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THE EFFECT OF LIFE CYCLES ON DIVERSIFICATION OF FINANCING SOURCES FOR SMES: EVIDENCE FROM ARGENTINA

Full Length Research Paper

The effect of life cycles on diversification of financing sources for SMEs: Evidence from Argentina

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We examined the effects of life cycle approaches on the capital structure of small and medium enterprises (SMEs) and tested the implications of these approaches using a sample of firms from Bahia Blanca (Argentina). We analysed the relationships between the diversification of financing sources and a set of variables from models of the financial growth cycle, the life-cycle of the owner-manager, and the life-cycle of the family firm. Using the multinomial logit model as an estimation method, we found some evidence of information asymmetries, but our main contribution lies in our assertion that the diversification of financing sources is partially a response to the characteristics of the firm owner's: age, education, and goals for the firm.

Key words: Diversification of financing sources, financial growth cycle, SME, family firms, multinomial logit model.

INTRODUCTION

Small and medium enterprises (SMEs) account for more than 90% of existing firms and are a fundamental part of the global economy. In Argentina, 99.5% of firms belong to the SME sector, and SMEs provide 39% of the total employment and conduct 45% of the registered sales (Instituto Iberoamericano de Mercados de Valores, 2007). Financing decisions are key to any firm's survival and growth, but for SMEs, access to external funds is affected by market imperfections such as transaction costs and information asymmetries. These limitations on access to external funds have led to the design of financial aid policies that target this sector. However, to design efficient policies, one must note that SMEs are different from large firms, not only in terms of their restricted access to capital markets but also for other reasons (Ang, 1991, 1992).

In this paper, we focus on both the demand and the supply side of financing decisions. Within this framework,

we study the different stages of diversification of financing sources throughout the financial growth cycle (Berger and Udell, 1998), which we represent through three groups:

Group 1: Firms that use only equity and trade credit as sources of financing.

Group 2: Firms that use the afore mentioned sources but also take on short-term financial liabilities.

Group 3: Firms that use the same sources as Group 2, but also take on long-term financial liabilities[1].

Each group responds to a combination of demand and supply variables that we intend to explain using three approaches:

i. The financial growth life cycle model (Berger and Udell, 1998), which states that a firm's financial needs and

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[1] In general, financial liabilities include bank credit, bond issues, and any other form of financing from financial institutions. The difference between groups 3 and 2 is that the latter only has short-term financial liabilities.

available financing sources change with the development of the business because information asymmetries decrease as the firm gains experience.

ii. A model centred on the life cycle of the owner-manager (Briozzo and Vigier 2007, 2009), which argues that the owner-manager's risk aversion and goals will evolve during her lifetime as her objectives change, shifting from the pursuit of profit and growth to a focus on more personal goals and family income.

iii. Finally, the life cycle of the family firm (Briozzo and Vigier 2007, 2009) may also affect financing choices. Following Gallo (1998), we recognise three distinct stages in the trajectory of family firms: the founder-owner stage, the second-generation stage (in which brothers and sisters act as partners), and the third-generation stage (in which cousins and relatives become stock-holders). Two forces may affect financing decisions. On the one hand, the agency costs associated with equity may rise as new family members join the firm, whereas on the other hand, risk aversion and entrepreneurship attitudes can change from one generation to the next.

The objective of our research was to identify the differentiating characteristics of these three groups of financing sources using the life cycle models and factors from the traditional theory of capital structure as explanatory and control variables. To tests our hypotheses, we used a unique database of SMEs from Bahia Blanca, Argentina. We collected data using questionnaires that were completed through personal interviews between July and October 2006.

Using the financial life cycle approach, we found that size (measured in terms of the number of employees) and legal status (defined as a limited liability status) are both positively related to the diversification of financing sources. We also found empirical support for the life cycle of the owner-manager model, observing a negative relationship between the age of the owner and diversification; in contrast, this effect was positive for value and growth-oriented goals. However, we did not find evidence to support the family firm life cycle hypothesis. By identifying the significantly different variables within these groups, we can improve our understanding of small firms' financing decisions. The contribution of this paper lies in the acknowledgement that the diversification of financing sources is partly a response to the characteristics of the firm's owner: age, education, and goals for the firm. In other words, it is not exclusively a response to informational asymmetries.

LITERATURE REVIEW

We focus here on the most relevant approaches for SMEs: trade-offs, pecking order, credit rationing, and small firm life cycles. This last approach is of special interest to this paper. Further on, we review the empirical studies related to firm life cycles and financing decisions.

Capital structure framework

Capital structure decisions can be modelled using twoclassic approaches: trade-off theory and the pecking order hypothesis. The trade-off theory considers industry-wide effects (taxes, bankruptcy costs, and agency problems) and predicts an optimal structure derived by balancing the costs and benefits of issuing debt and equity. Information asymmetries are especially relevant to SME financing decisions. For example, Ang (1991) and Chittenden et al. (1996) indicate that monitoring costs can be particularly high for providers of external funds because of the scarcity and often low quality of internal information in SMEs. Moreover, banks prefer to lend funds over the short-term to maximise monitoring effectiveness. Scott (1977) argues that secured debt can reduce monitoring costs; helping firms with collaterisable assets achieve lower information asymmetries. Diamond (1989) has developed a model in which reputation can decrease these asymmetries so that older firms are able to gain better access to credit. In summary, the trade-off theory predicts that if a firm faces a high income tax rate (and thus has a high tax shield), low information asymmetries between its insiders and financial institutions (related directly to firm size and age and inversely to growth), and low expected bankruptcy costs (related to asset tangibility), it should have a higher debt ratio relative to other comparable firms.

However, the pecking order describes a hierarchy of financing choices, instead of predicting the existence of an optimal structure for firms first use internal funds (retained earnings), then issue debt, and finally issue new equity. Different factors have been suggested to explain this hierarchy, including flexibility, transaction costs, and information asymmetries (Myers and Majluf, 1984; Myers, 1984). In SMEs, the fear that the owner-manager will lose control can also act as an internal barrier to external financing (Hamilton and Fox, 1998; Hutchinson et al., 1998). Less profitable firms will depend more on debt, but fund providers, who are aware of this adverse selection effect, will restrict access to long-term credit. Consequently, SMEs will depend mostly on short-term debt (Holmes and Kent, 1991). On the basis of the particularities of SMEs, Zoppa and McMahon (2002) argue that the first three sources in the SME pecking order are; 1) reinvested gains; 2) short-term debt (including trade credit); and 3) long-term debt. External equity is not included in the list because SMEs rarely employ this financial source. Flannery (1986) and Kale and Noe (1990) indicate that a preference for short-term debt will arise if insiders believe that the prospects of a firm are better than creditors expect. In this way, a firm can refinance its debt at lower interest rates once its true situation is publicly revealed. Therefore, young, good-quality, high-growth firms have incentives to issue short-term debt.

Furthermore, Stiglitz and Weiss (1981) shed light on the supply effect of information asymmetries, showing

that the credit market may undergo a credit rationing equilibrium due to adverse selection and moral hazard. Adverse selection occurs because low-risk firms are not willing to pay high interest rates and therefore exclude themselves. Moreover, higher interest rates induce firms to invest in riskier projects (moral hazard). Petersen and Rajan (1994) observed that firms facing credit rationing will first exhaust low-cost sources of funds (reinvested gains, then bank credit) and then will resort to more expensive sources such as trade credit if attractive investment opportunities still remain.

Three life cycle approaches

A small firm undergoes different stages of development from the initial stage through maturity, and a specific theory is necessary for each stage (Ang, 1991). Extending this idea, Berger and Udell (1998) explain the financial structure of small firms using a financial growth cycle, "(…) in which financial needs and options change as the business grows, gains further experience, and becomes less informationally opaque" (Berger and Udell 1998). Firms face higher information asymmetries during the infant stage (first two years), when the main sources of funds are the entrepreneur, her friends and relatives, trade credit, and angel investors. Credit from financial institutions, first short-term and later long-term, becomes available when the firm reaches a sufficient size and age to have historical accounting records that show a certain level of tangible assets. If the firm continues to grow, it may gain access to capital markets. Access to financial institutions can be granted in the earlier stages through personal guarantees by the owners. This sequence can be seen part of a dynamic view of the pecking order in which the strength of information asymmetries decreases as the firm gains experience. However, this approach should not be considered a general theory for small firms; no perfect correlation exists between the age, size, and growth of the firm.

Information asymmetries are not the only changing aspect of a firm. The model that details the life cycle of the owner-manager (Briozzo and Vigier, 2007, 2009) argues that the owner-manager's level of risk aversion and goals will evolve during her lifetime as her objectives change from the pursuit of profit and growth to more personal goals and ambitions related to family income. Small firms have shorter life expectancy because they are highly dependent on the duration of the founders' involvement in the firm, and on their succession plans (Ang, 1992). When an owner is preparing for succession, long-term planning may be neglected, and this neglect will affect financing decisions. Previous papers studying cognitive life-cycle patterns have indicated that analytic performance is negatively correlated with age in adult populations (Salthouse, 2005) and that personal financing choices change with age (Agarwal et al., 2007).

The financial growth cycle of the firm and the life cycle of the owner-manager are assumed to be connected to each other, sometimes with contradictory effects. For example, as the firm and its owner grow older, information asymmetries decrease, granting easier access to debt (a supply-side effect), whereas an owner's risk aversion and personal costs of bankruptcy[2] will increase with age, making the use of leverage less desirable (a demand-side effect). Finally, we believe that the life cycle of the family firm (Briozzo and Vigier, 2007, 2009) may also affect financing choices. Following Gallo (1997), we consider a business a family firm if the owners and controlling shareholders are members of a single family. We recognise three distinctive stages in the family firm trajectory: the founder-owner stage, the second generation stage (in which brothers and sisters act as partners), and the third generation stage (in which cousins and relatives are stockholders) (Gallo, 1998). The first-generation owners are expected to be entrepreneurial and prone to risk-taking (Ang, 1991), which should have a positive effect on the use of debt. However, these characteristics are not necessarily transferable to succeeding generations, which are therefore expected to use less debt. As new people join the ownership of the firm, the agency costs of will equity increase, thus increasing debt use as a means of avoiding these higher costs.

Previous empirical studies on diversification of financing sources in SMEs

Gregory et al. (2005) empirically tested the financial growth cycle for small and medium-size firms from the United States and found that size (defined as a firm's number of employees)[3] made it possible to differentiate between firms that use internal financing and those that issue long-term debt or new equity. Regarding firm age, they observed that younger firms tended to use long-term debt and capital market financing rather than medium-term debt or venture capital. However, these results should be considered carefully, given that this study did not include variables to control for the effects of growth.

On the other hand, Vos et al. (2007) examined small and medium-size firms from the United States and the United Kingdom and found that traditional financial ratios (such as return on assets and sales margin) were not significant determinants of the complexity of the financing sources. However, they did find empirical support for what they call the 'contentment hypothesis': younger and less educated owners used external financing more actively than older and more educated ones (the wiser owners). They also found that expected growth and size (defined by the sales) were positively related to financing source diversification, but they did not find relevant effects on the firms' legal status or types of business

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[2] If the income of the whole family depends on the firm, bankruptcy implies eliminating the family's means of subsistence and of preserving its reputation and lifestyle.

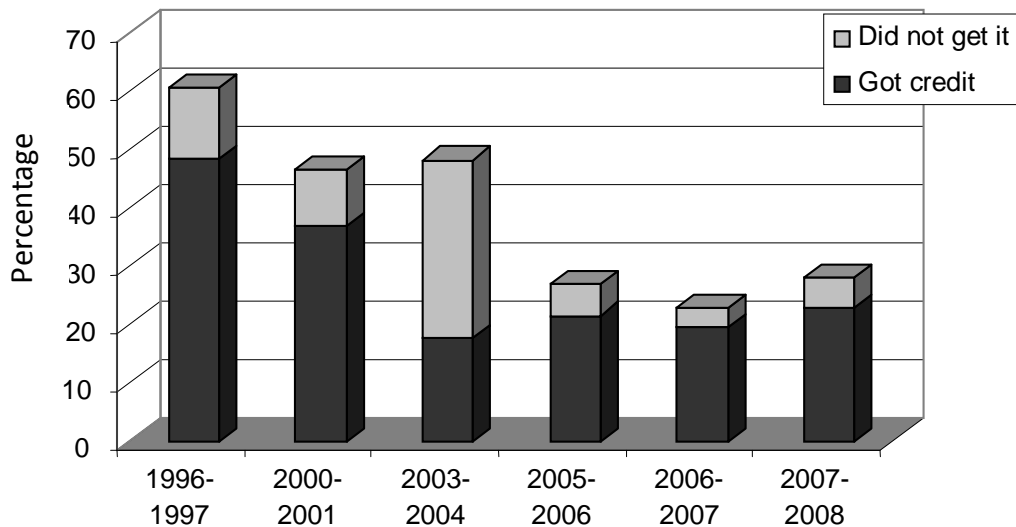[3] Size defined as sales showed no significant results.

Figure 1. Firms that got credit vs. firms that did not get credit (excluded overdraft); Source: personal compilation of data from SME observatory (1997-2008).

objectives.

Finally, LaRocca et al. (2009) studied information opacity across the different stages of the firm life cycle in Italian small businesses. Unlike previous studies, their work indicates that debt is a critical financial resource in the start-up and growth stages but has a lesser impact during the consolidation and maturity stages. These results are consistent with the pecking order predictions. Size, tangibility and growth opportunities positively affect the use of debt, whereas profitability was negatively related to leverage.

THE ARGENTINIAN UNIVERSE OF SMALL AND MEDIUM-SIZE FIRMS

Argentina has a bank-based economy with notably undeveloped capital markets[4]. To provide adequate context for this study, we will briefly present in this section some distinctive characteristics of local SMEs. Regrettably, there are no public-access databases of small firms in Argentina, but two local institutions gather information on these firms and issue summary publications with their results. One is Observatorio PyME (SME Observatory)[5], which has been gathering information from small and medium-size industrial firms for more than a decade, and the other is the project Mapa PyME (SME Map) from the Secretaría de la Pequeña y

Mediana Empresa y Desarrollo Regional (Secretary of Small and Medium Enterprise and Regional Development) (SePyME), which launched a national survey in 2007.

Data from the SME observatory indicate that, in the period 1996/1997, 60% of small firms were using forms of bank credit other than overdraft protection. This percentage dropped significantly after the 2001/2002 local crisis, with 28% of firms using this form of credit in the period 2007/2008. The level of approval of credit applications is now approximately 80% and is thus similar to the level of approvals during the pre-crisis period. We summarise this information in Figure 1.

Moreover, on the basis of the SME observatory publications, we can see that internal funds are the main financing source for small firms. Figure 2 indicates the evolution of the financing mix for manufacturing firms. Comparing the period 2003-2004 with the period 2007/2008 reveals that better access to credit in these later years has led to a higher percentage of bank credit for small (4.4 to 22%) and large firms (17 to 27%). We also observe that larger firms have a more diversified financing structure.

RESEARCH HYPOTHESES

We present the different stages of the financial growth cycle (Berger and Udell, 1998) using three groups and propose two explanations complementary to the information asymmetries argument: the models for the life cycle of the owner- manager and the life-cycle of the family firm. We defined these three groups of firms based on the diversification of their financing mix in qualitative

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[4] Market capitalisation as a percentage of GDP reached 26% in 2006: it was 55% for Brazil, 86% for Spain, 118% for Chile, and 137% for the USA (data from the World Federation of Exchanges).

[5] This is a private (non-profit) organisation that receives funds from Unión Industrial Argentina [*Argentine Industrial Union*] and the Università di Bologna (Italy).
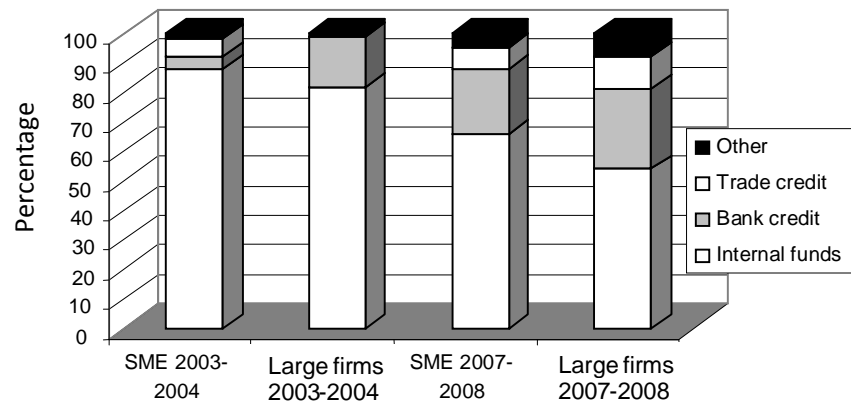
Figure 2. Investment financing mix, small vs. large firms (Source: personal compilation of data from SME observatory, 2005, 2008).

terms so that we might assess the determinants of the use of different financing sources. We adapted Berger and Udell´s (1998) formulation based on the idea that most SMEs will never issue public debt or equity[6], so the ultimate way to overcome information asymmetries is through access to long-term financing[7]. We define three groups of firms in terms of their diversification of financing sources:

Group 1: Firms that use only equity and trade credit as financing sources.

Group 2: Firms that use the previous sources, but also take short-term financial liabilities.

Group 3: Firms that use the same sources as Group 2, but also take on long-term financial liabilities.

Hypotheses for explanatory variables

We propose the hypotheses for our explanatory varia-bles. Whereas some approaches have complementary explanations, others propose conflicting predictions. Our aim is to study the effects that prevail in Argentinian SMEs.

Group 1: Firms that use only equity and trade credit as financing sources

H_{1a} (financial growth cycle argument): According to Berger and Udell (1998), in this group, we can find

young, small firms with high growth perspectives that therefore face higher information asymmetries and restricted access to external funds[8]. Given their short trajectory and small scale, these firms probably do not have limited liability status (a supply-side explanation). Limited liability statues may cover not only patrimonial liability but also two additional factors: the tax system (because according to Argentine law, there is a fixed profit tax rate (35%) associated with limited liability status) and the degree of informality of financial reporting (because according to regulations, these firms must present financial statements for tax purposes).

H_{1b} (life-cycle of the owner manager): We expect the firms in this group to have older owners with stability goals for their firm; they should be more risk averse and thus not as interested in investments and future growth (a demand-side explanation).

H_{1c} (life-cycle of the family firm): If the agency costs of equity prevail, the firms in this group will be family firms from the founder's generation (a demand-side explanation), because they will not need to use debt to avoid these agency costs.

H_{1c} bis (life-cycle of the family firm): If the transition to a less entrepreneurial attitude is dominant, this group will include family firms from later following generations that are less prone to risk-taking and are expected to avoid debt use, a source of financial risk (a demand-side explanation).

Group 2: Firms that use equity and trade credit and also take on short-term financial liabilities.

H_{2a} (financial growth cycle argument): According to Berger and Udell (1998), access to short-term credit is

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[6] In Argentina, only two SMEs have issued public equity in the Buenos Aires Stock Exchange, and around 20 firms have issued public debt.

[7] We must note that a firm with access to long-term credit can be partially rationed if it cannot obtain the entire desired amount of funds. However, these firms face softer credit rationing than do those than can only access short-term credit.

[8] The existence of a positive relation between debt use and firm size and age has been documented by several authors, such as Klapper et al. (2002), Gregory et al. (2005), and Rungani and Fatoki (2010).

available for firms of a certain age and size and with records documenting their historic performance and accumulated assets (a supply-side explanation).

H_{2b} (life-cycle of the owner manager): We expect firms in this group to have younger owners who are oriented toward maximising firm growth or value. These firms will experience more of a need for financing and will have less risk-averse owners (a demand-side explanation).

H_{2c} (life-cycle of the family firm): If the agency costs of equity prevail, we will observe family firms from non-founder generations in this group; they will prefer to use debt to avoid the agency costs of equity (a demand-side explanation).

H_{2c} bis (life-cycle of the family firm): If the transition to a less entrepreneurial attitude is dominant, this group will include family firms from the founder's generation; the founders will be more "entrepreneurial" and less averse to financial risk (a demand-side explanation).

Group 3: Firms that use the same sources as Group 2 but also take on long-term financial liabilities

H_{3a} (financial growth cycle argument): This group will be mostly composed of large, old, low-growth limited liability firms. These firms will face low information asymmetries in the credit market (a supply-side explanation).

H_{3b} (life-cycle of the owner manager): We expect firms in this group to have younger owners who are oriented toward maximising growth or firm value. These firms will have a greater need for financing sources and less risk-averse owners (a demand-side explanation).

H_{3c} (life-cycle of the family firm): If the agency costs of equity prevail, this group will be populated by family firms from non-founder generations (a demand-side explanation).

H_{3c} bis (life-cycle of the family firm): If the transition to a less entrepreneurial attitude is dominant, this group will include family firms from the founder's generation (a demand-side explanation).

Interestingly, these life cycle approaches indicate that a small firm can follow different evolutionary paths throughout its history. For example, the effects described by the financial growth cycle may prevail for a given firm so that it develops a more diversified financing mix as it ages. However, the life cycle of the owner-manager may be important for a firm that remains relatively small despite its age, especially if there are no clear succession plans and the owner is oriented toward her personal goals. In this case, the level of diversification of the financing sources will first rise and then decrease over time. Finally, some firms will follow the trajectory of the family firm life-cycle, in which the diversity of the financing mix will evolve based on whether the agency costs of equity prevail or if the change in entrepreneurial attitudes is the dominant one. For example, a family firm that transits from a founder-owner to second-generation owners may move from Group 2 (or 3) to Group 1 if the change in entrepreneurial attitude is dominant. However, a comparatively large, old family firm that transits from a founder-owner to second-generation owners may transition from Group 1 to Group 3 if the agency costs of equity prevail.

Hypotheses for control variables

In our study, we employed a set of control variables from the capital structure literature:

Owner education: Consistent with Vos et al.'s (2007) contentment hypothesis, older and more educated owners are expected to be more satisfied with their firm's situation, be less prone to entrepreneurial activity, and be less interested in searching for external financing. Thus, we expect a negative relationship between the firm owner age and education and the diversification of financing sources. However, higher education can be associated with better managerial skills, which should have a positive effect on the use of debt (Fatoki and Van Aardt, 2010).

Days payable outstanding: We have two contradictory hypotheses for this variable. On one hand, following Petersen and Rajan (1994), we expect the data for this variable to indicate credit rationing problems, given that trade credit can be seen as an expensive substitute for financial liabilities. Thus, we expect to observe a negative relationship between this variable and the diversification of financing sources. On the other hand, we also expect that firms with a greater need for funds will make further use of this source. Therefore, a positive relationship between this variable and diversification should exist.

Belonging to sector industry: These firms are expected to have a higher proportion of tangible assets that could serve as collateral, and thus enable better access to debt (Scott, 1977), and an expectation of smaller bankruptcy costs. We expect a positive relationship between this variable and the diversification of financing sources.

Reinvested gains: We also present two conflicting hypotheses for this variable. First, it reflects the use of internal funds, which might be expected to rise due to financial need (i.e., a cash flow deficit). Thus, we would assume a positive relationship between this variable and the diversification of financing sources. However, a greater use of internal financing should reflect a preference for that source after controlling for growth (pecking order; Myers, 1984)[9]. Therefore, a negative relationship between this variable and diversification should exist.

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[9] Other authors have found empirical support for this inverse relationship between leverage and profitability (Petersen and Rajan 1994; Romano, Tanewski, and Smyrnios 2000; Sorgorb 2005).

Table 1. Definition of variables.

Variable	Definition
Firm age	Number of years since foundation of the firm.
Firm size	We use three different definitions. i. By resolutions 675/2002 and 303/2004 of the SePyME (based on annual sales), defining two binary variables: micro-sized firms and medium-sized firms. ii. By number of employees, taking a binary variable (less than 10 employees).
Historical growth	Quantitative variable defined as observed percentage variation in sales volume during the last two years.
Limited liability	Binary variable. One is assigned if the legal status implies limited liability.
Owner's age	The oldest owner is considered if more than one exists.
Growth or value objective	Binary variable. One is assigned if the owner-manager states that she pursues sales or value maximisation
Non-founder generation	Binary variable. One is assigned if the second or third generation has control of the firm. Only valid for family firms.
Control variables	
Owner's education	Binary variable, where an owner with a college (or higher) degree is marked as one.
Days payable outstanding	Average period over which bills to suppliers are paid.
Sector industry	Binary variable. Firms belonging to sector industry are marked as one.
Reinvested gains	Percentage of net gains that are reinvested in the firm.
Sales margin	Net profit to sales.

Sales margin: Following *pecking order* predictions, we expect a negative relationship between this variable and the diversification of financing sources.

METHODOLOGY

Data source

Because there are no public access databases for small firms in Argentina, we collected our own data using a questionnaire that was completed via personal interviews. We defined the sample under study based on Resolutions 675/2002 and 303/2004 from the SePyME (Appendix 1).

   The list of firms was provided by Subdirección Estadística de la Municipalidad de Bahía Blanca[10] (the Department of Statistics of

Bahía Blanca Municipality). Of the 265 firms contacted between July and October 2006, 54% responded (yielding 143 valid responses). The dataset of complete answers that we use in this paper ranges from 80 to 97 firms for the whole sample and from 71 to 83 firms for the sub-sample[11]. In this study, we collected a set of SME data for variables that had not previously been examined in Argentina, such as owner-managers' goals for their businesses. We believe that the resulting database is unique to our country, given that such data were not previously available for Argentina. It also includes qualitative data that are not frequently present in studies undertaken in developing countries.

   To determine the external validity of the data, we compared our estimates (descriptive statistics) with the data published by the SME observatory in its 2007 report (Rotstein et al. 2007). The two sources contain similar results.

Data analysis

First, we will present the operational definition of the explanatory and control variables in Table 1. The dependent nominal variable is defined as the "phase in the financial growth cycle" or "type of diversification of financing sources". There are three possible

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[10] We limited our empirical study to the city of Bahía Blanca for budget-related and methodological reasons; a representative national sample of SMEs would have had to include at least 1,000 firms (to be interviewed in person, given that mailing and telephone surveys of this kind in Argentina have very low expected response rates). Moreover, firms located in different regions of the country represent different underlying populations, so an aggregate analysis of the data would have been inappropriate. There are no previously established databases in Argentina with the information that we required for this analysis.

[11] The smaller samples correspond to family firms only.

Table 2. Average observed values by group and for the whole sample.

Variable	Group 1	Group 2	Group 3	Global
Micro-sized firms (sales)* (%)	40	20.5	17	29.5
Small-sized firms (sales) (%)	48	48.5	65	54.7
Medium-sized firms (sales) (%)	9	22.7	17.2	15
Up to 10 employees* (%)	53.7	27	34.5	41.4
Firm age	26	27	24	26 years
Historical growth (%)	20	22	25	21
Limited liability*(%)	48	75	66	49
Owner's age (years)	50	47	46	48
Growth or value objective (%)	45	51	68	52
Owner's education (%)	55	68	39	55
Non-founder's generation (%)	42	34	29	37
Industry (%)	13	25	21	16
Reinvested gains*(%)	51	64	65	49
Days payable outstanding (days)	34	30	33	32
Sales margin (%)	16	17	15	16
Number of cases	67	44	29	140

Variables marked with a * show statistically significant differences among their means.

values[12]:

Y = 1: Firms that use only equity and trade credit as financing sources (Group 1),
Y = 2: Firms that use the above sources but also take on short-term financial liabilities apart from overdraft protection (Group 2), and
Y = 3: Firms that use the same sources as Group 2 does but also take on long-term financial liabilities (Group 3).

We used a dependent nominal variable instead of an ordinal one because there was no homogeneity in the evolution of firms in terms of their financial growth cycle[13]. To analyse the effects on the categories of the dependent variable, we used the multinomial logit model (MNLM). The MNLM consists of a combination of several binary logits that are estimated simultaneously. Because there are three categories, we needed to estimate three sets of effects. Group 1 was established as the base category, and the probability of membership in Groups 2 and 3 as compared with membership in Group 1 (Equations 1 and 2) was calculated. Then we defined Group 2 as the base category and obtained the corresponding probabilities (Equation 3). Mathematically:

$$\ln \Omega_{3|1}(x_i) = \beta_{0,3|1} + \beta_{1,3|1}x_1 + \ldots + \beta_{j,3|1}x_j \quad (1)$$

$$\ln \Omega_{2|1}(x_i) = \beta_{0,2|1} + \beta_{1,2|1}x_1 + \ldots + \beta_{j,2|1}x_j \quad (2)$$

$$\ln \Omega_{3|2}(x_i) = \beta_{0,3|2} + \beta_{1,3|2}x_1 + \ldots + \beta_{j,3|2}x_j \quad (3)$$

where

$\Omega_{j|h}(x_i) = \dfrac{\text{Prob(Y=j)}}{\text{Prob(Y=h)}}$ is the probability of belonging to Group j versus Group h

$\beta_{1,j|h}$: Partial effect of variable 1 on $\ln \Omega_{j|h}(x_i)$

x_i: Independent variables.

For the hypotheses regarding the family firm life cycle, we focused only on family firms, which reduced our sample. To avoid estimation problems, we used the logit model for this sub-sample, where we assigned Y=1 to firms belonging to Groups 2 and 3. We used the Huber/White/sandwich variance estimators for all of the regressions[14].

RESULTS AND DISCUSSION

Table 2 presents the descriptive statistics for our sample, including those for each financing group and those for the global sample. On the basis of these data, the following differences among the groups emerge:

Size: The average firm in either Group 2 or Group 3 is bigger than the average firm in Group 1. This is true in terms of both sales and the number of employees.

Limited liability: A larger percentage of firms from

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[12] These values were measured at the time of the survey.
[13] In other words, there is no unique or clear way in which the dependent variables should be ordered.

[14] Robust variance indicates an accurate assessment of the sample-to-sample variability of the parameter estimates even when the model is misspecified.

Groups 2 and 3 are limited liability firms relative to those from Group 1.

Reinvested gains: As firms go through the financial growth cycle, the percentage of gains reinvested increases.

The estimation results are as follows. First, we will present the MNLM results for the financial growth cycle and the life cycle of the owner- manager, after which we will present the analysis for the life cycle of the family firm.

The financial growth cycle and the life cycle of the owner- manager

We tested the hypotheses associated with these approaches using the MNLM. We used different variations on the basic model to analyse the level of robustness of the results. The estimations are presented in Tables 3, 4, and 5. For example, when there is a one-unit change in the variable owner's age, the log of the ratio of the two probabilities, P (Group = 2)/P (Group = 1), decreases by 0.048 (Model 1 in Table 3). Therefore, the older the owner, the lower the probability of his belonging to Group 2 versus Group 1 (or the higher the probability of his belonging to Group 1 versus Group 2). Additional econometric tests are presented in the Appendix.

Regarding the financial growth cycle, we find empirical support for the differentiation between Groups 2 and 3 versus Group 1, but we cannot clearly differentiate Group 2 from Group 3. We find partial support for H1a, H2a, and H3a; in particular, the results indicate that:

i. Size measured in terms of number of employees[15] and limited liability both have a positive effect on the probability of a firm's belonging to Group 2 versus Group 1. For Group 3 versus Group 1, the influence of size is weaker, whereas the influence of limited liability status is greater.
ii. A medium-size firm (in terms of sales) has a lower probability of belonging to Group 3 than to Group 1 or 2. These results could indicate that, for larger firms with better internal financing capacity, the pecking order prediction of a preference for lower leverage prevails. However, this is a weak result and should therefore be considered with caution.
iii. Size (measured in terms of sales for micro-firms), firm age, and historical growth do not allow for differentiation between groups[16].

Concerning the life cycle of the owner-manager, we find support for H1b, H2b, and H3b in particular:

a) Owner age has a (weak) negative effect on the probability of belonging to Group 2 or 3 versus Group 1.
b) A growth- or value-oriented objective has a positive effect on the probability of belonging to Group 3 versus Group 2. The results for the control variables indicate that:

i) Having achieved at least a college-level education has a weak positive effect on the probability of belonging to Group 2 versus Group 1. These results may indicate that education can act as a sign of good quality management when a firm is first diversifying its financing sources (that is, gaining access to short term debt). On the other hand, this relationship is strongly negative for Group 3 versus 2, as predicted by the contentment hypothesis (Vos et al., 2007).
ii) Industry sector has a positive effect on the probability of belonging to Group 2 versus Group 1, as expected based on the tangibility effect. However, it shows a weak negative effect for Group 3 versus Group 2, even after controlling for growth (Model 2 in Table 5). These results could reflect a demand-side effect, such as the expectations of industry owners about the future evolution of interest rates for sector-specific credit.
iii) The percentage of reinvested gains measurement has a (weak) positive relationship to the probability of belonging to Group 2 or 3 versus Group 1. This result is consistent with the cash flow deficit argument.
iv) There are no statistically significant results for days payable outstanding or sales margin.

To facilitate the reading and interpretation of these estimations, we sum up the main results in Table 6. For example, the first column of this table (Group 2/Group 1) indicates how a given variable affects the probability of belonging to Group 2 versus Group 1.

The life cycle of the family firm

We present the results for a sub-sample of family firms[17]. Thus, the sample is reduced to the configuration indica-ted in Table 7. Given that only seven firms from the non-founding generation belong to Group 3, we cannot apply the MNLM technique to this set. Instead we use the logit model, defining as the dependent variable the use of financial liabilities and combining Groups 2 and 3.

We estimate the same models as in Tables 3, 4 and 5, adding a variable for the 'Non-founder generation'. The results for this new variable are not statically significant for any of the variations of the model; thus, we do not find support for H1c, H1cbis, H2c, H2cbis, H3c, or H3cbis. We also observe that the smaller size of the sample causes

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[15] Note that a negative effect of having less than 10 employees means that the relationship with size is positive.
[16] We ran different models, including the growth variable, but the results were never significant, and the relevance of the other variables was not affected. We chose not to include all of the estimations to simplify the presentation of the results, but the full results are available on request.

[17] Following Gallo (1997), we consider a business to be a family firm if the ownership and control belong to members of a single family.

Table 3. Effect of each variable on the probability of belonging to group 2 versus belonging to group 1.

	M1	M2	M3	M4	M5	M6
Financial growth cycle						
Size (sales)			-1.002			
Micro-sized firm			(0.118)			
Size (sales)	-0.024			0.283		
Medium-sized firm	(0.979)			(0.696)		
Size (up to 10 employees)		-1.572			-1.357	-1.888
		(0.016)			(0.022)	(0.039)
Firm age	-0.002	-0.010	0.007	0.008	-0.007	-0.019
	(0.910)	(0.596)	(0.649)	(0.550)	(0.662)	(0.333)
Historical growth	0.054	-0.026				
	(0.941)	(0.964)				
Limited liability	1.739	1.705	1.661	1.704	1.467	1.148
	(0.004)	(0.005)	(0.005)	(0.008)	(0.013)	(0.095)
Life cycle of the owner-manager						
Owner's age	-0.048	-0.037	-0.045	-0.047	-0.027	-0.005
	(0.089)	(0.165)	(0.105)	(0.092)	(0.320)	(0.855)
Growth or value objective	-0.803	-1.036	-0.821	-0.701	-0.837	-0.928
	(0.163)	(0.101)	(0.163)	(0.240)	(0.154)	(0.174)
Control variables						
Owner's education	0.726	0.985	1.420	1.300	1.069	1.379
	(0.245)	(0.178)	(0.058)	(0.055)	(0.137)	(0.146)
Industry	1.249	1.647	2.547	2.399	1.790	1.733
	(0.208)	(0.069)	(0.012)	(0.018)	(0.034)	(0.053)
Reinvested gains	1.334	1.870	1.560	1.570	1.224	1.186
	(0.120)	(0.059)	(0.086)	(0.071)	(0.200)	(0.301)
Days payable outstanding			-0.009	-0.010		
			(0.423)	(0.359)		
Sales margin						5.864
						(0.119)
Constant	-0.175	-0.149	-0.477	-0.776	-0.492	-2.012
	(0.907)	(0.925)	(0.784)	(0.640)	(0.754)	(0.191)
Additional information						
Prob > chi2	0.001	0.003	0.000	0.028	0.005	0.009
Prob > LR	0.046	0.013	0.007	0.014	0.007	0.025
Count R2	0.533	0.600	0.543	0.609	0.598	0.637
Adjusted Count R2	0.106	0.234	0.160	0.280	0.220	0.275
Number of firms	90	90	92	92	97	80

P-values appear between brackets. An empty cell means that a variable is not included in the model specification. Chi2 and LR are joint significance tests. Count R2 is the proportion of correct guesses, while the adjusted count R2 is the proportion of correct guesses beyond the number that would be correctly guessed by choosing the largest marginal.

Table 4. Effect of each variable on the probability of belonging to group 3 versus belonging to group 1.

	M1	M2	M3	M4	M5	M6
Financial growth cycle						
Size (sales) Micro-sized firm			-1.097 (0.119)			
Size (sales) Medium-sized firm	-2.07 (0.025)			-1.073 (0.329)		
Size (up to 10 employees)		-0.938 (0.152)			-1.108 (0.073)	-0.924 (0.173)
Firm age	0.010 (0.664)	-0.002 (0.928)	0.003 (0.882)	0.009 (0.680)	0.002 (0.933)	-0.011 (0.608)
Historical growth	0.959 (0.183)	0.259 (0.667)				
Limited liability	1.228 (0.067)	1.049 (0.115)	1.352 (0.045)	1.619 (0.016)	1.254 (0.049)	1.191 (0.084)
Life cycle of the owner-manager						
Owner's age	-0.045 (0.182)	-0.043 (0.238)	-0.047 (0.099)	-0.047 (0.096)	-0.042 (0.191)	-0.039 (0.247)
Growth or value objective	0.772 (0.296)	0.596 (0.409)	0.34 (0.616)	0.513 (0.471)	0.286 (0.676)	0.609 (0.427)
Control variables						
Owner's education	-1.311 (0.063)	-1.084 (0.137)	-0.869 (0.165)	-0.964 (0.125)	-1.014 (0.109)	-1.048 (0.146)
Industry	-0.432 (0.685)	-0.455 (0.667)	0.136 (0.912)	0.083 (0.944)	-0.332 (0.743)	-0.031 (0.978)
Reinvested gains	2.021 (0.11)	2.117 (0.11)	2.407 (0.057)	2.400 (0.054)	2.257 (0.079)	2.771 (0.073)
Days payable outstanding			-0.005 (0.692)	-0.007 (0.572)		
Sales margin						1.289 (0.657)
Constant	-0.557 (0.814)	0.033 (0.989)	0.099 (0.963)	-0.419 (0.854)	0.055 (0.98)	-0.504 (0.843)

P-values appear between brackets. An empty cell means that a variable is not included in the model specification.

a loss in the joint significance of the estimations. We observed the following individual significant results:

i. A positive effect of limited liability on the probability of belonging to Groups 2 or 3.

Table 5. Effect of each variable on the probability of belonging to group 3 versus belonging to group 2.

	M1	M2	M3	M4	M5	M6
Financial growth cycle						
Size (sales) Micro-sized firm			-0.094 (0.902)			
Size (sales) Medium-sized firm	-2.046 (0.058)			-1.356 (0.261)		
Size (up to 10 employees)		0.633 (0.383)			0.245 (0.726)	0.964 (0.369)
Firm age	0.012 (0.635)	0.011 (0.606)	-0.004 (0.873)	0.0006 (0.978)	0.009 (0.674)	0.009 (0.738)
Historical growth	0.905 (0.117)	0.286 (0.625)				
Limited liability	-0.511 (0.498)	-0.655 (0.37)	-0.309 (0.684)	-0.084 (0.911)	-0.2213 (0.77)	0.044 (0.959)
Life cycle of the owner -manager						
Owner's age	0.003 (0.945)	-0.005 (0.886)	-0.003 (0.94)	-0.001 (0.978)	-0.015 (0.674)	-0.034 (0.371)
Growth or value objective	1.576 (0.028)	1.632 (0.018)	1.162 (0.078)	1.215 (0.082)	1.124 (0.091)	1.538 (0.049)
Control variables						
Owner's education	-2.036 (0.007)	-2.069 (0.007)	-2.288 (0.003)	-2.264 (0.003)	-2.083 (0.006)	-2.427 (0.019)
Industry	-1.680 (0.116)	-2.102 (0.056)	-2.413 (0.034)	-2.316 (0.027)	-2.123 (0.042)	-1.765 (0.166)
Reinvested gains	0.687 (0.606)	0.247 (0.857)	0.846 (0.501)	0.829 (0.508)	1.033 (0.445)	1.585 (0.342)
Days payable outstanding			0.005 (0.631)	0.003 (0.766)		
Sales margin						-4.574 (0.276)
Constant	-0.381 (0.878)	0.182 (0.938)	0.577 (0.797)	0.356 (0.88)	0.548 (0.806)	1.508 (0.565)

P-values appear between brackets. An empty cell means that a variable is not included in the model specification.

ii. A negative effect of size (for firms with fewer than 10 employees) on the probability of belonging to Groups 2 or 3.
We present the complete estimations in Appendix 2.

CONCLUDING REMARKS

The aim of this paper was to study life cycle hypotheses and their effects on small l firm capital structure, testing

Table 6. Summary of results.

Approach	Probability of belonging to ….vs. belonging to …	Group 2 /Group 1	Group 3/1	Group 3/2
Financial growth cycle	Firm size	+ **	+ *	+ ns
	Firm age	+ ns	+ ns	+ ns
	Growth	+ ns	+ ns	+ ns
	Limited liability	+ **	+ **	+ ns
Life cycle of the owner-manager	Owner's age	- *	- *	
	Growth or value objective	+ ns	+ ns	+ **
Life cycle of the family firm	Non founder generation	+/- ns	+/- ns	
Control variables	Owner's education	+/- +*	+/- ns	+/- - **
	Days payable outstanding	+/- ns	+/- ns	
	Sector industry	+**	+ ns	+ -*
	Reinvested gains	+/- +*	+/- +*	
	Sales margin	- ns	- ns	

On the left side of each cell we show the expected relationship, while on the right side appears the observed effect, according to this notation: *: support at 10% level, **: support at 5% level, ns: not statically significant.

Table 7. Distribution of the sample of family firms.

Group	Founder's generation	2nd or 3rd generation	Total
1	34	25	59
2	25	13	38
3	17	7	24
Total	76	45	121

the models using a sample of firms from Bahia Blanca (Argentina). On the basis of our results, the predictions associated with the financial growth cycle receive empirical support in that the diversification of financing sources increases with size when it is measured according to the number of employees at the firm and not according to sales. Moreover, limited liability also has a positive effect and appears to act both a direct proxy of the availability of information about firms and as an inverse proxy for tax informality. On the other hand, firm age and growth do not yield significant results.

Regarding the life cycle of the owner manager, we find a (weak) negative relationship between owner age and the diversification of financing sources and a positive effect of growth or value-oriented objectives on the probability of taking on long-term financial liabilities (Group 3). It is interesting to note that when time affects decisions, it does so on the personal side (owner age) and not from the perspective of the firm (firm age).

Finally, we do not observe empirical support for the life cycle of the family firm hypothesis. Our results are similar to those of Gregory et al. (2005) regarding the relevance

of size when it is measured in terms of the number of employees rather than sales. However, we include control variables and do not find firm age to be relevant.

In conversation with the evidence reported by Vos et al. (2007), our results also show support for the contentment hypotheses: younger and less educated owners tend to use more external financing than do older and more educated ones. Like LaRocca et al. (2009), we find that size has a positive effect on the use of leverage, whereas tangibility positively affects the use of short-term debt.

Identifying the variables allow us to differentiate between groups that can help us to improve our understanding of small firms' financing decisions. In this paper, we have attempted to explain the reasons for the diversification of financing sources. On the one hand, we find some evidence of information asymmetries, as indicated by the significant results regarding size, limited liability and industry. On the other hand, this is not our main subject of study, given its frequent treatment in the related literature. The contribution of this paper lies in its acknowledgement that financing decisions respond in part to the characteristics of firm owners: age, education,

and goals for the firm.

REFERENCES

Agarwal S, Driscoll J, Gabaix X, Laibson D (2009). The Age of Reason: Financial Decisions over the Life Cycle with Implications for Regulation. Brookings. Paper. Econ. Act., Fall: 51-117.

Ang JS (1991). Small Business Uniqueness and the Theory of Financial Management. J. Small Bus. Financ., 1: 1-13.

Ang JS (1992). On the Theory of Finance for Privately Held Firms. J. Small Bus. Financ., 3: 185-203.

Berger AN, Udell GF (1998). The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in The Financial Growth Cycle. J. Bank. Financ., 22: 613-673.

Briozzo A, Vigier H (2007). Rethinking SME's Financing Decisions: Demand-side Approach A, 42 Annual Meeting of the Argentina Association of Political Economy (AAEP).

Briozzo A, Vigier H (2009). A Demand-side Approach to SME's Capital Structure. Evidence from Argentina. J. Bus. Entrep., 21: 30-56.

Chittenden F, Hall G, Hutchinson P (1996). Small Firm Growth, Access to Capital Markets and Financial Structure: Review of Issues and an Empirical Investigation. Small Bus. Econ., 8: 59-67.

Diamond D (1989). Reputation Acquisition in Debt Markets. J. Polit. Econ., 97 (4): 828-862.

Fatoki O, Van Aardt Smit A (2010). Business environmental influences on the availability of debt to new SMEs in South Africa. Afr. J. Bus. Manage., 4(9): 1778-1789.

Flannery M (1986). Asymmetric Information and Risky Debt Maturity Choice. J. Financ., 41:18-38.

Gallo MA (1997). La empresa familiar [The Family Firm]. Biblioteca IESE de Gestión de Empresas [IESE Library of Business Management], Barcelona.

Gallo MA (1998). La Sucesión en la Empresa Familiar [Succession in the Family Firm]. Servicio de estudios de la Caixa [Caixa Study Services].

Gregory BT, Rutherford MW, Oswald S, Gardiner L (2005). An Empirical Investigation of the Growth Cycle Theory of Small Firm Financing. J. Small Bus. Manage., 43 (4): 382–392.

Hamilton RT, Fox MA (1998). The Financing Preferences of Small Firm Owners. Int. J. Entrepr. Behav. Res., 4 (3): 217-238.

Hausman J, McFadden D (1984). Specification Tests for the Multinomial Logit Model, Econometrica. 52: 1219-1240.

Holmes S, Kent P (1991). An Empirical Analysis of the Financial Structure of the Small and Large Australian Manufacturing Enterprises. J. Small Bus. Financ., 1(2): 141-154.

Hutchinson P, Hall G, Michaelas N (1998). The Determinants of Capital Structure for Micro, Small and Medium Sized Enterprises, International Council for Small Business, Conference Proceedings, Singapore.

Instituto Iberoamericano de Mercados de Valores [Iberoamerican Institute of Securities Market] (2007). La Titulización de Créditos a PYMEs en Iberoamérica [Credit Securitization to SME in Argentina]. Available: http://www.iimv.org/estudio_titulizacion.htm [Accessed: 29 March 2009].

Kale J, Noe T (1990). Risky Debt Maturity Choice in a Sequential Game Equilibrium. J. Financ. Res., 13:155-166.

Klapper L, Sulla V, Sarria-Allende V (2002). Small- and Medium-Size Enterprise Financing in Eastern Europe, World Bank Policy Research Working Paper No. 2933.

LaRocca M, LaRocca T, Cariola A (2009). Capital Structure Decisions During a Firm's Life Cycle. Small Bus. Econ., Available: http://dx.doi.org/10.1007/s11187-009-9229-z.

Myers S (1984). The Capital Structure Puzzle. J. Financ., 39(3): 575-592.

Myers S, Majluf N (1984). Corporate Financing and Investment Decisions when Firms Have Information that Investors do not Have. J. Financ. Econ., 13: 187-221.

Observatorio PyME [SME Observatory] (1997-2008). Informe anual [Annual report]. Available: http://www.observatoriopyme.org.ar [Accessed: 18 June 2009].

Observatorio PyME [SME Observatory] (2006). Informe sobre inversión y financiamiento de PyMEs industriales [Report on SME investment and financing]. Available: http://www.observatoriopyme.org.ar [Accessed: 3 March 2006].

Petersen M, Rajan R (1994). The Benefits of Lending Relationships: Evidence from Small Business Data. J. Financ., 49(1): 3-37.

Romano C, Tanewski G, Smyrnios K (2000). Capital Structure Decision Making: A Model for Family Business. J. Bus. Vent., 16: 285–310.

Rotstein F, Briozzo A, Esandi J, Milanesi, G. (2007). Descriptive Analysis of the Financial Structure of SME Bahiense [Descriptive Analysis of the Financial Structure of SMEs from Bahia Blanca]. 27 Conference of the Argentina Society of Teachers of Financial Management.

Rungani E, Fatoki O (2010). Determinants of capital structure of Small and Medium Enterprises in the Buffalo City Municipality, Eastern Cape Province, South Africa. Afr. J. Bus. Manage., 4(18): 3968-3977.

Salthouse T (2005). Effects of Aging on Reasoning. Cambridge Handbook of Thinking and Reasoning. Cambridge, England: Cambridge University Press.

Scott D (1977). Bankruptcy, Secured Debt, and Optimal Capital Structure. J. Financ., 32: 1-20.

SePyME [Secretary of Small and Medium Enterprise and Regional Development] (2007). Resultados Prueba Piloto Marzo 2007 [2007 Pilot Test Results]. Available at: http://www.sepyme.gov.ar/mapa/descargas/Resultados.pdf [Accessed: 10 February 2008].

Sorgob Mira F (2005). How SME Uniqueness Affects Capital Structure: Evidence From A 1994–1998 Spanish Data Panel. Small Bus. Econ., 25: 447–457.

Stiglitz J, Weiss A (1981). Credit Rationing in Markets with Imperfect Information. Am. Econ. Rev., 71(3): 393 – 409.

Vos E, Jia-Yuh Yeh A, Carter S, Tagg S (2007). The Happy Story of Small Business Financing. J. Bank. Financ, 31 (9): 2648-2672.

Zoppa A, McMahon R (2002). Pecking Order Theory and the Financial Structure of Manufacturing SME from Australia's Business Longitudinal Survey, The Flinders University of South Australia, School of Commerce, Research Paper Series Nº 02-2.

APPENDIX

Appendix 1. Definition of SME in Argentina considering annual sales (in thousands of Argentine pesos). Data-sources: resolutions 675/2002 and 303/2004 (Sub-secretaría de la Pequeña y Mediana Empresa y Desarrollo Regional).

Size	Agriculture ($)	Industry and mining ($)	Commerce ($)	Services ($)	Construction ($)
Micro-sized	270	900	1,800	450	400
Small-sized	1,800	5,400	10,800	3,240	2,500
Medium-sized	10,800	43,200	86,400	21,600	20,000

Appendix 2. Effect of each variable on the probability of belonging to groups 3 or 2 versus belonging to group 1 (LOGIT).

	M1	M2	M3	M4
Financial growth cycle				
Size (sales) Micro-sized firm		-0.938 (0.106)		
Size (sales) Medium-sized firm	-0.893 (0.284)		-0.408 (0.587)	
Size (up to 10 employees)				-1.218 (0.029)
Firm age	0.002 (0.82)	-0.002 (0.907)	0.001 (0.94)	-0.006 (0.632)
Historical growth	0.352 (0.607)			
Limited liability	1.494 (0.009)	1.534 (0.008)	1.626 (0.006)	1.385 (0.015)
Life cycle of the owner-manager				
Owner's age	-0.032 (0.188)	-0.046 (0.055)	-0.039 (0.123)	-0.033 (0.152)
Growth or value objective	-0.109 (0.842)	-0.272 (0.614)	-0.114 (0.832)	-0.372 (0.494)
Control variables				
Owner's education	-0.311 (0.616)	-0.247 (0.693)	-0.234 (0.697)	-0.42 (0.482)
Industry	0.193 (0.81)	0.445 (0.638)	0.379 (0.681)	0.245 (0.764)
Reinvested gains	1.283 (0.151)	1.819 (0.06)	1.748 (0.058)	1.908 (0.059)
Days payable outstanding		-0.008 (0.48)	-0.008 (0.42)	
Non-founder generation	-0.166 (0.783)	-0.388 (0.518)	-0.295 (0.601)	-0.488 (0.391)
Constant	0.227 (0.886)	1.388 (0.432)	0.587 (0.727)	0.998 (0.536)

Appendix 2. Contd.

Additional information				
Prob > chi2	0.187	0.027	0.0514	0.048
N	78	78	71	83

p-values appear between brackets. An empty cell means that a variable is not included in the model specification. Chi2 is the joint significance test. N is the number of firms included in the estimation of each model.