337***	-0.1711***	0.5403***	0.4348***				
External R&D	0.0570	0.0821**	0.0291	0.0439	0.0231	0.0203	-0.0118	0.0547	-0.0296	-0.2073***	-0.0887**	0.0000			
Operating management	-0.1691***	0.0548	-0.0128	0.1486***	-0.0297	0.1911**	-0.0782**	0.0988***	0.0608*	0.2634***	0.4467***	0.2687***	-		
Firm performance	-0.0513	0.0273	-0.0311	0.1125***	0.0143	0.1214***	-0.0588*	0.0888**	0.1143***	0.0030	0.0535	0.0452	0.1020***	0.0000	
Human resources management	-0.0424	-0.0192	-0.0014	-0.0715**	0.0219	-0.0779**	-0.0027	-0.0290	0.0675*	-0.0693**	-0.0220	-0.0390	-0.0279	0.0000	-0.0000

*, **, *** denote significance at the levels of 10%, 5% and 1%, respectively.

Table III. Strategic variables means

This table reports means for the strategic variables in descending order in each category.

Variables	N	Mean
Panel A. Products, services and manufacturing		
Improvement or changes in products or services	837	0.479
New equipment acquisition	836	0.479
Improvement or changes in production	837	0.467
Introduction of new products or services	837	0.382
Improvement or changes in sales management	837	0.289
Improvement or changes in management	837	0.273
Improvement or changes in supply management	837	0.256
Panel B. Entrepreneurship orientation		
Adopt a proactive attitude towards risk	836	3.582
Top management favors R&D activities	836	3.362
Highly competent in identifying new investment opportunities	835	3.233
Actions carried out by the firm are soon imitated by the competition	834	2.898
Prone to take on risky projects with a high potential	835	2.574
Panel C. R&D activities		
Have introduced new machinery and production equipment	836	0.535
Undertake technological cooperation with customers and/or suppliers	835	0.391
Consider alternative technologies for the firm	835	0.342
Have drawn up an innovation plan	835	0.297
Recruit university graduates	835	0.256
Cooperate with technical innovation centers	836	0.230
Take part in firm developing technological innovation	835	0.186
Have cooperated in innovation with Universities	836	0.151
Have participated in some research program from the European Union	833	0.048
Panel D. Internal resources		
Customer satisfaction	833	4.078
Image of the firm and its products	833	4.052

Product/service quality	835	3.929
Adapt easily to the market changes	832	3.925
Staff organization	833	3.765
Internal process efficiency	833	3.732
Motivation and job satisfaction in the workplace	833	3.523
Reduction in absenteeism	833	3.512
Increase in productivity	830	3.015
Increase in market share	835	2.970
Increase in profitability	833	2.781
Reduction of the staff turnover (voluntary leaving)	833	3.37

Table IV. Firms specific characteristics

This table reports means for each firm specific variable. All variables are defined as in table I, except for the variables dispersion, length, size and age which are in levels instead of the log transformation.

	Mean (applicants for a loan)	Mean (discouraged)	Total mean	t-test	P-value	Significance
Dispersion	4.937	3.642	4.798	3.065	0.002	***
Length	16.609	14.771	16.407	1.299	0.194	
Size	3.156	2.389	3.073	4.998	0.000	***
Age	21.515	17.596	21.087	1.786	0.074	*
Growth	-.052	-.141	-.061	1.777	0.076	*
Family	0.733	0.771	0.738	-.615	0.538	
Education	0.345	0.280	0.338	0.974	0.330	
International	0.4571	0.2456	0.4340	3.062	0.002	***

*, **, *** denote significance at the levels of 10%, 5% and 1%, respectively.

Table V. Loadings of factor analysis

This table reports the factor analysis perform on each group of strategic variables.

Panel A. Factor loadings of variables in product/service and management system changes dimension		
Variable	Organizational change	
Improvement or changes in sales management	0.4061	
Improvement or changes in products or services	0.3925	
Improvement or changes in production	0.3922	
Improvement or changes in supply management	0.3909	
Improvement or changes in management	0.3746	
Introduction of new products or services	0.3736	
New equipment acquisition	0.3076	
Panel B. Factor loadings of variables in the entrepreneurship orientation dimension		
Variable	Entrepreneurship orientation	
Highly competent in identifying new investment opportunities	0.4972	
Prone to take on risky projects with a high potential	0.4505	
Top management favor R&D activities	0.4419	
Adopt a proactive attitude towards risk	0.4228	
Actions carried out by the firm are soon imitated by the competition	0.4193	
Panel C. Factor loadings of variables in R&D activities dimension		
Variable	Internal R&D	External R&D
Consider alternative technologies for the firm	0.5147	
Have introduced new machinery and production equipment	0.4925	
Have drawn up an innovation plan	0.4828	
Undertake technological cooperation with customers and/or suppliers	0.4235	
Have cooperated in innovation with Universities		0.5799
Have participated in some research program from the European Union		0.4868
Cooperate with technical innovation centers		0.4593
Recruit university graduates		0.3309

Panel D. Factor loadings of variables in organizational culture dimension

Variable	Operating management	Firm performance	Human resource management
Staff organization	0.4396		
Internal process efficiency	0.4298		
Customer satisfaction	0.4005		
Product/service quality	0.3658		
Image of the firm and its products	0.3628		
Adapt easily to the market changes	0.3580		
Increase in profitability		0.5966	
Increase in productivity		0.5574	
Increase in market share		0.5535	
Reduction of the staff turnover			0.7060
Reduction in absenteeism			0.6828

Table VI. Regression

The dependent variable discouraged is a binary variable that takes on the value of 1 if the firm is discouraged and does not apply for credit and a value of zero if the firm applies for credit. Standards errors are robust to heteroscedasticity. Definitions and sources of the variables are provided in table I.

Variable	Logit (1)	Logit (2)	Logit (3)	Logit (4)	Logit (5)	Logit (6)
Constant	0.3761 (1.0452)	0.1524 (1.0624)	0.2749 (1.0393)	-0.0677 (1.0506)	-0.1542 (1.0837)	-0.7089 (1.0998)
Dispersion	-0.9697** (0.4808)	-0.9634** (0.4757)	-0.9719** (0.4802)	-0.9309** (0.4676)	-0.7967 (0.4993)	-0.7966* (0.4730)
Length	-0.1127 (0.4079)	-0.0479 (0.4266)	-0.0906 (0.4143)	0.0240 (0.4255)	-0.2129 (0.4214)	-0.0609 (0.4562)
Employee	-0.4904** (0.2085)	-0.4128** (0.1966)	-0.4541** (0.2063)	-0.3936** (0.1931)	-0.4586** (0.2262)	-0.3612* (0.2062)
Age	0.0016 (0.3455)	-0.0490 (0.3509)	-0.0202 (0.3505)	-0.1038 (0.3531)	0.0608 (0.3595)	-0.0132 (0.3712)
Growth	-0.5896 (0.4890)	-0.5394 (0.4566)	-0.5666 (0.4423)	-0.5056 (0.4511)	-0.4516 (0.4455)	-0.3733 (0.4360)
Family	0.5126 (0.4073)	0.5152 (0.4122)	0.4800 (0.4069)	0.3741 (0.4229)	0.2986 (0.4248)	0.2414 (0.4366)
University	0.1191 (0.4038)	0.1695 (0.4014)	0.1881 (0.4047)	0.4077 (0.4042)	0.3862 (0.4186)	0.6395 (0.4190)
International	-0.5955 (0.4358)	-0.5238 (0.4274)	-0.5569 (0.4308)	-0.5041 (0.4255)	-0.4325 (0.4524)	-0.3603 (0.4452)
Organizational change		-0.1835** (0.0897)				-0.0967 (0.1058)
Entrepreneur orientation			-0.1456 (0.1007)			0.0390 (0.1273)
Internal R&D				-0.3933** (0.1674)		-0.3491** (0.1674)
External R&D				0.1546 (0.2373)		0.1039 (0.2458)
Operating management					-0.2004* (0.0841)	-0.1717* (0.09591)
Firm performance					-0.0950 (0.1342)	-0.1217 (0.1397)
Human resources management					-0.2359* (0.1271)	-0.2451* (0.1342)
Observations	469	468	469	464	461	455
Pseudo R ²	0.1291	0.1386	0.1349	0.1630	0.1623	0.1921

*, **, *** denote significance at the levels of 10%, 5% and 1%, respectively and the standard errors are in brackets.

