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Firm-Level Determinants of the Financing Decisions of Small and Medium Enterprises: Evidence from Argentina

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ABSTRACT

This article studies the determinants of the financing decisions of small and medium enterprises (SMEs), which we characterize through three cases: trade-off behavior, pecking order, and extreme aversion to debt. We test our hypotheses using a dataset of firms from Bahía Blanca (Argentina) for two years: 2006 and 2010. We find that firm characteristics related to information asymmetries, such as firm age, size, and legal form; and personal factors, such as owner's age and education; and perception of emotional bankruptcy costs, are relevant variables in SME financing behavior. The recognition of extreme aversion to debt motivates reconsideration of the underleverage problem of SMEs.

RESUMEN

Este trabajo analiza los determinantes de las decisiones de financiamiento de las PYMEs, caracterizados a través de tres casos: el *trade-off*, la teoría de la jerarquía y la extrema aversión a la deuda. Colocamos a prueba nuestras hipótesis mediante el uso de un conjunto de datos de empresas de Bahía Blanca (Argentina) a lo largo de dos años: 2006 y 2010. Observamos que las características de la empresa relacionadas a las asimetrías de la información, tales como edad de la empresa, tamaño y constitución legal, y factores personales, como la edad y educación del dueño, y su percepción emocional sobre los costos de la quiebra, son variables importantes en el comportamiento relacionado a la financiación. El reconocimiento de la aversión extrema cuanto a la deuda conduce a reconsiderar el problema de bajo coeficiente de endeudamiento de las PYMEs.

RESUMO

O presente trabalho estuda os fatores determinantes das decisões de financiamento nas pequenas e médias empresas (SMEs na sigla em inglês), que caracterizamos através de três casos: comportamento de compromisso, *pecking order* e extrema aversão a dívida. Testamos as nossas hipóteses usando um conjunto de dados de empresas de Bahía Blanca (Argentina) referentes a dois anos: 2006 e 2010. Descobrimos que as características da empresa relacionadas às assimetrias das informações, como idade, tamanho e forma de constituição jurídica da empresa, além de fatores pessoais como grau de

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instrução e idade do proprietário, e percepção do custo emocional da falência são variáveis relevantes no comportamento de financiamento das SMEs. O reconhecimento da extrema aversão ao débito nos leva a reconsiderar os problemas de desalavancagem das SMEs.

Introduction

The development of small and medium enterprise (SME) is itself an interesting problem in developing economies (Dong & Men, 2014). In such firms, the problems of asymmetric information, adverse selection, and moral risk can severely affect access to external financing. Thus, this constitutes one of the main research lines that can promote the development and survival of SMEs, especially in emerging countries where the financial constraints are stronger. Therefore, the aim of this article is to study financing decisions in Argentinian SMEs, in light of the particular characteristics that arise in this context.

Capital structure theory considers the importance of two main theories: the pecking order theory (PO) and the trade-off theory (TO). The first assumes that companies are exposed to information costs arising from these asymmetries (Myers, 1984; Myers & Majluf, 1984). SMEs privilege internal financial sources that are least subject to information costs and at the same time involve less risk. Hamilton and Fox (1998) also showed the preference of SMEs for internal funds, based on the idea of control and flexibility of their owners. The second theory, named the trade-off theory, considers industrywide effects (taxes, bankruptcy cost, and agency problems) and predicts a target optimal structure as a result of balancing costs and benefits of issuing debt and equity. This theory assumes that the optimal capital structure is a result of balancing the benefits of leverage (mainly tax savings) and the costs of financial distress. In this regard, if the company takes on debt, tax savings are expected to be larger, as are the costs arising from default risk. Previous empirical evidence coincides with both trade-off and pecking order predictions in SMEs. Authors such as Lopez-Gracia and Sogorb-Mira (2008); Degryse, de Goeij, and Kappert (2010); Aybar-Arias, Casino-Martinez, and López-Gracia (2011); and Serrasqueiro and Maças Nunes (2012) concluded that TO and PO should not be considered mutually exclusive explanations for financing decisions. Our work falls within this line of studies.

In addition, we consider a third complementary description for SME financing decisions, which is particularly relevant in emerging economies: extreme aversion to debt (AV) (Briozzo & Vigier, 2009). In this case, leverage is considered to be highly disadvantageous, and owner-managers will not take on debt even though doing so means passing up an attractive investment.

The problems related to capital structure require a deep analysis of the actual capital structure vis-à-vis the optimal (Kumar & Purnima, 2015). The

former requires analyzing the SME choices with respect to extant financial sources; the latter refers to all available sources of funds in the market. In this study, we balance both perspectives insofar as we focus on how firms take financing decisions instead of analyzing the observed capital structure.

We test our hypotheses using a dataset of SMEs from Bahia Blanca, Argentina, with data collected in 2006 and 2010. We select different subgroups of variables as explanatory factors. First, regarding firm-specific variables, we consider size, firm age, legal form, industrial sector, and reinvestment rate. Moreover, owner characteristics are also considered: owner's age, education, goals for his or her firm, and perception of bankruptcy costs. The results show that demand-side characteristics can severely affect financing decisions and sometimes lead to extreme aversion to debt.

This article makes at least three contributions to the topic of SME financing decisions. First, in the way we characterize the problem under study, with a focus on the financing decision instead of the observed capital structure. Second, the assessment of both the firm's and the owner's characteristics, which has rarely been done in previous studies because of the unavailability of such data. Finally, this study addresses the gap in studies on SME financing decisions in developing countries.

The remainder of the article is organized as follows. In the next section we review the main relevant theories and the previous studies on SME financing and present our hypotheses. Additionally, we present a brief review related to the macroeconomic conditions in Argentina during the years of analysis. Section 3 describes the data and methodology, and Section 4 shows and discusses the empirical results. Finally, the main conclusions of this article are summarized in Section 5.

Literature review

Conceptual framework and hypotheses

In this section, we briefly describe the capital structure and financing behaviors approaches considered in this study: trade-off theory, pecking order theory, and extreme aversion to debt. For each approach we present the hypotheses of this study.

Trade-off theory (TO)

Trade-off theory considers industrywide effects (taxes, bankruptcy costs, and agency problems) and predicts a target optimal structure as a result of balancing the costs and benefits of issuing debt and equity. Under the TO approach, we expect a positive relationship between debt ratios and tax-shield-related factors, such as profitability and corporate tax rates, as well as a negative relationship between the variables associated with bankruptcy costs and

information asymmetries. In this sense, small-sized, young, high-growth firms are expected to use less debt (Frank & Goyal, 2009).

Dynamic trade-off models (DTO) consider the adjustment costs of changing the leverage ratio (Fischer, Heinkel, & Zechner, 1989; Goldstein, Ju, & Leland, 2001; Strebulaev, 2007; among others). Firms whose leverage ratios do not coincide with their targets will only adjust their capital structure if the benefits outweigh the adjustment costs. These deviations from optimal leverage may create problems in interpreting the empirical research results (Hennessey & Whited, 2005).

Thus, according to TO theory, we can identify the following financing behavior.

Case trade-off

Leverage is considered advantageous under certain conditions, and owner-managers choose to use debt even if internal funds are available.

Considering the effect of diverse factors on the benefits and cost of debt, we formulate the following hypotheses regarding firm financing according to TO behavior:

Hypothesis 1: Firm size and age: The relative impact of bankruptcy costs should decrease with firm size, so a direct relationship between firm size and TO financing behavior exists. Older firms face less uncertainty, so the expected value of tax shields should be higher, leading to a direct relationship between firm age and TO financing behavior.

Hypothesis 2: Limited liability: This variable captures limited liability and the tax system, because limited liability implies a fixed profits tax rate (35%) in Argentina. Because of the tax effects, a direct relationship with TO financing behavior exists.

Hypothesis 3: Sector: Belonging to the manufacturing sector acts as a proxy for tangible assets, which moderates the magnitude of bankruptcy costs; thus a direct relationship with TO financing behavior exists.

In developing countries, macroeconomic and regulatory uncertainty can be particularly strong. Recent capital structure models study the effect of changing financial constraints and credit risk in financing decisions (Hackbarth, Miao, & Morellec, 2006; Korajczyk & Levy, 2003). A particular form of economic instability is inflation. The tax advantage is due to the time value of money and therefore increases in periods of high inflation and high nominal interest rates (Myers, Dill, & Bautista, 1976). Several studies (from Jaffe, 1978 to Frank & Goyal, 2009) reveal that during an inflationary period, firms employ more debt in their capital structure as the real cost of debt falls.

Hypothesis 4: Macroeconomic conditions: Given the lower cost of debt in real terms due to increasing inflation, firms in year 2010 (a year with higher inflation) have stronger preference for TO behavior.

Pecking order theory

Pecking order theory describes a hierarchy in financing choices instead of predicting the existence of an optimal structure. Firms first use internal funds (retained earnings), then issue debt, and, as a last resort, issue new equity. Myers (1984) and Myers and Majluf (1984) explained the negative signaling effect of new equity issues. Hamilton and Fox (1998) also showed a preference for internal funds based on the owner's desire for control and flexibility. While the original proposition of the financing hierarchy results from the undesirable signaling effect of new equity issues, this argument can be considered a demand-side explanation for private firms.

Following PO theory, we can identify the following financing behavior.

Case pecking order

Because leverage is considered to be disadvantageous compared with internal sources, owner-managers choose to use internal funds first. If internal financing is exhausted and attractive investments remain, they use debt to avoid losing an investment opportunity. Similarly, as soon as internal funds become available, they choose to cancel debt before maturity.

Romano, Tanewski, and Smyrnios (2000) found that equity is less likely to be a consideration for older family business owners in Australia. This result agrees with PO, as outside equity is the last source of financing. Moreover, older and more educated SME owners are less likely to seek or use external financing (Vos, Jia-Yuh Yeh, Carter, & Tagg, 2007). This result is in line with PO, where internal financing is the preferred source of financing. Thus, we formulate the following hypotheses regarding firm financing according to PO behavior:

Hypothesis 5: Owner's age: Owner's age has a direct relation with PO financing behavior.

Hypothesis 6: Owner's education: Higher education is positively related to PO financing behavior.

Berger and Udell (1998, p. 622) explained the small firm's financial structure using a financial growth cycle "in which financial needs and options change as the business grows, gains further experience, and becomes less informationally opaque." These authors showed that capital structure varies with firm size and age. Smaller and younger firms rely on initial insider finance, trade credit, and angel finance if available. As firms grow, they gain access to other financing sources: first, banks and finance companies; and later, public equity and debt markets. This sequence can be seen as a dynamic view of the PO where information asymmetry strength decreases as the firm gains experience, as we postulate in the following hypothesis:

Hypothesis 7: Firm's size and age: These variables capture the financial growth cycle of the firm, and act as an inverse proxy for information asymmetries; thus an inverse relationship with PO financing behavior exists.

Fama and French (2002) noted that under PO hypotheses, firms have no incentive to issue debt if they still have internal funds to finance investments. This behavior assumes that firms use debt only if attractive investment opportunities remain.

On the one hand, pecking order theory predicts a positive relationship between the debt ratio and firm size and growth but a negative relationship between the debt ratio and profitability. Empirical studies on small firms around the world support these hypotheses (e.g., Petersen & Rajan, 1994; Romano et al., 2000; Sogob Mira, 2005; Van Caneghem & Van Campenhout, 2012). Haileselasie Gebru (2009) finds that PO holds for less-educated owners in Ethiopia, owners with a higher level of entrepreneurial skills, and firms with less involvement in the form of ownership. On the other hand, empirical evidence coincides with both trade-off and pecking order predictions in SME. These authors conclude that TO and PO should not be considered mutually exclusive explanations for financing decisions (see Aybar-Arias et al., 2011; Degryse et al., 2010; Lopez-Gracia & Sogorb-Mira, 2008; Serrasqueiro & Maças Nunes, 2012). Thus, we formulate the following hypotheses:

Hypothesis 8: Limited liability: This variable may capture the degree of informality because according to Argentinean regulations, these firms must present financial statements. Thus, through the reduction of information asymmetries, an inverse effect with PO financing behavior exists.

Hypothesis 9: Sector: Belonging to the manufacturing sector acts as a proxy for tangible assets, which moderates the intensity of information asymmetries; thus an inverse relationship with PO financing behavior exists.

Extreme aversion to debt and personal lifecycle approaches

Briozzo and Vigier (2009) described the existence of extreme aversion to debt in small firms: firms that willingly pass up attractive investments if they have to recourse to debt to finance them.¹ This leads us to postulate the following case of financing behavior.

Case aversion to debt

Leverage is considered highly disadvantageous, and owner-managers will not take on debt even if they pass up an attractive investment by doing so. This situation is a case of extreme aversion to debt.

Briozzo and Vigier (2009) took a demand-side view of financing decisions and propose the managerial view and the life cycle of the owner-manager approach, which are an application of the upper echelons theory (Hambrick & Mason, 1984) to SMEs. The managerial view considers the impact of the owner-managers' personal characteristics and the way they run their organizations on financing decisions through a set of different variables.

Appearing first are the owner's business goals, as investment and financing decisions may differ if the owner has a traditional financial objective instead of family oriented goals. Carland, Carland, Carland, and Pearce (1995) suggested differences in the risk propensities of founders who primarily focus on profit and growth, owners of small business who focus on more personal goals and family income, and corporate managers. Because SMEs are not subject to capital markets scrutiny, preferences and objectives of owner-managers in these firms strongly affect capital structure decisions (Barton & Matthews, 1989). For example, Romano and colleagues (2000) found that firms whose owners' objectives are to create a lifestyle business are likely to use capital and retained profits as a source of business finance.

Hypothesis 10: Owner's business goals: Owners who focus more on business related goals are less willing to pass up positive-net, present-value projects than owners focused on personal goals, thus an inverse relation with Aversion to debt (AV) financing behavior exists.

Second, capital structure decisions are influenced by the firm owner's attitude toward debt. The entrepreneur's prior experience and knowledge about capital structure lies among the factors that influence this attitude (Matthews, Vasudevan, Barton, & Apana, 1994). Then, attitude toward debt financing and previous debt experiences (personal and for the firm) influence financing decisions, because owners with this experience may have less aversion to debt risk (a demand effect). Moreover, relationship banking studies (Binks & Ennew, 1997; Boot, 2000; among others) show that previous records can soften information asymmetries with banks (supply effect).

Hypothesis 11: Experience with debt at personal level: The owners' lack of experience with debt at the personal level has a direct relationship with AV financing behavior.

Third, the owner's education level: the owner's education can signal management professionalization, which can be associated with better access to financing sources. Conversely, according to Vos and associates (2007) contentment hypothesis, older and more educated owners are expected to be more satisfied with their firm's situation, less prone to entrepreneurial activity, and less interested in searching for external financing.

Hypothesis 12: Owner's education: A direct relationship between owner's education and AV financing behavior exists.

Moreover, Shepherd, Wiklund, and Hayni (2009) acknowledged that there are emotional as well as financial consequences from business failure. In particular, personal costs of bankruptcy appear because of the owner-firm intertwinement typically present in SMEs. These costs involve the socio-economic and emotional consequences of the firm's bankruptcy for the owner, even with limited liability. As banks and other financing institutions often require personal guarantees from SME owner-managers, this personal

collateral is equivalent to the entrepreneur investing their own equity in the business (Thorne, 1989).

Hypothesis 13: Emotional costs of bankruptcy: Owners that consider the emotional costs of bankruptcy to be higher than the economic-financial consequences, for the firm and for themselves, will be less likely to engage in financial leverage (AV financing behavior).

The *lifecycle of the owner-manager* considers the owner-manager's risk aversion to increase with age. The owner-manager's goals evolve during his or her lifetime as well (from the pursuit of profit and growth to more family-oriented objectives). A relationship between the firm's financial growth cycle and the owner-manager's lifecycle also exists. As the firm and its owner age, information asymmetries decrease, granting easier access to debt (a supply side effect captured in H5), whereas the owner's risk aversion and emotional bankruptcy costs increase with age, which create the desire to use less leverage (demand-side effect).

Hypothesis 14: Owner's age: Risk aversion increases with age, so older owners will be less inclined to face the higher risk of a leveraged firm; thus a direct relationship with AV financing behavior should exist.

Finally, family businesses may use less debt than nonfamily businesses, due to aversion to financial risk and the owner's fear of losing the freedom to dictate business policies (Gallo, Tàpies, & Cappuyns, 2004).

Hypothesis 15: Family firm: Firms that follow AV financing behavior will be predominantly family firms.

Three cases of financing behavior: A model

The three cases we propose (TO, PO, and AV) represent a choice in changing the total debt level (ΔTD) as a consequence of choosing to finance a new project. Mathematically, this choice can be expressed as follows:

$$\Delta TD_t = TD_t - TD_{t-1} = \begin{cases} f(\lambda, D^* - D_{t-1}) \rightarrow \text{TO, DTO} \\ f(CFD) \rightarrow \text{PO} \\ 0 \text{ and } D_t = 0(\text{always}), \text{ even though } D^* > 0 \rightarrow \\ \text{Extreme aversion to debt} \end{cases} \quad (1)$$

Where:

D_t = Ratio of total debt to total assets in moment t .

D^* = Ratio of total debt to total assets that maximizes firm value, which is the objective optimal debt ratio.

λ = Velocity of adjustment to the optimal debt ratio.

CFD = Cash flow deficit.

Traditional theories (e.g., TO and PO) can explain the first two cases. Under trade-off arguments, in case TO (i.e., internal funds are still available), a firm can choose to use debt if the firm value is expected to rise with this decision. If the firm has reached the optimal capital structure, new debt will be issued to finance new projects to maintain the optimal ratio.

Dynamic trade-off models state that the firm will issue debt only if it is underleveraged ($D < D^*$) and if the benefits outweigh the debt issue costs. Empirical studies (e.g., Aybar-Arias et al., 2011) found that the adjustment speed of SMEs is nonzero, which means that ΔTD_t cannot always be zero. Therefore, DTO cannot explain extreme and constant aversion to debt (case AV).

For case PO, internal funds are always selected first. This hierarchy relates to credit rationing because the firms that expect to be rationed (or were previously rationed) in the debt market will prefer to avoid this unproductive process and use their internal funds first.

The firms belonging to case AV choose to avoid financial debt at all costs even if they must pass up an attractive investment to do so. In this case, extreme aversion to debt can result from a very high aversion to risk, large expected bankruptcy costs (both financial and emotional), and the owners' belief that macroeconomic conditions are highly unstable (this fear can be particularly strong in developing countries).

Previous evidence

Several prior studies analyze PO and TO predictions in SME, mainly in developed countries.² Table 1 shows that in general results agree with a complementary role of PO and TO in financing decisions. For emerging countries, the financing hierarchy, described by the PO, appears as a clear pattern of financing behavior.

National context

Argentina is of special interest for several reasons: (1) it is the third largest economy by Gross Domestic Product (GDP) in Latin America, after Brazil and Mexico, (2) SMEs account for 70.2% of formal employment and 53.7% of Argentinean GDP (Cohen Arazi & Baralla, 2012), and (3) the percentage of SMEs with a bank loan or line of credit is similar to the Latin-American average (World Bank, 2014). Thus, while our results are specific to Argentina, we expect that similar results will be found in other emerging economies.

In order to understand the underlying context of Argentina in general and of each year of our study in particular, in Table 2 we present a summary of the main economic and business indicators. Argentina's economy experienced high growth of the GDP during this period, with a GDP per capita rising from

Table 1. Literature Review on SMEs financing decisions.

Author	Country and Sample	Methodology	Results
López-Gracia and Sogorb-Mira (2008)	3569 Spanish small and medium enterprises (SMEs) from 1995 to 2004.	Pecking Order (PO): Performance is analyzed by observing the sign and magnitude of the firm's financial deficit and the level of debt through cash flow as a proxy for internal resources. Trade-off (TO): Test the sign impact of a set of variables (effective tax rate, the ratio between depreciation and total assets, debt ratio, firm profitability, rate of real leverage) Econometric tool: Panel data model.	Results suggest that both theoretical models help to explain the capital structure of SMEs. First they find clear evidence that SMEs follow a funding source hierarchy (Pecking Order model). Then, the results reveal that greater trust is placed in SMEs aiming to reach target or optimum leverage (Trade-off model). This remains true even when SMEs take a long time to reach this level, due to the high transaction costs they have to face.
Shyam-Sunder and Myers (1998)	157 large and small Scottish firms, from 1971 to 1989.	TO: Test empirical hypothesis related to debt ratio towards a target; it predicts a cross-sectional relation between average and debt ratios and asset risk, probability, tax status, and asset type. PO: Considering that in this theory there is no well-defined optimal debt ratio, the interest tax rate shields and the threat of financial distress are selected as explanatory variables. Econometric tool: ordinary least squares tests.	Consistent with the PO they find that entrepreneurs in start-ups turn to internal sources first. Counter to the PO, however, evidence in this paper finds that where external funds are required, the main source is equity rather than debt. In most cases, in-depth interviews show that a bridged pecking order applies in that the businesses move from self-funding to external equity in preference to, or instead of, bank finance.
Watson and Wilson (2002)	626 UK SMEs firms, considering data until 1994.	The TO consider the expected changes in financing of retained earnings, change in debt and new share issues. The PO not expected changes of those variables provide evidence consistent with the PO. Moreover, they consider a group of independent variables (total assets, accounting balance sheet, changes in the relative proportions of debt and equity) with respect to the dependent variable growth rate. Econometric tool: Regression Model.	This paper tests the implication of the Pecking Order model that when SMEs require additional finance and the use of retained earnings is preferred over debt, debt will be preferred over new share issues. The results also suggest that there may be a PO within debt types since the explanatory power of all the estimated models increases significantly when the change in debt is decomposed into its ratios.
Benito (2003)	Spanish data of 6417 firms from 1985 to 2000. United Kingdom data of 1784 companies from 1973 to 2000.	PO: A negative relation between debt and investment is considered a key determinant of this theory. TO: A positive relation between debt and cash flow or profitability is expected. Econometric tool: Panel data with fixed effects/	The results are consistent with the Pecking Order approach and generally inconsistent with the trade-off approach, suggesting that the behavior is consistent with the existence of a hierarchy of finance faced by firms in Spain and the United Kingdom.
Degryse et al. (2010)	Dutch SMEs; 2003 to 2005.	PO and TO: Test the effects of a different sign for some key variables, such as asset structure, net debtors as a proxy of liquidity, and profitability. Econometric tool: Panel data model	The results of the firm characteristics analyzed are mostly in line with the predictions of the Pecking-Order theory. SMEs use profits to reduce their debt level, since they prefer internal funds over external funds. They also

Serrasqueiro and Mações Nunes (2012)	1805 Portuguese SMEs; 1999 to 2006	The PO behavior is studied by observing the sign and magnitude of the firm's financial deficit as the main explanatory variable of the change in debt level between a period and the previous one. On the other hand, the TO behavior is studied through the determinants of adjustment to optimal debt ratio (profitability, age, size, growth, asset structure, etc.). Econometric tool: Panel Data Models.	conclude that both inter- and intra-industry heterogeneity are important drivers of capital structure, in line with both PO and TO theories of capital structure. The analysis of inter-industry effects reveals that different industries show different degrees of leverage, in line with the TO theory. The results for young and old SMEs suggest that TO theory and PO theory should not be considered mutually exclusive, since both theories are necessary to understand the SMEs' capital structure decisions throughout their life cycle. Due to the difficulty in accessing long-term financing sources, young SMEs are more likely to follow PO theory than TO theory would predict. For old SMEs, financial behavior appears to be closer to that predicted by the TO theory than to what is predicted by the PO theory.
Van Caneghem and Van Campenhout (2012)	79,097 Belgian SMEs	Considering both TO and PO theories, the financial structure of SMEs is controlled for a set of variables such as firm size, firm age, asset tangibility, and profitability. The sign is analyzed according to the expected result. Econometric tool: odds least squares regression model.	They test the impact of differences in quantity and quality of information on SME financial structure. The results confirm that a lack of information and low quality of information inhibits firms from using external funds. Their results indicate that the traditional capital structure theories (PO theory, TO theory, and agency theory) are all relevant in explaining Belgian SME capital structures. Nearly 59% of LATAM firms declare they do not have a target debt ratio.
Maquieira et al. (2012)	290 LATAM SMEs Compared to 378 USA firms (from Graham and Harvey 2001 data)	The LATAM (not random) sample includes 290 firms from seven countries: Argentina, Chile, Colombia, Ecuador, Peru, Uruguay and Venezuela, and some observations from other countries. The study consists in a survey on corporate finance, taking the structure and questions developed in Graham and Harvey (2001). Statistically significant differences are evaluated comparing LATAM and USA samples, and for LATAM firms for size, leverage, dividends, industry, and Chief Financial Officer age.	Availability of internal funds has a higher importance for highly levered and small firms (PO). Managers who follow a target debt ratio are more likely to consider factors such as the tax advantage of interest deductibility, and the potential costs of bankruptcy (TO).
Vera-Colina, Melgarejo-Molina and Mora-Rapira (2014)	4168 Colombian SMEs from 2004 to 2009.	A quantitative research was applied as an explanatory objective, in order to identify some of the causes that may be causing problematic situations in the performance of SMEs, especially with respect to their access to resources financial. This order involves exploratory, descriptive, and correlational processes.	The results show that SMEs are mainly financed with own resources, to a lesser degree with short-term liabilities and low proportion with long-term liabilities, following a PO pattern.

(Continued)

Table 1. Continued.

Author	Country and Sample	Methodology	Results
Forte, Barros and Nakamura (2013)	19,272 SMEs during 1994–2006; comprising a variety of firms based in the state of Sao Paulo, Brazil.	This research is a nonexperimental research design (ex post facto), longitudinal (panel data), exploratory, and correlational. The econometric analysis employs the System Generalized Method of Moments estimator (GMM-Sys).	The results obtained are strong and show a robust negative relationship between profitability and the leverage ratio, consistent with the pecking order arguments and may also be interpreted as evidence of the limited access Brazilian SMEs have to outside financing. The second an important result is the positive relationship between leverage and the growth rate (besides with smaller magnitudes in the long-term leverage regressions). This result is also compatible with the pecking order theory. Risk, sales growth and ROE have a positive effect on long-term leverage. Asset tangibility has a negative effect on total leverage. Firms preferred own resources first, second short-term debt, and last they used long-term debt.
Mejía-Amaya (2015)	23 medium Colombian firms during 2007–2011	Multiple lineal regression using three different measures of leverage: total liabilities to assets, long-term liabilities to assets, and total liabilities to equity.	

Table 2. Economic and business indicators for 2006 and 2010.

Variable	2006	2010	2010 LATAM Average
GDP per capita (current US\$)*	6783	11,460	8978
GDP growth (annual %)*	8.364	9.136	5.7
Gross capital formation (% of GDP)*	20.802	19.212	13.4
Gross capital formation (annual % growth)*	18.061	38.439	21.3
Domestic credit provided by financial sector (% of GDP)*	24.940	23.253	64.6
Domestic credit to private sector (% of GDP)*	10.545	11.649	40.0
Domestic credit to private sector by banks (% of GDP)*	10.210	11.293	36.7
Inflation rate (consumer prices index, annual variation)**	6.705	24.274	3.7
Lending interest rate for overdraft (local currency, %)+	15.28	17.31	–
Lending interest rate for mortgage credit (local currency, %)+	12.93	16.54	–
Proportion of firm total purchases of fixed assets that was financed by internal funds or retained earnings (SMEs, %)	72.89	63.29	62.9
Percent of SMEs with a line of credit or loan from a financial institution++	35.75	47.96	45.8
Firms that did not apply for a loan last year because there was no need for a loan—establishment had sufficient capital (SMEs, %)+	52.97	26.91	41.9
Access to finance is major or very severe obstacle (SMEs, %)+	36.81	43.93	31.1

Sources. *World Bank Development Indicators, + Central Bank of the Republic of Argentina, **San Luis Province Statistics Institute, ++ World Bank Enterprise Surveys. SME defined up to 200 employees.

US \$6783 (year 2006) to US \$11,460 (year 2010), a sign of recuperation from the severe 2001–2002 crisis. Macroeconomic indicators of domestic credit to private sector remained stable, but the increasing inflation led to higher interest rates in nominal terms (from 13% to 16.5%). This fact can be observed in the increase of the percentage of SMEs declaring that interest rates were the main reason to avoid credit financing (from 23% to 45%). Interestingly, the real interest rate became negative in year 2010 (24% inflation rate versus 16%–17% lending interest rate), which favored debtor positions for those that could afford the financial costs, leading to higher leverage (36% of SMEs had a credit line in year 2006, versus 48% in 2010). In addition, SMEs relied more on internal funds in year 2006 (in year 2006, 53% of firms that did not apply for a loan declared they had sufficient capital, versus 27% in year 2010), a change probably derived from deteriorating profitability due to inflation-caused price distortions and increases of the cost structure.

Data and methodology

Data

The data were collected by an ad hoc questionnaire and personal interviews, in two different years: 2006 (110 firms) and 2010 (112 firms), in the city of Bahía Blanca, Argentina. With this study, we developed a dataset of SMEs with information on variables with no previous records in Argentina, such as personal bankruptcy costs, owner-managers' goals for their businesses, and experience with debt at the personal level. To check for internal

consistency, we included several follow-up questions.³ We also compared our results with national level reports from Observatorio PyME (2006, 2010) and The World Bank (2011).

Methodology

The three cases of financing decisions can be represented through a qualitative nominal variable, which can assume three values:

$$Y = \begin{cases} 1, & \text{if firm belongs to case TO} \\ 2, & \text{if firm belongs to case PO} \\ 3, & \text{if firm belong to case AV} \end{cases} \quad (2)$$

We use the Multinomial Logit Model (MNL) to model the proposed relations, which can be written as (Long, 1997):

$$\begin{aligned} \Pr(y_i = 1|x_i) &= \frac{1}{1 + \sum_{j=2}^J \exp(x_i \beta_j)} \\ \Pr(y_i = m|x_i) &= \frac{\exp(x_i \beta_m)}{1 + \sum_{j=2}^J \exp(x_i \beta_j)} \text{ for } m > 1, \end{aligned} \quad (3)$$

where y is the dependent variable, J represents nominal outcomes, and $\Pr(y = m|X)$ is the probability of observing outcome m given X .

X represents the vector of independent variables: Firm age, Size, Limited liability, Manufacturing, Year 2010, Owner's age, Owner's education, Percentage of reinvested gains, Business goal, Experience with debt at the personal level, Emotional costs of bankruptcy, and Family firm.

$\Pr(\cdot)$ is a function of the linear combination $X\beta_m$, where β_m (the vector of coefficients) differs for each outcome.

The MNL can also be expressed as an odds model:

$$\Omega_{mn}(x_i) = \frac{\Pr(y_i = m|x_i)}{\Pr(y_i = n|x_i)}, \quad (4)$$

which allows us to interpret the relative risks ratio or odds ratio:

$$\frac{\Omega_{mn}(X, x_k + \delta)}{\Omega_{mn}(X, x_k)} = e^{\delta \cdot \beta_{k,mn}} \quad (5)$$

as a unit change ($\delta = 1$) in x_k , the odds of m versus n are expected to change by a factor of $\exp(\beta_{k, m|n})$.

We describe the operational definitions of the variables in Table 3. We also add interaction terms between year 2010 and the other variables.

Table 3. Operational definitions of the variables.

<i>H</i>	Variable	Operational Definition
<i>H1; H7</i>	Firm age	This variable represents the number of years between the firm's inception and the year 2006.
<i>H1; H7</i>	Size micro [¶]	Defined considering the corresponding definition of the Secretary of Small and Medium Enterprises and Regional Development (SePyME).*
<i>H2; H8</i>	Limited liability	We assess whether the legal structure of the firm implies limited liability.
<i>H3; H9</i> <i>H4</i>	Manufacturing [¶] Year 2010	Defined as belonging to the manufacturing sector. Binary variable, one is assigned to observations from year 2010.
<i>H5; H14</i>	Owner's age	If several owners co-exist, we consider the oldest one.
<i>H6; H12</i> <i>H10</i>	Owner's education [¶] Business goal [¶]	Owner with a college (or higher) degree. Owner-manager states that he or she pursues maximization of sales or value.
<i>H11</i>	Experience with debt at the personal level [¶]	Owner-manager has used debt for personal purposes. We do not include credit card financing.
<i>H13</i>	Emotional costs of bankruptcy [¶]	Owner-manager considers the emotional costs of bankruptcy to be higher than the economic costs.
<i>H15</i>	Family firm [¶]	We consider a business as a family firm if the ownership and control belong to the members of a single family (Gallo 1997).
Control variable (CV)	Percentage of reinvested gains	This variable represents the percentage of net gains reinvested in the firm during the previous year.

Note. [¶]For binary variables, one is assigned to the firms possessing the corresponding characteristic. When several owners co-exist, we consider the larger owner (except for age).

*This classification is based on annual turnover and 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 each survey. See Annex, Table A2.

Results

Descriptive statistics

In Table 4, we show the descriptive statistics considering the global mean values and each year of the sample, for the three cases of financing decisions. We observe that use of financial liabilities is higher for TO compared to PO firms in year 2006, but use of debt is quite similar for year 2010. This result responds to the changing macroeconomic conditions, in particular the increase in the inflation rate that favors debtor positions.

It is interesting to note the decrease of firms from case AV and the increase of case TO firms between 2006 and 2010. This can be explained through the natural aging of the sample and generational change, given that (1) 31% of the firms are present both years and (2) the increasing inflation rate lowers the real cost of debt.

Some characteristics remain stable despite the migrations of some firms between cases, such as the predominance in case AV of micro-sized firms, older owners with lower education, low experience with debt at personal level, and high perception of emotional costs of bankruptcy.

Table 4. Descriptive statistics of the sample.

<i>H</i>	Variable	Case TO		Case PO		Case AV		Mean
	Year	2006	2010	2006	2010	2006	2010	
–	Use of financial liabilities (%)	60.67%	67.86%	48.38%	64.29%	0%	0%	49.5%
<i>H5; H14</i>	Owner's age (years)	47.378	54.625	47.888	56.642	53.937	60.941	52.784
<i>H15</i>	Family firm (%)	85.56	83.04	87.10	78.57	88.89	82.35	84.28
<i>H6; H12</i>	Owner's education (%)	56.92	54.46	59.26	60.71	37.50	29.41	53.36
<i>H10</i>	Business goals (%)	55.56	68.29	42.31	85.71	50.00	75.00	62.45
<i>H11</i>	Experience with personal debt (%)	25.56	16.35	22.58	10.71	0	5.88	17.53
<i>H13</i>	Emotional costs of bankruptcy (%)	25.84	26.13	33.33	28.57	47.06	31.25	28.57
<i>H2; H8</i>	Limited liability (%)	65.56	59.82	58.06	78.57	33.33	52.94	61.20
<i>H3; H9</i>	Manufacturing (%)	23.33	20.54	12.90	21.43	5.56	23.53	20.07
<i>H1; H7</i>	Firm's age (years)	25.633	30.116	24.387	24.444	31.666	31.353	27.805
<i>H1; H7</i>	Size micro (%)	28.89	25.89	20.00	32.14	44.44	47.06	29.19
CV	Reinvested gains (%)	.5932	.5688	.6321	.7160	.4531	.8058	.6077
	Sample distribution (cases) (%)	64.75	73.20	22.30	18.30	12.95	8.50	–
	Sample distribution (cases) (%)		69.18		20.21		10.62	–

Note. [¶] For Binary variables the shown value is the percentage of the subsample with that characteristic.

Multivariate analysis

Our MNLM estimations show problems with two variables: use of personal debt and manufacturing sector, which have very few observations for case 3 firms. Discarding these variables, we try different variations of the basic model to analyze the robustness of the results. We present the final MNLM results (in terms of odds ratios, Equation 5) in Table 5.

In the first panel of Table 5, we show the odds of belonging to case TO relative to case PO (holding all other variables constant). We find that the odds are smaller for each additional year of owner age. They are greater for each additional year of firm age, for micro-sized firms, for the firms with limited liability, and for firms in year 2010.

Owner education, family firm, business goals, emotional costs of bankruptcy, and reinvested gains all have no significant effects. Considering the interaction effects, in year 2010 the impact of business goals, limited liability and size are smaller than in year 2006. In particular, the effect of limited liability in year 2010 is of $2.82 \times 0.145 = 0.41$ and the impact of size in year 2010 is of $3.10 \times 0.11 = 0.36$. Because the odds ratio turns to become less than one, the direction of the relation changes between the two years for both variables—an effect that also appears in Table 4.

In the second panel of Table 5, we show the odds of belonging to case AV relative to case PO. These odds are greater for each additional year of owner and firm age. The odds are smaller for owners with a college degree. This negative effect of owner education can show the prevalence of professional management arguments versus the contentment hypothesis. Contrary to what we expected, the observed sign for business goals is positive: the owners with

Table 5. Odds ratios for the MNLM.

<i>H</i>	Variable	TO vs PO	AV vs PO	AV vs TO
	Global Effect	Odds	Odds	Odds
<i>H5;H14</i>	Owner's age	0.961**	1.0574**	1.0985***
<i>H16</i>	Family firm	0.4244	0.2071	0.4880
<i>H6; H12</i>	Owner's education	0.5792	0.1924***	0.3322*
<i>H10</i>	Business goals	2.1717	4.4657*	2.0563
<i>H13</i>	Emotional bankruptcy costs	0.6679	2.1705	3.2497*
<i>H2;H8</i>	Limited liability	2.8221*	0.8347	0.2957
<i>H1;H7</i>	Firm's age	1.037**	1.0632***	1.0252
<i>H1;H7</i>	Size: micro-firm	3.1047*	3.4795	1.1207
CV	Reinvested gains	0.6472	0.1265	0.1955
<i>Differential effect for year 2010</i>				
	Year 2010	89.760***	0.1680	0.0018***
<i>Interaction effects</i>				
<i>H10</i>	Business goals	0.1529**	0.5137	3.3597
<i>H2; H8</i>	Limited liability	0.14511**	1.0534	7.2595*
<i>H1; H7</i>	Size: micro-firm	0.1148**	0.8538	7.4333*
CV	Reinvested gains	0.2179	10.8523	49.7868**

Note. An empty cell means that the particular variable is not included in the model specification. Statistically significant values are shown in bold (*denotes a 10% significance level, **a 5% significance level, and ***a 1% significance level). An odds ratio of 1 indicates that the condition or event under study is equally likely to occur in both groups. An odds ratio greater than 1 indicates that the condition or event is more likely to occur in the first group. An odds ratio less than 1 indicates that the condition or event is less likely to occur in the first group. For the interaction effects, the interpretation is in multiplicative terms. For example for Size (case AV-TO), the odds ratio is 7.4333, which means that the effect of this variable is 7.4333 times higher for firms in year 2010.

value-creation goals are less likely to behave according to pecking order predictions. Regarding interaction effects, none of the interactions with year 2010 is statistically significant.

Finally, the third panel of Table 5 shows the odds of belonging to case AV relative to case TO: we find that these odds are greater for each additional year of owner age, and for owners with emotional bankruptcy costs. They are smaller for owners with college or higher education and for firms in year 2010. The interaction effects show that reinvested gains, limited liability, and size have stronger effects for firms in year 2010.

In order to further analyze the nonexpected results, Table 6 presents the predicted probabilities for each case, by year and by type of business goals and size. The probability of belonging to case TO is higher for owners who pursue a business goal and for micro-sized firms in year 2006; however, this relationship reverses strongly in year 2010. Similarly, the probability of belonging to case PO is smaller for owners who pursue a business goal and for micro-sized firms in year 2006, but reverses in year 2010. This change in the financing behavior is probably explained in terms of the different macroeconomic conditions of rising inflation and higher nominal interest rates in 2010. Related to the likelihood of following the AV behavior, probability is higher for owners who do not pursue business goals during

Table 6. Predicted probabilities for each year, type of business goals, and size.

Variable	Prob (case = TO)		Prob (case = PO)		Prob (case = AV)	
	2006	2010	2006	2010	2006	2010
Business goals						
No	0.653	0.906	0.305	0.079	0.042	0.014
Yes	0.731	0.743	0.159	0.193	0.111	0.064
Micro-sized firm						
No	0.646	0.861	0.292	0.119	0.062	0.019
Yes	0.796	0.591	0.117	0.224	0.087	0.185

Note. This table shows the predicted probability of belonging to each case for firms with the mentioned characteristic, for each year, holding all other variables in the model at their means.

2006. During 2010 the probability is inverse: investors who follow business goals present a higher probability of belonging to case AV. Moreover, considering the variable micro-sized firm, the probabilities for both years are higher when the firm is micro-sized.

Discussion

Table 7 presents a summary of the expected and observed results in terms of the odds ratios. These results show partial support for the contentment hypothesis, as older (H14) but less educated owners (H12) are more likely to belong to case AV of extreme aversion to debt. The effect of education aligns with the management professionalization interpretation (H6). Business goals (H10) and firm size (H1, H7) have a general effect that is contrary to the expected; however, the analysis of the predicted probabilities in Table 7 show a temporal change in the effect of this variable, which can affect the odds ratio of case AV versus PO and TO, given its definition of ratio of probabilities. Emotional costs of bankruptcy (H13) have a significant effect in case AV firms, leading to extreme aversion to debt. On the one hand, firm age (H1, H7) has a positive effect in case TO firms relative to case PO firms, and in case AV firms relative to case PO firms, which can be interpreted as evidence

Table 7. Summary of observed effects in terms of the odds ratios.

H	Variable	Case TO-PO	Case AV-PO	Case AV-TO
H5; H14	Owner's age	—**	+***	+***
H6; H12	Owner's education [¶]		—***	—*
H10	Business goal [¶]		+*	ns
H13	Emotional costs of bankruptcy	ns	ns	+*
H15	Family firm [¶]		ns	ns
CV	Reinvested gains	ns		ns
<i>Proxies for information asymmetries</i>				
H1; H7	Firm age	+**	+***	
H2; H8	Limited liability [¶]	+*	ns	ns
H9	Size: micro [¶]	+**	ns	ns

Note. Binary variables are marked with a [¶]. In this case, the hypothesis represents the effect of possessing the corresponding characteristic versus not possessing it. *denotes a 10% significance level, **a 5% significance level, and ***a 1% significance level. Ns denoted not statistically significant.

of information asymmetries faced by PO firms. Moreover, a legal form with limited liability (H2, H8) also has a positive effect in case TO relative to PO, giving further support for information asymmetries for PO firms.

For the variables not included in the MNLM for estimation reasons, that is, manufacturing sector (H3, H9) and use of personal debt (H11), the descriptive statistics in Table 4 show that AV firm owners scarcely use personal credit and that the composition of the industrial sector has changed notably from 2006 (with limited participation of AV firms) to 2010 (with a balanced distribution among the three cases).

We find no evidence for family firm nature (H15), or for the control variable reinvested gains.

The evidence for the effect of inflation (H4) is interesting to note, because the likelihood of TO behavior is higher for firms in year 2010, as reported by Frank and Goyal (2009).

In summary, TO firms are older, larger, organized as limited liability, and run by younger owners than PO firms. These results agree with Serrasquero and Maças Nunes (2012), who found that young SMEs are more likely to follow a PO, and with Berger and Udell's (1998) financing growth cycle. Moreover, Maquieira, Preve, and Sarria-Allende (2012) also reported the inverse relation between firm size and PO.

Compared to PO firms, AV firms are older and have older, less educated owners who are likely to pursue business goals. Finally, AV firms are older and have less educated owners with high emotional costs of bankruptcy, compared to TO firms. This partially agrees with Vos and colleagues (2007), who reported that older but more educated SME owners are less likely to use external financing.

Conclusions

This article articulates important aspects related to the financial capital structure of a set of SMEs in Bahía Blanca, Argentina, during the years 2006 and 2010. We classify financing decisions into three different cases: trade-off behavior, pecking order, and extreme aversion to debt, and we study firm and firm-owner determinants of this classification. The limitations of this study pertain to the local nature of the sample and the impossibility of measuring certain variables given the constraints to access firm-level data.

The key findings of this article lie in the identification of firm-owner characteristics relevant in financing decisions. First, high owner age increases the probability of belonging to PO versus TO and is positively related to aversion to debt. Second, the probability of belonging to AV case diminishes in relation to the degree of education of the owner. Moreover, business goals and emotional costs of bankruptcy affect extreme aversion to debt. Regarding firm's characteristics, firms' age presents an inverse relation with PO case.

The conclusions of this article lead us to reconsider the underleverage problem of SMEs. We find that demand-side characteristics can severely affect financing decisions and sometimes lead to extreme aversion to debt. Based on these results, policymakers might partially re-design financial aid instruments for SMEs by taking into consideration firm owner characteristics. Moreover, the results underscore the importance of training programs as a complement to financial aid policies.

Notes

1. Although aversion to debt in small firms has been described in other countries (e.g., Norton, 1990), we do not have evidence that this extreme case has been previously documented.
2. The search for studies focused on Latin-American countries was made in SCOPUS, SCIELO, and DIALNET databases.
3. The full questionnaire is available upon request.

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Appendix

A1. Measuring the three cases of financing decisions

We adopt a survey approach, such as Graham and Harvey (2001) for US and Canada firms, and Maquieira and colleagues (2012) for Latin-American firms,

because this allows us to consider a wide range of variables that cannot be analyzed if the study is based only on financial data. This is particularly necessary given our goal of studying the process of financing decisions, and not just the observed capital structure.

Graham and Harvey (2001) included questions such as if the firm has a target debt ratio, and what factors affect the choice of the appropriate amount of debt. Likewise, Maquieira and associates (2012) included a question about target debt ratio, and found that 59% of LATAM firms declare they do not have a target debt ratio. Moreover, in response to the question, “To what extent do you believe these statements are criteria to be taken into account when deciding leverage policies at your firm?”, 54.14% of firms reply “We issue debt when internal funds are not sufficient”, which represents PO. We are not able to compare these quantitative results with ours given the not-random nature of their sample.

Although our questionnaire includes some questions similar to Graham and Harvey (2001), Maquieira and associates (2012), the core questions we use to classify firms into groups are different. We follow the conclusion of Fama and French (2002) that under PO hypotheses, firms have no incentive to issue debt if they still have internal funds to finance investments. Thus, we measure which firm belongs to each case through two questions.

First: Assume you face an attractive (profitable) investment opportunity in fixed assets in your business. You have available all the following financing sources: (a) retained earnings, (b) current business partners’ capital disbursement, and (c) bank credit at a subsidized interest rate (lower than the market rate). How would you finance the project? (Indicate percentage of funds used from each category.)

If the financing choice includes use of bank credit, then case TO is assigned. If the choice only involves use of internal (a) to external equity (b), then the next question follows:

Assume you face an attractive (profitable) investment opportunity in your business, but you do not have internal or external sources of equity available. Which one of the following happens more often? (a) I look for other external financing sources, such as credit; (b) I pass up the investment opportunity.

If option **a** is chosen, then case PO is assigned; that is, these are firms that use credit only when equity funds are not available. If option **b** is chosen, then case AV is assigned, that is, extreme aversion to debt.

Our checks for internal consistency for these core questions involved a comparison of the hypothetical decision versus the actual capital structure. We analyzed these answers in comparison to the declared current and historical capital structure, and the percentage of reinvested gains. In this way, for firms classified as trade-off in the financing decisions questions, we checked for current or historical use of debt, and for higher debt use and lower reinvested gains compared to PO firms (differences for debt use

and reinvested gains between TO and PO firms can be observed in Table 4). Then, for firms classified as AV, we checked for null current and historical use of debt.

A2. Definition of SME in Argentina

Resolutions 675/2002 and 303/2004 from *Sub-secretaría de la Pequeña y Mediana Empresa y Desarrollo Regional* (SEPYME) state that a firm is considered a SME if its annual sales (without internal taxes) are within the ranges (in US dollars) shown in Table A2.

Table A2. SMEs Classification.

	Agriculture	Manufacturing and Mining	Retail	Services	Construction
Year 2006: Resolutions 675/2002 and 303/2004 of the SePyME (USD)					
Micro	87,379	291,262	582,524	145,631	129,450
Small	582,524	1,747,573	3,495,146	1,048,544	809,061
Medium	3,495,146	13,980,583	27,961,165	6,990,291	6,472,492
Year 2010: Disp. 147/2006 of the SePyME (USD)					
Micro	115,100	315,752	467,313	118,091	121,249
Small	767,909	1,894,513	2,803,880	850,258	757,805
Medium	4,607,457	15,156,108	22,431,040	5,668,384	6,062,443

Note. This table presents monetary values in US dollars, for year 2006 considering the average exchange rate of Argentine pesos to US dollars from July to October 2006 (time of the first survey), for year 2010 considering the average exchange rate of Argentine pesos to US dollars from July to October 2010 (time of the second survey).