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The role of personal loans in the financing of SMEs

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Received 29 October 2013
Revised 7 February 2014
Accepted 14 March 2014

Abstract

Purpose – The purpose of this paper is to study the determinants of the use of personal loans in small and medium-sized enterprises (SMEs).
Design/methodology/approach – Personal loans are addressed as a function of the borrower and collateral. To empirically test the hypothesis of this study, a probit model was applied to a group of companies in Bahia Blanca, Argentina, with a previous analysis of the possible effects of sample selection.
Findings – Older companies, firms with lower expected growth rates, younger owners, those who seek to create value or growth, and owners who perceive low emotional costs associated with bankruptcy, are less likely to use personal loans to finance their operations.
Research limitations/implications – This study is limited by the availability of data on SMEs in Argentina.
Social implications – The results highlight the importance of financial aid programmes that focus on SME scarce availability of collateral.
Originality/value – This study makes three principal contributions: first, it investigates the phenomenon of personal loan utilisation in SMEs; second, it analyses financing decisions from both the supply and demand perspectives; and third, it presents a database that includes variables that have not been previously studied in Argentina or other emerging economies.

Keywords Small enterprises, Financing decisions, Personal loans
Paper type Research paper

Introduction

The IberoAmerican Institute of Securities Markets (Instituto Iberoamericano de Mercados de Valores) (2007) reports that in Argentina, small and medium-sized enterprises (SMEs) comprise 99.5 per cent of the business sector, accounting for 39 per cent of total employment and 45 per cent of reported sales in the country. The primary source of external financing for these companies is the banking system, in which loans to the sector have rebounded dramatically since the crisis in 2001. Specifically, lending to SMEs increased by 30 per cent between 2005 and 2006. Nevertheless, the dependence on bank loans represents a barrier to the growth of SMEs, particularly given the small percentage of funds allocated to such enterprises: in Argentina, loans to the private sector represented 12 per cent of the national GDP in 2005, while in countries

A previous version of this work was presented at XLIV Región Anual de la Asociación de Economía Política, Universidad Nacional de Cuyo (Mendoza), Argentina, and at Primer Seminario Interuniversitario sobre Desarrollo Productivo Argentino, Universidad de Buenos Aires. The authors thank Juan Carlos Hallak, Laura D'Amato and all attendants for their valuable suggestions.

Academia Revista Latinoamericana de Administración
Vol. 27 No. 2, 2014
pp. 209-225

1012-8255
DOI 10.1108/ARLA-10-2013-0167

belonging to the Organisation for Economic Cooperation and Development, such loans averaged 66 per cent of GDP (SME Observatory (Observatorio PyME), 2007).

The financing problems of SMEs have been frequently studied from the perspective of failures in the credit market, which can intensify in the context of strong information asymmetries, as can occur in capital markets in less developed countries. The use of personal loans in the financing of SMEs constitutes a less well-studied aspect of this phenomenon, although this approach has arisen as a partial solution to a demand for credit that remains unsatisfied by the traditional financial sector. Therefore, because official estimates of private sector loans do not capture this phenomenon, analysing their determinants and the impact of personal loans for financing SMEs may be extremely useful for economic policy.

The objective of this work is to study the determinants of the use of personal credit in small enterprises to contribute to the scarce literature on this topic. To this end, among those firms that utilise bank loans, we identified two groups of companies:

- Group 1: companies that use loans in which the owner acts as the loan holder for some or all of the loans or, using a broader definition, companies in which lenders hold the personal assets of the owner as collateral.
- Group 2: companies that use loans in which the company is the loan holder.

The research question motivating this work is the identification of distinguishing characteristics, if any, between the two groups identified above. This work is original in that it focuses on a rarely studied aspect of financial decision-making among small businesses, namely the use of personal loans. Thus, we seek to understand the utilisation of such loans, not only through the traditional supply-side lens, which emphasises company characteristics, but also through a demand side analysis of the owner, whose characteristics are considered in addition to those of the company. The methodology used includes a probit model with sample selection, which controls for non-random effects arising from the fact that only some of the companies surveyed used some type of financing and a direct probit model.

We found that key company characteristics, such as company age and expected growth rate, as well as owner characteristics such as the owner's age, business goals for the company, and perception of the costs of bankruptcy, differed significantly between the two groups of SMEs.

The presentation of the content of this study is structured as follows: Financing decisions in SMEs: theoretical framework and background; Research objectives and hypotheses; Methods; Results; and Conclusions.

Funding decisions: theoretical framework and background

Supply-side explanations

The analysis of funding decisions in SMEs, from a supply-side perspective, is part of the theory of financial constraints. In this theory, information asymmetries arise as a primary cause of these constraints, along with the existence of incomplete and fragmented credit markets.

On the one hand, the concept of a "pecking order" implies that an order of preferences exists among funding sources. This hierarchy of preferences suggests that the first source to which companies turn is internally generated funds (retained earnings), followed by the issuance of debt, and finally the expansion of equity (issuance of shares). Different arguments have been proposed to explain this result, such as the higher flexibility and lower transaction costs from using internal funds,

although the most widespread argument is related to observations of the negative signalling effects associated with the issue of new equity shares (Myers, 1984; Myers and Majluf, 1984).

Zoppa and McMahon (2002) argue that a complete version of a financial hierarchy theory for SMEs would include the following:

(1) reinvestment of profits, which could also include the additional time that the entrepreneur invests in the company at a wage below the market rate;

(2) financing through short-term debt, including trade credit and personal credit cards;

(3) financing through long-term debt, potentially beginning with loans from the owners, as well as their relatives and friends;

(4) new capital investments by the owners, their relatives, and friends; and

(5) new capital investments by third parties.

This last option is excluded by Holmes and Kent (1991), as they believe this option is rarely used by SMEs.

The pecking order theory predicts a positive correlation between the debt ratio and the growth and size of the firm, as well as a negative correlation with profitability, effects that are consistent with various studies focusing on small companies (for the USA: Petersen and Rajan, 1994; for the UK: Chittenden *et al.*, 1996; for Australia: Romano *et al.*, 2000; for Spain: Cardone Riportella and Casasola Martínez, 2003; Sorgob Mira, 2005).

Scott (1977) suggests that a company has an incentive to issue secured debt because this increases the value of a company's stock, transferring value from the holders of unsecured debt. Thus, the structure of a company's assets can be related to the company's capital structure. If secured debts save lenders the cost of monitoring, thereby reducing information asymmetries, we may anticipate that companies that have more assets available to be used as collateral will also have higher levels of debt because they will take advantage of these assets to obtain financing at lower rates.

By contrast, Stiglitz and Weiss (1981) analysed the ways in which information asymmetries affect loan offers by banks, demonstrating that the lending market is characterised by credit rationing. First, there is a problem of adverse selection, which arises because less-risky firms are not inclined to pay high interest rates and, thus, exclude themselves from the group of companies demanding loans at a given rate. Furthermore, higher interest rates can induce companies to invest in riskier projects, creating a moral hazard problem. Petersen and Rajan (1994, 1997) found that, for the USA, small firms facing credit rationing first exhaust the least costly sources of funds (retained earnings, then bank loans), and if they still possess attractive investment opportunities, they turn to more expensive sources of funding, such as commercial loans. Fanelli *et al.* (2001) analysed the determinants of barriers to credit access for large Argentine companies. They found that larger companies received preferential treatment from lenders, or encountered fewer obstacles in accessing long-term loans and that the effect of size on debt-to-equity ratios is greater than the effect of tangible asset ratios, although both were found to be significantly positive. Similarly, Filippo *et al.* (2004) developed a model to describe credit rationing among SMEs in Argentina and found that firm size was positively correlated with the probability of obtaining a bank loan.

The financial growth cycle (Berger and Udell, 1998) is based on the idea that information asymmetries have a dynamic character over the lifespan of companies. These authors suggest that SMEs have a financial growth cycle, during which their needs and available sources of credit can change with the rhythm of business growth, resulting in increased experience and information transparency. Thus, companies are more opaque in the start-up phase, when they are still developing their business model and/or beginning production at a small scale. During this stage, companies must rely largely on investments made by the entrepreneur, family, and friends, as well as commercial loans and angel investors. Venture capital usually appears later, in the rapid growth phase. Credit from financial institutions, first in the form of short-term and later long-term loans, becomes available when the company reaches a size and age where its track record reflects a certain level of tangible assets. It is important to bear in mind that this is not a general theory for all small businesses, given that there is no perfect correlation between the age, size, and growth of such companies.

The financial growth cycle was studied by Gregory *et al.* (2005) for small and medium companies in the USA, and these authors found that size can be used to distinguish between companies that used internal financing and those that obtained long-term funding or sold securities on capital markets. The authors found that younger companies were more likely than older companies to access long-term loans and capital markets, instead of medium-term loans or venture capital. Nevertheless, this latter result, which is contrary to expectations, should be considered with care, given that this study did not include variables that allowed the authors to control for growth.

In the relationship lending framework, lenders collect information about borrowers using the borrowers' financial information along with other data that connect the borrower to other companies over the course of their relationship, such as the borrower's credit history within the same bank. In addition, information is gathered from providers and clients as well as the company's history in its local community (Berger and Udell, 1995, among others). The evidence suggests that commercial banks have advantages in collecting this information because they provide a variety of services (such as deposits, payroll, and investment management) to small businesses, and these businesses generally work with the same bank over periods of several years. Berger *et al.* (2001) analysed data from the Debtor's Centre of the Central Bank of the Republic of Argentina and found that small firms receive less credit from large banks and from foreign banks, and that this effect is greater for companies with a history of late payments. These companies also tended to concentrate their borrowing relationships with a single bank. Bebczuk (2004) found that for a sample of Argentine SMEs, the use of overdraft protection increased the probability of obtaining a bank loan, which can be considered evidence of relationship lending.

Demand-side explanations

Financing decisions respond to both supply-side and demand-side factors, in particular with respect to a distinctive characteristic of small businesses: business-owner entanglement.

In the first place, information asymmetries are not the only aspect that changes as companies evolve: the degree of the owner's risk aversion changes as well, starting out relatively low in the initial phase and increasing significantly in the growth, maturity, and decline phases (Leitner, 2006). The concept of the owner-administrator life cycle (Briozzo and Vigier, 2007, 2012), was developed to capture this idea, and it describes the

long-term changes that owner-managers often experience with respect to their degree of risk aversion and their goals for the business. These goals can vary from growth and profit seeking to more personal goals, such as maintaining their family's income and lifestyle. Ang (1992) suggests that SMEs have shorter life expectancies because they depend strongly on the longevity of their founder and his or her plans for succession. When the owner is planning his or her succession, long-term planning can be neglected, affecting decisions about the source and duration of loans. It is therefore likely that the financial cycles of companies (Berger and Udell, 1998) and the life cycles of owners are interconnected, sometimes with opposing effects. For example, information asymmetries decrease with the increasing longevity of companies, resulting in increased access to debt (supply effect), while risk aversion and the cost of personal bankruptcy increase with the age of the entrepreneur, leading to a reduced desire to utilise debt (demand effect). Briozzo and Vigier (2012) found that for Argentine SMEs, the age, level of education, and business objectives of the owner were important variables affecting decisions regarding the use of short-term vs long-term financing.

Vos *et al.* (2007) analysed two groups of SMEs in the USA and the UK and found that traditional indicators of financial performance, such as return on assets and sales margin, were not predictive of the complexity of financing activities. By contrast, they found support for the "satisfaction hypothesis": younger and less educated owners used external financing more actively than older and better-educated owners (whom the authors referred to as "wiser"). The authors also found that firms with higher expected growth were more active in seeking financing, while firm size was positively correlated with the degree of diversification in funding sources. The authors did not find the legal structure of firms or the business objective to be significant.

Furthermore, when considering the business-owner entanglement phenomenon characteristic of small firms, it is also necessary to consider the management approach of the firm (Briozzo and Vigier, 2007, 2012), which depends on the following factors:

- The business goals of the entrepreneur, which can range from traditional financial objectives, such as increasing the value of the company or the growth of sales, to more personal goals, such as providing employment to family members, passing on the company to the next generation, or maintaining a given lifestyle. Carland *et al.* (1995) suggest that there may be differences in the risk appetites of founders who focus primarily on growth and profitability, owners who emphasise personal and family interests, and managers without a stake in the firm. It is presumed that owners with growth-oriented goals will be more likely to seek external financing (Romano *et al.*, 2000).

- The attitude towards financing with debt and previous experience with debt, both at personal and firm level because there are frequently no clear limits between the finances of the company and those of the owner. Knowledge of the financial system, from a personal perspective, can tend to reduce the risk aversion commonly associated with debt financing.

- The personal costs of bankruptcy, including the socio-economic and emotional consequences that bankruptcy signifies for the owner, even with limited liability. These consequences result from a lack of diversification of the owner's assets and human capital, as well as his or her emotional investment in the company, particularly if it is a family business. In addition to financial factors, there are

emotional costs associated with damage to the owner's reputation, as well as the sentimental value that a business may have for its owner, particularly if it is a family business. Sheperd *et al.* (2009) maintain that one of the reasons that entrepreneurs tend to postpone the declaration of bankruptcy of their businesses is the anticipated pain of these losses. Briozzo and Vigier (2010) found that for Argentine SMEs, the emotional costs of bankruptcy were positively associated with self-exclusion from credit markets.

Finally, Steijvers *et al.* (2010) found that small family businesses in the USA were more likely to use personal loans compared to businesses that were not family owned. The use of personal loans can create agency problems among the various owners of a company due to the unequal distribution of risk and the emergence of free riders. This problem is mitigated in family businesses because strong ties exist between the different parties. Thus, family businesses are more likely to resort to the use of personal loans.

Research objectives and hypotheses

The objective of this work is to study the determinants of the use of personal loans in small businesses. Among firms that utilise bank loans[1], we identify two groups of companies:

- Group 1: companies that use loans for which the owner acts as the loan holder for some or all of the loans or, using a broader definition, companies in which the loans hold personal assets of the owner as collateral.
- Group 2: companies that use loans in which the company is the loan holder.

We exclude from this definition those companies that do not use loans, because it is possible to identify distinct subgroups among them: first, those companies that always exclude themselves from credit markets (the case of extreme debt aversion, as documented by Briozzo and Vigier, 2007, 2010); second, companies that do not utilise loans at a given moment due to the lack of a need for external funding (behaviour governed by the pecking order), although they could access such loans if needed; and third, companies that encounter credit rationing (either following a rejected loan application or in the case of anticipated rejection). Due to the limited size of the sample on which this work was based, it was methodologically impossible to include this degree of disaggregation, despite the need to do so based on the anticipated differences in the behaviour of these distinct groups. We therefore limited our study to those companies that utilised debt[2].

Personal loans obtained by the owner from credit markets are incorporated into the company as loans from the owner or as capital contributions. Strictly speaking, in terms of the risk assumed, these loans are a form of equity. The same argument can be used when the holder of the loan is the company but the collateral for the loan consists of personal assets (the owner's house, for example) because the residual risk in such cases is assumed by the owner.

In this study, we incorporate a new dimension into the financial growth cycle of the company by considering the type of debt to which the firm has access. We anticipate that in the early stages of growth, access to credit is limited to personal loans. As entrepreneurs gain experience and establish a track record, the information asymmetries between the bank and the firm decrease, and the company becomes increasingly eligible to access credit.

The primary source of differences between firms in Groups 1 and 2 that we may anticipate on an a priori basis with respect to this track-record effect is the legal structure of the company, which may limit the firm's creditworthiness. Nevertheless, we expect that other (supply-side) variables related to information asymmetries in the relationships between banks and companies/owners may be important as well. Similarly, we anticipate that the (demand-side) business-owner entanglement phenomenon may be important as well.

Several hypotheses are proposed to describe these anticipated effects, *Ceteris paribus*:

H1. Company size: in accordance with the pecking order and financial growth cycle theories, a larger firm size is expected to correlate with smaller information asymmetries and therefore to positively influence credit utilisation, particularly loans in the name of the company.

H2. Company age: company age is expected to influence credit utilisation in a manner similar to that described for firm size.

H3. Limited liability: a legal structure with limited liability determines not only the patrimonial responsibility of a company but also the firm's income tax rate (fixed at 35 per cent for Argentine corporations (*Sociedades Anónimas* – SAs) and limited liability companies (*Sociedad de Responsabilidad Limitada* – SRLs)) as well as the degree of regulation, given that SAs and SRLs are required to maintain detailed accounting records. It is, therefore, expected that incorporation under either of these structures will make such companies more attractive lending opportunities for the banking system, in addition to indicating the firm's legal eligibility to apply for loans.

H4. Overdraft protection: according to relationship banking, the use of overdraft protection can be seen as a relationship between the company and the banking system, facilitating access to longer-term loans for which the company is the loan holder. By contrast, from the perspective of credit rationing, a positive correlation is expected between overdraft protection and the use of personal credit because the use of this particularly burdensome funding source signals obstacles to accessing other types of financing.

H5. Expected growth: within the framework of the pecking order, companies with greater growth requirements must seek external funding sources, resulting in a positive relationship between the expected growth rate and the probability of belonging to Group 2. However, larger growth opportunities are associated with greater moral hazard, which may lead to greater credit rationing (and thus, a reduced probability of belonging to Group 2).

H6. Profitability: profitability is an indicator of a company's ability to self-finance. According to the pecking order hypothesis, more profitable companies tend to rely less on external financing compared to their less profitable counterparts.

H7. Sector: the sector to which the company belongs may act as a proxy for the nature of the assets that the company holds. It is likely that companies in the industrial sector will have more assets that can serve as collateral, a factor

that can tend to diminish information asymmetries between the company and potential lenders. Thus, membership in these types of sectors may facilitate access to loans in the name of the company.

H8. Owner's age: according to the satisfaction hypothesis of Vos *et al.* (2007), "wiser" (i.e. older and better educated) owners will be more satisfied with the current status of their companies and will thus be less entrepreneurial and less inclined to seek external sources of funding.

H9. Owner's education: this variable's anticipated effect is similar to that of the age of the company owner.

H10. Owner's business goals: the business goals of the owner can be considered to be primarily financial if the owner seeks to increase sales and create wealth compared to more personal goals such as maintaining a given lifestyle or providing employment to family members. A greater tendency to pursue financial goals is associated with a greater need for financing, and a positive correlation with the use of loans whereby the company is the loan holder is therefore anticipated.

H11. Emotional costs of bankruptcy: it is useful to determine whether the most significant cost of a potential bankruptcy is economic (e.g. the need to find a new source of income) or emotional (e.g. the reactions of close associates and society at large). Higher emotional costs of bankruptcy are associated with the lower utilisation of financing methods that could put the continued viability of the company at risk, for example, loans held by the firm.

H12. Family businesses: due to the existence of internal agency costs associated with the use of personal guarantees, it is anticipated that family businesses are less likely to use loans held by the company.

The above hypotheses are presented in Table I, summarised in terms of the anticipated effect of each variable on the relative probability of a company belonging to Group 2 compared to Group 1.

Methods

Data sources

Because there are no public databases of Argentine SMEs, this study presents the results of a field study conducted in the city of Bahia Blanca (Argentina) between July and October of 2006. To define the universe of the sample, SMEs were identified according to Resolutions 675/2002 and 303/2002 of the SePyME (see Table AI). Data collection were conducted through personal interviews using a structured questionnaire containing closed-ended questions. To measure the various aspects of the financial structure of companies, validation questions were used to detect inconsistencies in the responses. A total of 265 firms were contacted, and 122 complete responses were obtained. In this study, two groups of companies were analysed: the entire sample to study the selection equation and a subset of 61 companies using financial instruments and providing complete survey responses. This data set is unique in its inclusion of factors that have not been previously studied in small companies.

Focus	Variable	Anticipated effect
Supply-side explanatory variables		
Financial growth cycle	Micro-enterprise	−
	Company age	+
	Limited liability	+
Rationing	Overdraft	−
	Expected growth rate	−
Relationship banking	Overdraft	+
Financial hierarchy	Micro-enterprise	−
	Sales margin	−
	Expected growth rate	+
	Industry	+
Demand-side explanatory variables		
Life cycle of the owner	Owner's age	−
	Business goals	+
Management focus	Owner's education	−
	Emotional cost of bankruptcy	−
Internal agency costs	Family business	−

Notes: In this table, the anticipated effects of each explanatory variable are described and grouped according to the conceptual area to which they belong. Company size is treated as a binary variable, denoting those companies that fit the definition of micro-enterprises, and the anticipated effect of micro-enterprise status on the use of loans to the company is negative

Table I.
Summary of the anticipated effects of the use of company loans vs the use of personal loans (membership in Group 2 vs Group 1)

As a form of external validation and to compare our local results with national-scale data, Rotstein *et al.* (2007) compared their study results with those reported by the SME Observatory in its 2007 structural report (where information was available), although the latter data set includes only industrial firms.

Methods of data processing and analysis

As indicated previously, we excluded from the definition of the dependent variable those companies that did not use credit, as this group is expected to have different characteristics from those that utilise external financing. Thus, the appropriate model for estimation must control for the non-randomness introduced by this sampling procedure. To that end, we used a probit model with sample selection (based on the selection model of Heckman, 1979 and further developed by Van de Ven and Van Pragg). If the sample selection does not introduce bias, the utilisation of personal loans can be estimated directly using a probit model as follows:

$$P(y = 1/x) = G(x_i\beta) \tag{1}$$

where G is a function of the standard normal cumulative distribution:

$$G(z) = \Phi(z) = \int_{-\infty}^{z} \phi(v)dv$$

and $y\ \phi(z)$ is the density of the normal standard distribution.

Marginal effects can be calculated as follows:

$$\frac{\partial \Pr(y=1|\mathrm{X})}{\partial x_k} = \frac{\partial F(\mathrm{X}\beta)}{\partial x_k} = f(\mathrm{X}\beta)\beta_k \quad (2)$$

where $f(.)$ is the density function of F(.).

The marginal effect is the slope of the probability curve that relates x_x with $\Pr(y=1|\mathrm{X})$, keeping the other variables constant. The sign of the marginal change always corresponds with the sign of β_k (given that $f(\mathrm{X}\beta)$ is always positive), while its magnitude depends on the other variables and their coefficients.

To operationalise the dependent variable "use of personal loans", two different definitions were used:

- Group 1 was considered to include those firms whose owners reported financing part or all of their investments with personal loans; 15 per cent of surveyed firms fell into this category.
- Group 1 was considered to include those firms included in the previous definition as well as those firms that reported financing investments with loans secured by personal assets; 36 per cent of surveyed firms used loans that were either personal loans to the owner or loans secured by personal assets of the owner[3].

Because the classification of companies is significantly affected by the definition used, calculations were performed using both definitions.

Table II presents the operating definitions of the explanatory variables.

Variable	Operational definition
Firm size (micro-enterprise)	Binary variable: 1 if the firm is a micro-enterprise based on Resolutions 675/2002 and 303/2004 of the Secretary of Small and Medium Enterprises and Regional Development (SePyME)[a]
Firm age	Numeric variable: the number of years since the company was founded
Limited liability	Binary variable: 1 for companies constituted as corporations of limited liability companies (Sociedad Anónima or Sociedad de Responsabilidad Limitada)
Overdraft	Binary variable: 1 for companies with overdraft coverage
Expected growth rate	Numeric variable: the anticipated per cent variation in sales volumes in the next two years
Profitability	Numeric variable: the sales margin from the previous year
Sector	Binary variable: 1 for companies in the industrial sector
Owner's age	Numeric variable: the owner's age in years. The oldest owner is used if there is more than one owner
Owner's level of education	Binary variable: 1 if the owner has completed tertiary/university education
Business objective	Binary variable: 1 if the owner's business objective is the growth of sales or the creation of wealth
Emotional cost of bankruptcy	Binary variable: 1 if the owner believes that the emotional cost of bankruptcy is greater than the financial cost
Family business	Binary variable: 1 for a family business. According to Gallo, we consider a firm to be a family business if the majority of its owners belong to the same family and they exercise control of financial activities

Table II.
Operational definitions of the explanatory variables

Notes: [a]This classification is based on annual turnover and it was the metric used by the Central Bank of Argentina and by the SePyME to determine whether a business is an SME in the year of the survey. See Table AI

Results

Table III presents descriptive statistics for each funding group within the sample. From these data, significant differences can be observed a priori, in agreement with our expectations with respect to the following:

- Expected growth: the average company in Group 2 has lower expected growth than that in Group 1, indicating that the moral hazard effect appears to prevail.
- Age of the owner: owners of the firms in Group 2 are, on average, younger than those in Group 1.
- Business objectives: the percentage of firms pursuing financial objectives such as growth or value creation is greater in Group 2.
- Emotional costs of bankruptcy: firm owners who finance their firms through personal loans place higher importance on the emotional costs of bankruptcy.

The hypotheses presented in this study were tested using two calculation methods: first, probit regression with sample selection and second, probit regression. In both cases, different model specifications were tested to determine the sensitivity of the results to these adjustments. In this manner, the effects of different variables of interest were studied without including them all simultaneously; this was undertaken both to minimise the loss of degrees of freedom and to avoid saturating the model with binary variables and thereby reduce the availability of discrete quantitative variables.

No globally significant results were obtained when comparing companies with loans held by the firm (Group 2) to those with loans held by the owner (Group 1)[4]. In contrast, when the definition of Group 1 was broadened to include those cases in which loans to the company were secured with personal assets, the results were significant.

Calculations made using the probit model with sample selection indicate that there is no strong evidence of selection bias[5]; therefore, the marginal effects of the explanatory variables on the unconditional probability of the dependent variable

	Group 1	Group 2
Numeric variables		
Firm age	25 years	28 years
Expected growth rate**	17.5%	11.4%
Owner's age*	50 years	44.4 years
Sales margin	13%	17%
Binary variables		
Business goals*	50%	70%
Owner's level of education	54%	58.8%
Emotional cost of bankruptcy**	41.9%	20%
Family business	90.6%	88.9%
Industry	18.8%	22.2%
Micro-enterprise	21.9%	20%
Limited liability	65.6%	69%
Overdraft	46.9%	57.8%

Notes: This table presents the percentage of each subgroup for which binary variables have a value of 1 as well as the mean value of the numerical variables. *,**Variables that are statistically significant at the 10 and 5 per cent confidence intervals, respectively, as calculated using ANOVA for numeric variables and the χ^2 and Fisher exact tests for binary variables

Table III.
Median values, by group and overall, according to dependent variable, loan holder, and type of loan

(probit model) are presented directly in Table IV. In both groups of calculations (with and without sample selection), several variables are observed to be statistically significant and with the same sign in both cases: the age of the firm and its expected growth rate, as well as the age of the owner, his or her business goals, and the emotional costs of bankruptcy. The only variable that was found to behave differently between the two calculation methods was the use of overdraft protection, which was weakly significant in calculations of the effect on the conditional probability of the dependent variable.

Table IV also presents additional information on the calculations and goodness of fit tests used. Long (1997) warns that for these types of maximum likelihood models, it is best to use large samples to allow reliance on the properties of the estimators. For this reason, various specifications were used that would allow the available data to be used more effectively. However, Long (1997) reports that numerical estimation methods work best when the model is suited to the data, in which case the results should converge within five iterations. For all of the models used in this work, convergence was achieved in three to five iterations.

The results indicate that older companies are more likely to belong to Group 2, which is consistent with the predictions of the financial growth cycle theory: reducing information asymmetries improves access to credit. The negative effect of the anticipated growth rate can be interpreted in the same way, as a characteristic that signals the potential for moral hazard issues. It is important to recall that 25 per cent of the companies in Group 1 reported having obtained their requested loan amounts only occasionally in the last two years, while only 9 per cent of the firms in Group 2 encountered such situations. However, using the strict definition of Group 2, only 25 per cent of these companies reported not being able to make investments due to lack of funds, whereas 53 per cent of the firms in Group 1 reported encountering such limitations.

Similarly, evidence was obtained to support the owner-administrator life cycle, as a negative correlation was observed between the age of the owner and the probability of belonging to Group 2, while a positive effect was observed for the pursuit of a financial objective. Furthermore, the results support the relevance of the emotional costs of bankruptcy, which showed a negative effect on the probability of belonging to Group 2. This result suggests that loans held by the firm are considered to be more risky by the owners, in part due to the amount of money involved as well as to the effect from the separation of patrimonial responsibility[6].

Thus, the evidence supports hypotheses *H2* (age of the firm), *H5* (growth), *H8* (age of the owner), *H10* (business goals), and *H11* (emotional costs of bankruptcy). The remaining variables were not found to be significant, leading to the rejection of hypotheses *H1* (firm size), *H3* (limited liability), *H4* (overdraft), *H6* (profitability), *H7* (sector), and *H12* (family business).

Conclusions

The aim of this work was to study the determinants of the use of personal loans in small businesses. Personal loans are addressed in terms of not only the borrower, but also the collateral. The empirical analysis was based on comparing the variables that influence the probability that companies use loans held by the business (Group 2) vs using loans held by the owner and/or secured by the personal assets of the owner (Group 1).

Using a sample of small companies in Bahia Blanca, Argentina, it was found that both supply-side and demand-side variables distinguish the two groups. The results

Model	Col.1	Col.2	Col.3	Col.4	Col.5	Col.6	Col.7
Numeric variables							
Firm age	0.013**	0.011*	0.012*	0.015*	0.013**	0.013**	0.012**
	(0.021)	(0.068)	(0.056)	(0.013)	(0.025)	(0.024)	(0.027)
Expected growth rate	−1.131*	−1.142*	−1.520**	−0.871	−1.176*	−1.245*	−1.180*
	(0.076)	(0.067)	(0.044)	(0.172)	(0.062)	(0.054)	(0.068)
Owner's age	−0.020***	−0.020***	−0.017***	−0.020***	−0.020***	−0.020***	−0.020***
	(0.002)	(0.002)	(0.007)	(0.006)	(0.002)	(0.002)	(0.002)
Sales margin				0.777			
				(0.271)			
Binary variables							
Emotional cost of bankruptcy	−0.375**	−0.403**	−0.290	−0.279	−0.385**	−0.398**	−0.389**
	(0.03)	(0.016)	(0.153)	(0.122)	(0.025)	(0.019)	(0.026)
Business goals	0.342**	0.335**	0.269*	0.168	0.325**	0.358**	0.331**
	(0.012)	(0.015)	(0.067)	(0.316)	(0.016)	(0.01)	(0.016)
Owner's education			0.022				
			(0.884)				
Family business							0.045
							(0.849)
Industry						−0.151	
						(0.356)	
Micro-enterprise	0.112	0.164					
	(0.405)	(0.210)					
Limited liability					0.040		
					(0.778)		
Overdraft		0.200					
		(0.18)					
Information on the calculations and goodness of fit							
n	61	61	51	47	61	61	61
Log-likelihood	−30.377	−29.498	−25.381	−25.517	−30.523	−30.251	−30.538
Prob > χ^2	0.002	0.000	0.007	0.012	0.003	0.002	0.003
AIC	1.225	1.229	1.270	1.384	1.230	1.221	1.231
BIC	−161.233	−158.880	−122.236	−102.973	−160.933	−161.485	−160.911
Adj. Count R^2	0.261	0.217	0.263	0.150	0.13	0.130	0.174

Notes: AIC, the Akaike Information Criterion value; BIC, the Bayesian Information Criterion. AIC and BIC are criteria for comparing maximum likelihood models. Given two models calculated using the same data, preference is given to the model with the lower value for these criteria. This table shows the marginal effects of each variable on the unconditional probability of belonging to Group 2 instead of Group 1 according to the loan holder and the type of collateral, assuming the mean values for all other variables. For binary variables, the coefficient indicating the effect of the variable ranges from 0 to 1. For example, in Col.1, a company with emotional costs of bankruptcy exceeding its financial costs has a 37.5 per cent lower probability of belonging to Group 2 instead of Group 1. An empty cell indicates that this variable was not included in the model. The Adjusted R^2 count measures the percentage of hits beyond the level that would be achieved by choosing the category with the largest number of cases observed. Individual p values are shown in parentheses. The significance of each coefficient is indicated as follows: ***,**,*for 1, 5, and 10 per cent confidence intervals, respectively

Table IV.
Marginal effects on the unconditional probability of using loans held by the company vs personal loans

support the financial growth cycle theory, based on the positive effect of company age on the probability of belonging to Group 2, and the administrator-owner life-cycle theory, which is supported by the negative relation of the owner's age and the positive relation of financial business goals with the probability of belonging to Group 2. Similarly, a negative relation between the expected growth rate and the probability of belonging to Group 2 signals the existence of moral hazard problems.

Furthermore, the evidence supports the relevance of the emotional costs of bankruptcy in the financing decisions of small companies. It is therefore useful to review the effects of different types of financing on the capital structure of the company. While an owner's personal loans used to invest in the business constitute a form of equity, loans held by the company function as part of the firm's debt. It is possible that this difference also affects the way in which the owner evaluates the company's financial risk compared to his or her personal financial risk. Despite the local nature of the sample as well as its limited size[7], these results are particularly interesting because they suggest that the use of personal loans to finance companies does not depend exclusively on information asymmetry problems.

Finally, it is useful to note the relevance of these results for public policy. First, the evidence suggests that the credit indicators for the productive sector, as developed by central banks, are incomplete because they do not capture the effects of personal loans on the financing of companies. Second, the incidence of the use of personal loans, which is approximately 15 per cent using the strict definition based on the loan holder, indicates the potential existence of a market failure because the utilisation of this problematic funding source results in underinvestment problems. Third, the existence of this phenomenon indicates an important limitation in the lines of financial support to the SME sector because the majority of these consist in the subsidisation of lending rates offered by the banking system to companies. If part of the productive sector encounters problems in accessing this source of funding, these lines of support have a limited effect. Other forms of assistance thus become relevant, such as the formation of Mutual Guarantee Societies, which are designed precisely to solve the problem of scarce or non-existent guarantees in SMEs.

Notes

1. We focused on this type of loan because it represents the primary source of external financing for SMEs according to data from the SME Observatory (2006, 2007).
2. In an earlier version of this study, we included the definition of a first group that did not rely on loans in general, but when calculations were performed with three values of the dependent variable using a limited sample size, the joint significance of the results was not satisfactory.
3. No significant differences exist for any of the variables studied between the companies that used personal loans and those using loans held by the company but secured with owners' personal assets.
4. The complete results can be obtained from the authors upon request. We believe that the principal cause of the low significance is due to the characteristics of the sample, which was characterised by very low participation in Group 1, according to this definition. The only variable that was individually significant was the age of the company, which had a positive effect.
5. The complete results can be provided by the authors.
6. A personal loan does not imply bankruptcy risk for the company if the latter has a legal structure with limited liability.

7. The reduced size of the sub-sample of companies financed using personal loans constitutes a weakness of this study. Nevertheless, it is useful to point out that because a random sample was used, it is expected that the participating group of SMEs is representative of the true values in the total population. Furthermore, despite the limited size of this sub-sample, the results (Table IV) were found to have adequate combined significance (χ^2 test), which supports their statistical validity.

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Appendix. Definition of SMEs in Argentina

Resolutions 657/2002 and 303/2004 of the Secretary of Small and Medium-Sized Businesses and Regional Development (Secretaría de la Pequeña y Mediana Empresa y Desarrollo Regional (SePyME)) present a classification of SMEs as a function of their annual turnover, as shown in Table AI.

	Agriculture	Industry and Mining	Retail	Services	Construction
Micro	US$87,379	US$291,262	US$582,524	US$145,631	US$129,450
Small	US$582,524	US$1,747,573	US$3,495,146	US$1,048,544	US$809,061
Medium	US$3,495,146	US$13,980,583	US$27,961,165	US$6,990,291	US$6,472,492

Notes: This table presents monetary values in US$, considering the average exchange rate of Argentine Pesos to US$ from July to October 2006 (time of the survey)
Sources: Resolutions 675/2002 and 303/2004 of the SePyME

Table AI.
Definition of SME in Argentina (in US$)

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