8th Finance Conference

PORTUGUESE FINANCE NETWORK

Proceedings

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Portuguese Finance Network
8th Finance Conference

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WELCOME

Dear Collegues,

It is our great pleasure to welcome you to the 8th Portuguese Finance Network conference (PFN2014), held by the School of Economics – University of the Algarve. The University of the Algarve was founded in 1979 and is located in one the most popular tourist destinations in Europe. Business and economics have been taught at the University of the Algarve since the very beginning of the University. Currently, the School of Economics has more than 1,300 students.

Your city for the conference, Vilamoura, is the biggest private tourism resort in Europe, and is the most prestigious in Portugal. At the heart of Vilamoura is the marina, with a huge range of restaurants, bars and shops. During the day, although it can get quite busy, it is really a very peaceful area to stroll around. It gets more lively at night, with everyone coming to eat and try out some of the bars. It is also the place to visit for a rather nice spot in the sun!"

We are delighted to provide an opportunity for our colleagues from all over the world to strengthen their cooperative ties. In fact, the aim of the PFN2014 conference is to promote a high quality discussion network in all finance fields for academics, and practitioners. We truly wish that the conference helps to promote the area of finance through the exchange of global views and ideas.

We warmly welcome you to the 8th Portuguese Finance Network Conference!

Luís M. S. Coelho
Rúben M. T. Peixinho

PAST PFN CONFERENCES

The portuguese Finance Network (PFN), first established in 1999, is a network, primarily of Portuguese researchers but also international, who aim at promoting the field of Finance in Portugal. To that purpose, the PFN organizes a major international conference every two years. Past PFN conferences were held at the University of Minho (2000), University of Évora (2002), ISEG/UTL - Technical University of Lisbon (2004), University of Oporto (2006), University of Coimbra (2008), University of Azores (2010), and University of Aveiro (2012). PFN conferences are the most important scientific event taking place at Portugal in the area of Finance, bringing together numerous researchers from all over the world to present their papers, share their experiences and, of course, also to enjoy the best Portugal has to offer.

The PFN takes great pride on our past Keynote Speakers as their input and support are an invaluable contribution to the development of our project. We were fortunate to welcome among us distinguished Academics such as Richard Brealey (in 2000), Edwin Elton (in 2002), Eduardo Schwartz (in 2004), Werner De Bondt and Clifford Smith (in 2006), Stephen J. Taylor and Georges Gallais-Hamonno (in 2008), Stewart Myers (in 2010) and Martin J. Gruber (in 2012). Franco Modigliani also participated in the closing ceremony of the 2000 conference via video-conferencing.

We are honoured to have with us Professor Sheridan Titman as Keynote Speaker for the 8th Portuguese Finance Network Conference. His lecture on *Capital Structure, Investment Externalities and Economic Growth* will certainly inspire all of us.

KEYNOTE SPEAKER

Sheridan D Titman

Professor Titman is the director of the Energy Management and Innovation Center at UT. His research interests include both investments and corporate finance, and he has published and consulted in both of these areas. He currently blogs on energy policy from a financial economist's perspective. Having co-authored a leading advanced corporate finance textbook entitled "Financial Markets and Corporate Strategy," he has served on the editorial boards of leading academic journals. He is a past director of the American Finance Association and a current director of both the Asia Pacific Finance Association and the Western Finance Association.

Professor Titman holds a B.S. from the University of Colorado and an M.S. and Ph.D. from Carnegie Mellon University. He has served on the faculties of UCLA, the Hong Kong University of Science and Technology, and Boston College. He has also worked in Washington D.C. as special assistant to the Assistant Secretary of the Treasury for Economic Policy. He is a research associate of the National Bureau of Economic Research

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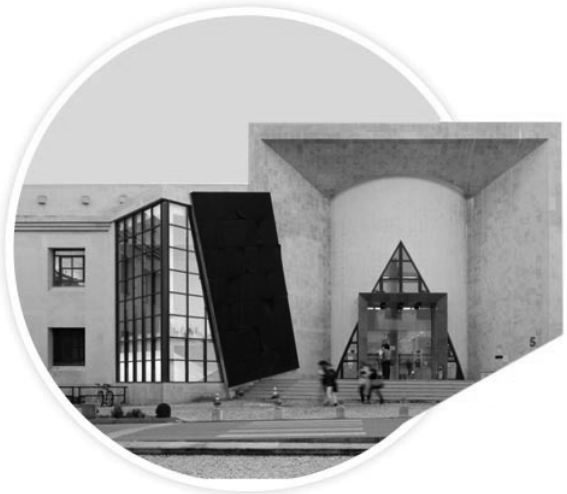

The University of the algarve is a young state university, located in the southern part of Portugal, one of the most touristic regions of Portugal. Founded on the 16th January 1979, the University of the algarve student population is today close to 10,000 and employs over 700 academics. The University of the algarve offers a range of quality undergraduate and postgraduate courses in beautiful academic settings. Recently, there has been a significant increase of foreign students from more than 60 countries due to the internationalization strategy of the University of the Algarve.

The University of the Algarve is an important centre for cultural, scientific and technological development, with strong regional, national and international ties, offering students the opportunity to explore various careers as they gain transferable skills. In these last three decades, the University of the Algarve has consolidated the link established with the regional business and with the public and private organizations, encouraging the transfer of knowledge and contributing to sustainable development with an impact across the community.

Business and economics have been taught at the University of the Algarve since the very beginning of the University. Currently, the School of Economics has more than 60 staff and 1,300 students, half of which are enrolled in MSc or PhD courses. Research undertaken at the School of Economics covers a broad range of interests, mainly related to Business, Economics, and Quantitative Methods. Its dynamic staff cooperates with a vast number of universities, research centers and private firms in Portugal, as well as abroad.

VENUE

Congress Venue

All sessions of the conference will take place at the Congress Centre of the Tivoli Marina Hotel. The Congress Centre of this 5-star hotel has a capacity for 3,200 people simultaneously and was designed to host important meetings, large events, and the launch of new products.

With the famous Vilamoura Marina on one side and its own concessioned beach, the Tivoli Marina Vilamoura is a reference for luxury tourism in the Algarve. In the gardens of this resort in the Algarve, guests can pamper themselves at the Angsana Spa choosing from a vast range of invigorating treatments in the best oriental tradition and enjoy delicious delicacies in the hotel's restaurants and bars.

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The PFN Best Paper Award is sponsored by **Bureau Van Dijk.**

THIS AWARD, OF
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In addition,
Castro Marim Golf has agreed to sponsor the PFN's Best Doctoral Paper Award.

This award will be presented to the author of the best paper written by a PhD student and consists of a

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Conference Program

18 June 2014

5 pm - 8:30 pm		Registration
6:30 pm - 8:30 pm		Welcome Reception

19 June 2014

8:30 am - 9am		Opening Session
9 am 10:30 am	Session1	Fixed Income I
	Session2	Derivatives I
	Session3	Market Microstructure and similar issues
	Session4	Depository Institutions - Management
	Session5	Securities Issuance I
	Session6	Capital Structure I
	Session7	Money and Capital Markets

Coffee-Break

11 am 12:30 pm	Session1	Portfolio Performance Evaluation I
	Session2	Small Business and related issues
	Session3	Dividend Policy and M&A
	Session4	Corporate Governance I
	Session5	Project Selection and Cost of Capital
	Session6	Asset Pricing Models and Tests I
	Session7	Issues in Monetary and Economic Policy

Lunch

2:30 pm 4 pm	Session1	Bankruptcy and Financial Distress I
	Session2	Corporate Governance II
	Session3	Asset Pricing and other issues
	Session4	Market Efficiency and Anomalies I
	Session5	Portfolio Management and Asset Allocation I
	Session6	Real Options I
	Session7	International Market Integration and Efficiency

Coffee-Break

4:30 pm 6 pm	Session1	Portfolio Performance Evaluation II
	Session2	Corporate Governance III
	Session3	Asset Pricing Models and Tests II
	Session4	Market Efficiency and Anomalies II
	Session5	Equities
	Session6	Real Options II
	Session7	Currency markets and equity markets

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Conference Program

20 June 2014

9 am 10:30 am	Session1	Bankruptcy and Financial Distress II
	Session2	Market Microstructure
	Session3	Corporate Governance IV
	Session4	Portfolio Management and Asset Allocation II
	Session5	Fixed Income II
	Session6	Issues in Corporate Finance I
	Session7	Financial Institutions

Coffee-Break

11 am 12:30 pm	Session1	Capital Structure II
	Session2	Derivatives II
	Session3	Regulation
	Session4	Risk Management and similar issues
	Session5	Issues in Corporate Finance II
	Session6	Corporate Governance V
	Session7	Behavioral Issues I

Lunch

2:30 pm 4 pm	Session1	Bankruptcy and Financial Distress III
	Session2	Accounting Issues
	Session3	Securities Issuance II
	Session4	Issues in Corporate Finance III
	Session5	Interest Rates and Term Structure
	Session6	Behavioral Issues II
	Session7	Financial Education

Coffee-Break

4:30 pm - 6:30 pm	Key note address
8 pm - 11 pm	Gala Dinner

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Conference Papers Showcase

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The impact of family ownership and firm size on capital structure decisions*

* Financial support from Fundacao para a Ciencia e a Tecnologia (grant PTDC/EGE-GES/116004/2009) is gratefully acknowledged. Address for correspondence: Joaquim J.S. Ramalho, Department of Economics, Universidade de Évora, Largo dos Colegiais, 7000-803 ÉVORA, Portugal (e-mail: jsr@uevora.pt).

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ABSTRACT

In this paper we examine the influence of family ownership and firm size on two distinct financial leverage decisions: the probability of using debt; and, conditional on its use, the proportion of debt issued. Overall, we find a significant positive effect of family ownership on both decisions; a significant positive effect of firm size on the probability of using debt; and a significant negative effect of firm size on the (conditional on usage) proportion of debt used. We find also that the effect of family ownership differs across micro, small and medium/large firms and that the effect of firm size across size categories is uniform for non-family firms but very distinct for family firms.

KEYWORDS:
family firms, firm size, long-term debt, zero leverage, two-part fractional model.

1. Introduction

The study of capital structure exhibited a notable development from 1958 with the pioneering contribution of Modigliani and Miller. From that time, and for many decades, research was centered on the study of large quoted companies, mainly in the USA. However, the economic literature has registered the great importance of both small and medium-sized enterprises (SMEs) and family-owned firms for the economy. For example, regarding the latter type of firms, it is estimated that about 60% of European companies (European Commission, 2009) and 90% of USA businesses (Shanker and Astrachan, 1996) are family-owned. Moreover, in the European Union, family firms represent around two thirds of all employment in the private sector and contribute to gross national product between a minimum of 45% in the United Kingdom and a maximum of 70% in Spain and Norway; see European Commission (2009).

While the majority of micro and small companies are family businesses (see, *e.g.*, Lee, 2006), the proportion of large firms that are controlled by families is also relevant. For instance, Anderson and Reeb (2003a) and Shleifer and Vishny (1986) report that about one third of, respectively, the *S&P 500* corporations and the *Fortune 500* companies can be classified as family firms. Moreover, family-owned firms have characteristics (*e.g.*, overlapping of roles between being a member of the family and also of the firm) and aims (*e.g.*, transferring ownership to the following generations) that differentiate them from firms controlled by another type of shareholder, irrespective of their dimension. Therefore, studying the financing decisions of SMEs is clearly not equivalent to studying the financing decisions of family-owned firms. However, while in recent years there has been a growing interest in the former issue, the number of papers dedicated to the latter is much more limited (see Benavides-Velasco, Quintana-García and Guzmán-Parra, 2013, which describes trends in family business research during the period 1961-2008 and identifies only a few papers whose primary topic concerns capital structure decision making). Furthermore, because family firms are typically associated to small firms, in applied work it has been very common to explain the financial behavior of small (family) businesses using arguments that apply directly to family (small) companies but not to any kind of small (family) firm.

The main aim of this paper is to provide further insights on the impact of family ownership on firms' capital structure decisions. The great heterogeneity of firms under family influence creates some difficulties in finding a consensual definition of family firm in the

literature (see, *e.g.*, Chrisman, Chua and Sharma, 2005).[1] More recently, González, Alexander and Trujillo (2013) identified three perspectives to analyze the influence of the family factor on business: management, ownership and control. Throughout this paper, we follow the ownership perspective and use the definition of Lopez-Gracia and Sanchez-Andujar (2007) that consider a firm to be family-owned when one individual or a family possesses more than 50% of its capital. Because we condition the analysis on three distinct size-based groups of firms, this paper also contributes to clarify the impact of firm size on capital structure decisions. We focus on the Portuguese case, where family firms account for 70% to 80% of the business sector, around two thirds of GNP and 50% of employment (Coimbra, 2008). Although this is relevant in itself, given the almost complete absence of scientific research about the financing decisions of family-owned Portuguese firms[2], the contribution of this paper to the literature on family firms goes well beyond that.

The first major difference between this paper and previous empirical analyses of family firms' financing decisions concerns the data set used, which comprises firms from many different sizes. The sample is partitioned into micro, small and medium/large firms, which allows us to investigate whether the effect of family ownership on firm's capital structure differs across those size-based groups of firms. As far as we know, this issue has not been investigated by any other paper, since most previous studies focused on particular groups of firms, either SMEs (*e.g.*, Coleman and Carsky, 1999; López-Gracia and Sánchez-Andújur, 2007) or large firms (*e.g.*, Agrawal and Nagarajan, 1990; Anderson, Mansi and Reeb, 2003; Brailsford, Oliver and Pua, 2002; Mishra and McConaughy, 1999). Moreover, the papers that examine the influence of family ownership on SMEs' financing decisions treat all sample firms as a uniform size-based group and typically exclude micro firms from the analysis. However, Ramalho and Silva (2009) have found that different factors might affect the capital structure decisions of micro, small and medium firms in fundamentally different ways, and so this may be also the case for the family ownership factor. Furthermore, note that the micro firm group *per se* clearly deserves special attention, since the vast majority of SMEs are actually micro firms.[3]

[1] Westhead and Cowling (1998), Chua, Chrisman and Sharma (1999) and Sharma (2004) provide summaries of various definitions of family firms used in literature.
[2] To the best of our knowledge, the only exception is Serrasqueiro, Nunes and Silva (2012).
[3] For instance, according to Wymenga, Spanikova, Barker, Konings and Canton (2012), in a report to the European Commission, micro firms are 92.2% (92.4%) of SMEs (all firms), contributing to 43.9% (29.6%) of the employment generated by SMEs (all firms) and to 36.4% (21.2%) of the Gross Value Added by SMEs (all firms).

Another aspect that it is extensively investigated in the paper but so far did not merit any attention in the financial literature on family-owned firms' financing decisions concerns the zero-leverage behavior that is common to many small and large firms. Some authors (*e.g.*, Kurshev and Strebulaev, 2007; Strebulaev and Yang, 2013) have recently argued that zero-leverage behavior is a persistent phenomenon and that the factors that determine whether a firm uses debt at all may be different from those that determine how much debt is used by firms that do use debt. This paper investigates whether zero-leverage is also a common behavior for family-owned firms and estimates separately the influence of family ownership on both the participation and amount debt decisions, using as basis the two-part fractional model developed by Ramalho and Silva (2009). Although this study is based in the comparative analysis of family versus non-family firms identified by Sharma (2004) as common in this research strand, the methodology used in this paper contrasts markedly with those employed in previous studies, which often limited themselves to univariate analysis and, in all cases where multivariate analysis was performed, failed to use econometric methods appropriate to deal with two basic characteristics of leverage ratios: by definition, they are bounded by 0 and 1; and, as mentioned, many firms have null leverage ratios.

The remainder of this paper is organized as follows. Section 2 applies the most common capital structure theories to the specific context of family-owned firms and formulates the empirical hypotheses about their financing behavior that are tested in the paper. Section 3 describes the sample and performs a preliminary analysis of the impact of family ownership and firm size on debt ratios. Section 4 describes the econometric methodology used and presents the main empirical results obtained. Section 5 contains some concluding remarks.

2. Capital Structure Decisions and Family Ownership

This section starts with an overview of classical capital structure theories, namely the pecking-order, agency costs and trade-off theories, and how they may be adapted to the particular case of family businesses. Then, the main hypotheses to be tested in the empirical part of the paper are formulated.

2.1. Capital Structure Theories

The pecking order theory (Myers, 1984; Myers and Majluf, 1984) is one of the most popular capital structure theories. According to this theory, firms tend to adopt a perfect hierarchical order of financing: they use first internal resources and, in case external financing is required, they prefer debt to outside equity. In general, this is explained in terms of

information asymmetries between firms' managers and potential outside financiers, which limit firm's access to external finance. In the context of family businesses, the same reasoning obviously applies and, actually, given the informational opacity that characterizes most family firms, the asymmetric information problem tends to be even more serious. In addition, specific demand side issues related to the characteristics of family businesses may be put forward to reinforce the importance of the pecking-order theory in this particular framework. This is because one of the distinctive features of family firms is that often managers are simultaneously owners, which implies that they have a great ability to modify a firm's asset portfolio and to use benefits and channel funds to themselves and the family. Therefore, to preserve this situation, the financing decisions of owner-managers are frequently driven by the desire to minimize interference in their businesses and avoid the discipline inherent to the use of external funds (Mishra and McConaughy, 1999). Moreover, see Brenes, Madrigal and Requena (2011), succession is one of the main concerns in family firms. Thus, family firms tend to be more conservative, seeking less external finance, even if this means the loss of opportunities for growth, to prevent dilution of family control in order to avoid jeopardizing future generations (Blanco-Mazagatos, Quevedo-Puente and Castrillo, 2007; López-Gracia and Sánchez-Andújar, 2007). Hence, retained earnings and personal savings lie in the first place of their preference of financing sources and, in case internal funds are not enough, they will prefer debt to outside equity, because debt means a lower level of intrusion and, thus, a lower risk of losing control and decision-making power, exactly as predicted by the pecking-order theory.

The agency costs theory (Jensen and Meckling, 1976) states that the optimal capital structure of each firm depends on the value of debt that mitigates the conflicts between stockholders and managers, on the one hand, and stockholders and debtholders, on the other hand. In the specific context of family firms, the former type of agency cost is expected to be minimal, since concentrated ownership and owner-management naturally aligns the owner-managers' interests about growth opportunities and risk. Therefore, the incentives for issuing debt as a means of reducing the free cash at managers' disposal are much less important for family firms. Moreover, that same close alignment of management's and shareholders' interests in family firms, and consequent added flexibility of changing the asset base and greater opportunity to consume perquisites, exacerbates the debtholder-shareholder conflict within the firm, due to issues like parental altruism and self-control problems (Schulze, Lubatkin, Dino and Buchholtz, 2001), implying higher monitoring costs. Hence, more stringent lending conditions, such as a higher interest rate and more collateral requirements,

may be imposed by lenders to family firms. Clearly, combining both types of agency costs, family firms are expected to use less external finance than their non-family counterparts. However, this negative effect of family control on the use of debt may be attenuated by other characteristics of family firms and family shareholders (*e.g.*, undiversified portfolios, concern with firm and family reputation, longer investment horizons, desire to pass the firm onto their descendents), which, if recognized by the lender, may reduce monitoring costs and contribute to more favourable lending conditions. Indeed, many authors claim that debt holders view family ownership as an organizational structure that better protects their interests by ensuring continuity and stability; see *inter alia* Bopaiah (1998), which provides evidence that family ownership is associated with greater availability of credit, and James (1999) and Anderson, Mansi and Reeb (2003), which found a lower cost of debt financing for family firms.

Regarding the trade-off theory, its central aspect is that firms set an optimal ratio of capital structure, which they try to reach by maximizing the tax gains on interest on the debt (Modigliani and Miller, 1958) and minimizing the costs of financial insolvency and bankruptcy originated by an excessive amount of debt (Kraus and Litzenberger, 1973). There are several papers suggesting that family firms use resources more efficiently (*e.g.*, Andersen and Reeb, 2003a; Lee, 2006; Maury, 2006; Chu, 2009), which may include the development of strategies based on debt usage aimed at reducing the tax burden. However, note that in family firms similar gains may be obtained simply by transferring cash income from the firm to the family, thereby reducing the net profits of the business (Haynes, Walker, Rowe and Hong, 1999). On the other hand, the costs of insolvency tend to be higher for family firms because of the greater involvement of family owners in their businesses (Blanco-Mazagatos, Quevedo-Puente and Castrillo, 2007). Indeed, loss of self-esteem, self-employment and personal assets are issues particularly relevant for family firms. Overall, the trade-off theory suggests that *ceteris paribus* family firms may have a different optimal capital structure, but it is not clear whether the specificities of family firms will lead them to use more or less external finance.

2.2. Empirical Hypotheses

Given that the literature of family firms, in general, and the three classical capital structure theories just reviewed, in particular, present various arguments justifying possible differences in the financing decision process of family-owned and non-family-owned firms, it is not surprising that several empirical studies have focused on the investigation of whether family

firms use a lower or a higher level of debt. So far, the evidence provided in those papers is mixed, as the following examples illustrate: (i) Agrawal and Nagarajan (1990) found that all-equity listed USA firms exhibit more extensive family involvement than levered firms and McConaughy, Matthews and Fialko (2001) observed more conservative levels of debt in large family USA firms; (ii) Coleman and Carsky (1999) found virtually no differences between family-owned and nonfamily-owned small USA businesses in the usage of various credit products and Andersen and Reeb (2003b) report that *S&P 500* family firms use similar levels of debt to nonfamily firms; and (iii) King and Santor (2008) show that Canadian publicly listed family firms display higher financial leverage than their non-family counterparts and Schmid (2013) find a similar result for several countries from East Asia and Western Europe. Therefore, the basic hypothesis to be investigated throughout this paper may be formulated as follows:

Hypothesis 1: "Family ownership is a relevant factor in determining firms' financing decisions."

Several general capital structure empirical studies found that many firms have zero leverage ratios. For instance, Byoun, Moore and Xu (2008), Dang (2013), Bessler, Drobetz, Haller and Meier (2012) and Strebulaev and Yang (2013) reported that an average of 12.2% of U.S. firms (sample period: 1971-2006), 12.2% of U.K. firms (1980-2007), 11.0% of G7 firms (1988-2008) and 10.2% of U.S. firms (1962-2009), respectively, had zero outstanding debt. In the last year of the sample period, those figures rise to 22.6%, 23.7%, 14.2% and 19.5%, respectively, which shows that the zero-leverage phenomenon has been increasing over time. Thus, before assessing the factors determining the proportion of debt, or in parallel to that investigation, it is important to examine the reasons why so many firms do not use debt at all to finance their activities.

The studies by Kurshev and Strebulaev (2007) and Ramalho and Silva (2009), among others, mention the development of firm's financing decisions in two stages. A first stage consists of the decision whether to use a given source. After choosing that source, it is necessary to decide the amount to issue. As found out by Ramalho and Silva (2009), the determinants of the financing decision at the first stage are not necessarily the same ones that determine the second stage. In particular, they found that firm size have opposite effects on the participation and amount debt decisions due to the presence of fixed costs in external financing. Because of these costs, smaller firms often opt for no leverage at all, but choose

higher leverage at the moment of refinancing to compensate for less frequent rebalancing and to mitigate the importance of the fixed costs. Hence, firm size affects negatively the probability of using debt, but, conditional on its use, has a positive impact on leverage.

For family firms, we conjecture that a similar two-stage process may describe in a more appropriate way the financial reasoning of their owners-managers. In fact, given the apparent strong preference of family firms for financing options that minimize intrusion in their businesses, the first decision, using or not debt, may be interpreted as a kind of psychological hurdle to overcome: before using debt, managers have to accept the possibility of losing some control of their firms in the future. However, once the decision to use debt is taken, then more standard financial factors are expected to determine the amount to issue. Therefore, this paper examines the following hypothesis:

Hypothesis 2: "Family ownership influences differently the probability of using of debt and, conditional on its use, the proportion of debt in a firm's capital structure."

There is growing recognition in the literature of differentiated financial behavior of small firms compared to larger ones, which is a result of their different characteristics in various aspects such as taxation, expected life-cycle, access to the financial market, flexibility, scale economies and information asymmetry; see *inter alia* Ang (1992), Berger and Udell (1998), Scherr and Hulburt (2001) and Sogorb-Mira (2005). To the best of our knowledge, all previous empirical studies on family firms' capital structure focused on particular size-based groups of firms, so they were unable to separate in a suitable way the effects of size and ownership on capital structure choices. For instance, when the analysis is restricted to a sample of SMEs, it is often argued that 'family firms have limited sources of external financial capital because (…) their size normally does not justify bond issues' (Sirmon and Hitt, 2003). However, this is a direct consequence of the dimension of the firm and not of its ownership, and so cannot be generalized to any type of family firm.[4] In this paper we use a sample that comprises micro, small and medium/large firms and test the following hypothesis:

[4] Conversely, some previous studies focusing on generic SMEs may have used abusively theoretical arguments that are specific for family firms. For instance, Ramalho and Silva (2009) explain some of the results found micro and small firms under the assumption that most of those firms are family businesses.

Hypothesis 3: "The influence of family ownership on firms' financing decisions differs across micro, small and medium/large firms."

3. Descriptive analysis of data

This section describes the sample and variables used in this study and performs a preliminary analysis on the effect of family ownership and firm size on capital structure decisions.

3.1. The sample

The data set used in this paper were taken from the SABI database[5], from which some information was extracted about balance sheets, income statements, concentration of capital and other characteristics of Portuguese non-financial firms for the year 2007. Firms with zero sales or negative EBITDA were discarded from the analysis as well firms that were in a situation of technical bankruptcy according to Article 35 of the Portuguese Commercial Company Code (equity to be below 50% of issued share capital). By applying these selection criteria, we aimed to obtain a sample that included only effectively operational firms that were not in the final stage of their life-cycle or at too early a stage. The final sample contains 24 448 firms.

There is no consensus in the empirical literature about how a family firm should be defined, but, typically, criteria related to firm management and ownership have been used. Given the information available on SABI, we followed López-Gracia and Sánchez-Andújar (2007) and classified as a family firm those firms where an individual or a family is in possession of more than 50% of the capital. As a result of this definition, our sample comprises 20 174 family firms and 4 274 non-family firms.

Besides the influence of family ownership, this paper aims to clarify the effect of the size factor on the financing decision. Therefore, the sample was divided into three groups: micro, small and medium-sized/large firms. The process for classification into the three groups followed the criteria of the European Commission Recommendation of 6 May, number 2003/361/CE. Therefore, a firm was classified as micro if it presented a number of employees under 10 and annual turnover or total assets no greater than 2 million euros. A firm was classified as small if, not having been classified as micro, it presented a number of employees

[5] SABI – Analysis System of Iberian Balance Sheets – is the largest database of financial information about Portuguese firms and is produced by Bureau Van Dijk and managed by Informa, S.A. and BvD.

under 50 and annual turnover or total assets no greater than 10 million euros. The remaining firms were classified as medium/large firms. Overall, our sample comprises 13 012 micro firms, 8 559 small firms and 2 877 medium/large firms.

Table 1 contains the breakdown of our sample by firm size and ownership. Clearly, on average, family firms tend to be smaller in size. Nevertheless, 43.3% of medium/large firms are family-owned and 12.3% of micro and small firms are classified as non-family firms, so this sample is sufficiently diversified to allow us to analyze the separate effects of family ownership and firm size on capital structure choices.

Table 1

3.2. The impact of family ownership and firm size on financial leverage: a preliminary analysis

In this paper, the ratio of long-term debt (debt with a maturity of more than one year) to long-term capital assets (defined as the sum of long-term debt and equity) is used as a summary measure of firm's financing decisions. This measure of leverage was chosen because we are interested in active capital structure choices of firms, while a non-trivial portion of short-term liabilities may simply reflect day-to-day business arrangements rather than financial considerations; see Rajan and Zingales (1995) for an extensive discussion on alternative measures of financial leverage. As the sample contains mainly unquoted firms, the ratio was calculated based on book values. Table 2 presents some sample statistics for mean leverage ratios by ownership type and size.

Table 2

According to Table 2, there seems to be a clear positive relationship between firm size and the proportion of long-term debt used by firms, irrespective of their ownership type. Conditional on firm size, it is also apparent that family firms have either similar (micro firms) or greater (other size-based groups) mean leverage ratios than their non-family counterparts. However, note that the opposite conclusion would be reached if family and non-family firms were compared in unconditional terms: overall, the proportion of debt used by non-family firms is greater, which occurs (see Table 1) due to the greater predominance of micro firms in the family case. Clearly, not considering firm size in studying the importance of the family

ownership factor could bias the results obtained and can be at the origins of some contradictory results found in earlier studies.

The results observed in Table 2 are heavily influenced by the presence of a significant number of firms with zero leverage ratios in the sample. In fact, Table 3 shows that 50.2% of sample firms do not use long-term debt. Again, irrespective of ownership type, a positive relationship is observed between firm size and (the probability of using) debt: around 3/5, 2/5 and 1/4 of micro, small and medium/large firms, respectively, did not have any long-term debt in their 2007 balance sheets. Also similarly to the previous analysis, the relationship between family ownership and debt is not independent on firm size. Indeed, while overall it seems that family firms are clearly less prone to use debt (52.4% versus only 39.9% of non-family firms), the frequency of zero leverage ratios for family firms by size-based group is only significantly greater in the micro case, being even significantly smaller for medium/large firms.

Table 3

Table 4 presents again mean leverage ratios for firms in the sample, but now excluding those with a zero ratio. In this case, the results obtained are substantially different from those reported in Tables 2 and 3. Indeed, Table 4 shows that, conditional on the use of debt, the greatest leverage ratios are displayed by smaller firms. Also in contrast to the previous analyses, the differences between family and non-family firms are now much clearer: irrespective of their dimension, family firms present a greater proportion of long-term debt than their non-family counterparts. Both these results justify our option for studying separately the determinants of the decisions on using debt or not and how much debt to use, since, on the one hand, firm size seems to affect in an inverse way each decision and, on the other hand, the same occurs with the effect of family ownership in the micro and small firm cases. Moreover, by excluding zero-leverage firms, the average book leverage ratio increases from 19.8% (family firms) and 21.9% (non-family firms) to 41.6% and 36.5%, respectively, which suggests that the stylized fact that on average firms have low leverage ratios relative to what could be expected from various models of capital structure (Strebulaev and Yang, 2013) may not apply to leveraged firms and may be better explained by investigating, as we do in the paper, why some firms tend not to have debt at all.

Table 4

4. Econometric analysis

The results of the univariate tests described in Tables 2, 3 and 4 indicate that the financing decisions of family-owned firms, overall and by size-based group, differ significantly from their counterparts controlled by another type of shareholder in most cases. However, these differences may be due, at least partially, to other factors mentioned in the literature as being determinants of capital structure. This section uses regression techniques to investigate whether, once those factors are controlled for, the influence of family ownership remains significant for explaining both the probability of a firm using debt and, conditional on the former decision, the amount of debt to use.

4.1. Explanatory variables

Characterizing the influence of family ownership on capital structure decisions is the main aim of this paper. Therefore, in the regression analysis that follows we introduce a dummy variable, *Family Ownership*, which equals one if the firm is classified as family-owned and equals zero otherwise. The preliminary analysis carried out in the previous section suggests that the influence of the family-ownership factor on the financing decision may depend on the firm's size. To test if this is indeed the case, some of the regression models to be estimated contemplate also two dummy variables, *Micro* and *Small* (which equal one if the firm is classified as micro or small, respectively, and zero otherwise) and two interaction variables that interact these two dummies with *Family Ownership*.

On the other hand, over the years, capital structure empirical studies produced a long list of factors that are also expected to influence financial leverage decisions. Hence, some of the most common of those factors are used in this paper as control variables: *Size*, measured by the natural logarithm of sales;[6] *Profitability*, the ratio between earnings before interest and taxes and total assets; *Tangibility*, the proportion of fixed assets in total assets; *Growth*, the yearly percentage change in total assets; *Age*, the number of years since the foundation of the firm; *Liquidity*, the sum of cash and marketable securities, divided by total assets; and eight industry dummies: *Manufacturing Non Equipment*; *Manufacturing Equipment*; *Accommodation*; *Firm Services*; *Trade and Repair Vehicles*; *Transportation*; *Financial Activities*; *Agriculture and Mining*. Some of these variables are expected to have a positive

[6] Note that size is included in two different ways in the analysis, both as a quantitative variable (sales) and as a nominal variable (size-based group of firms), since it is assumed that the effects of firm size may vary depending on whether the firm is in fact micro, small or medium/large sized.

impact on leverage ratios (*Profitability*, in the case of the trade-off and agency costs theories; *Growth*, in the pecking-order theory; *Age*, in the agency costs theory; and *Tangibility* and *Size*, in all cases), while others are expected to have a negative effect (*Growth*, in the trade-off and agency costs theories; and *Profitability*, *Age* and *Liquidity*, in the pecking-order theory). It may be also the case that one variable, *Size*, has a negative impact on the probability of using debt, but, conditional on its use, a positive effect on leverage. See *inter alia* Ramalho and Silva (2009) for a detailed explanation of all these possible effects.

Table 5 reports some descriptive statistics for the continuous explanatory variables, showing that non-family firms have on average greater size, profitability, asset tangibility, growth and maturity, while family-owned firms present a higher level of liquidity, which may be a consequence of the mitigated stockholder-manager agency problems that arise in this context, as discussed in Section 2. Most of the differences in the characteristics of family and non-family firms are statistically relevant, which emphasizes the importance of using regression analysis to study the effect of family ownership in capital structure choices. On the other hand, firms with zero-leverage ratios have a smaller proportion of tangible assets, a lower growth rate and are smaller and younger than leveraged firms. In contrast, they show greater average profitability and level of liquidity.

Table 5

4.2. Econometric Methodology

Let y be the dependent variable (i.e. the ratio of long-term debt to long-term capital assets), with $0 \leq y < 1$, $\mathbf{x}$ be the vector of explanatory variables and z be a binary indicator that takes the values of unity and zero for firms that use debt and firms that have null leverage ratios, respectively. Then:

$$z = \begin{cases} 1 \text{ for } 0 < y < 1 \\ 0 \text{ for } y = 0 \end{cases}$$

In order to estimate separately the effects of family ownership on the decisions of using debt or not and how much debt to use, a two-part fractional regression model is employed. This model has two components: one binary and other fractional. The binary component (the first-part) of the model comprises a standard binary choice model to explain the probability of a firm choosing to use debt or not:

$$\Pr(z = 1|\mathbf{x}) = F(\mathbf{x}\beta_{1P}),$$

where β_{1P} is a vector of coefficients and $F(\cdot)$ is a cumulative distribution function (*e.g.*, that defining binary logit or probit models). The fractional component (the second part) of the model considers only the sub-sample of firms that do use debt and estimates the relative amount of debt issued by them:

$$E(y|\mathbf{x}, y \in]0,1[) = M(\mathbf{x}\beta_{2P}),$$

where $M(\cdot)$ is some nonlinear function satisfying $0 < M(\cdot) < 1$ and β_{2P} is another vector of coefficients. As remarked by Ramalho, Ramalho and Murteira (2011), one may consider for $M(\cdot)$ the same specifications as those for $F(\cdot)$ in the binary component of the model.

The overall conditional mean of *y* can be written as:

$$E(y|\mathbf{x}) = \Pr(z = 1|\mathbf{x}) \cdot E(y|\mathbf{x}, y \in]0,1[)$$

Next, we adopt a logistic specification for both components of the two-part model:

$$E(y|\mathbf{x}) = \frac{e^{\mathbf{x}\beta_{1P}}}{1 + e^{\mathbf{x}\beta_{1P}}} \cdot \frac{e^{\mathbf{x}\beta_{2P}}}{1 + e^{\mathbf{x}\beta_{2P}}}$$

4.3. Empirical Results

Table 6 reports the results obtained for three distinct two-part fractional regression models. Model 1 is the simplest model, with the variable *Family Ownership* capturing the influence of family ownership on both the use and proportion of debt. Model 2 adds two dummy variables, *Micro* and *Small*, allowing the firm's size category to affect capital structure choices but still assuming that the family ownership factor influences uniformly firms in different size categories and *vice-versa*. Finally, Model 3 adds two interaction variables, *Family Ownership* * *Micro* and *Family Ownership* * *Small*, which allows to investigate whether the effect of family ownership depends on firm's size or not. Model 3 is used for testing the empirical hypotheses formulated in Section 2.2, while the other two models illustrate how the use of less flexible econometric models often leads to erroneous conclusions by imposing inappropriate assumptions.

Table 6

Table 6 is divided into four panels. The first panel reports the results for the control variables. The second panel presents the results for the variables related to firm's ownership type and size category. Because often it is not clear how to interpret the estimated coefficients for these variables, particularly in Model 3, the third panel presents the results of the previous panel in a simpler manner, allowing immediate comparisons between family and non-family

firms and across size categories. Finally, the fourth panel displays some complementary information on the estimated models.

To understand how the values in the third panel were calculated, we provide the following example for Model 3, Part I. For micro family firms, the coefficients relevant to analyze the effects of family ownership and size category on financial leverage are those of *Family Ownership, Micro* and *Family Ownership * Micro*. For small family firms, the relevant coefficients are those of *Family Ownership, Small* and *Family Ownership * Small*. Therefore, to test whether micro family firms are more prone to use long-debt, we have to calculate the difference between the sum of the first set of coefficients (0.477 - 0.075 - 0.471 = -0.069) and the sum of the second set of coefficients (0.477 - 0.019 - 0.319 = 0.139). The result is -0.208 and by applying a standard *t* test we find that small family firms have a significantly higher probability of using long-term debt than micro family firms.

Considering the empirical adequacy of the three models, it seems that they fit the data relatively well in all cases and that the pecking-order theory provides a reasonable explanation of the capital structure decisions of Portuguese firms. The RESET test provides no evidence of functional form misspecification. The values found for the pseudo R^2, although low, are common in cross-sectional studies. The effects on leverage of the control variables *Profitability* (-), *Tangibility* (+), *Growth* (+), *Age* (-) and *Liquidity* (-) are consistent with the pecking-order. However, unlike predicted by the pecking-order theory, the effect of *Size* (positive for the probability of using debt; negative for the (conditional) amount of debt used) is consistent with the two-part theory of Ramalho and Silva (2009).

Model 1 reveals that family ownership is indeed a relevant factor in determining firms' financing decisions. According to this model, firms classified as family-owned tend to be more likely to use long-term debt and, conditional on its use, tend to have a greater proportion of long-term debt. Similar conclusions are achieved in Model 2, which, in addition, shows that, on the one hand, micro and small firms are less prone to use long-term debt than larger firms, and, on the other hand, conditional on using it, micro firms tend to use larger relative amounts of long-term debt. As the third panel of Table 6 clearly evidences, Models 1 and 2 rely on the assumption that family ownership and size category are independent factors in the explanation of financial leverage, i.e. both models assume that the effect of *Family Ownership* is the same for all firms, irrespective of their size category, and that the effect of size category is either non-existent (Model 1) or identical for all firms (Model 2), irrespective of their family or non-family nature. However, as discussed next, Model 3 shows clearly that those assumptions do not hold with our data, displaying a slightly different picture.

In the richer Model 3, the effects of the variables *Micro* and *Small* are no longer statistically relevant but the two interaction variables added to the model are statistically significant. This reveals that, unlike assumed in the other models, the effect of size category is distinct for family and non-family firms. As the results in the third panel of Table 6 show unequivocally, there are no significant differences between the leverage decisions of micro, small and medium/large non-family firms. In contrast, family firms in larger size-based groups have a higher probability of using long-term debt and, conditional on its use, tend to issue smaller amounts of long-term debt.

Conditioning on the size category, the effect of family ownership is positive for both parts of the model, being statistically significant in four out of six cases. Thus, irrespective of being micro, small or medium/large, family firms are more prone to use long-term debt and tend to use it more intensively. While in terms of the type of effect there is a relative uniformity across size categories, the same does not happen in terms of their magnitude. Indeed, the magnitude of the effect of family ownership is, one the one hand, significantly higher for medium/large firms in the binary component of the model and, on the other hand, significantly higher for micro and small firms in the fractional component of the model.

Overall, our results fully corroborate two of the three empirical hypotheses formulated in Section 2. In general, family ownership is unequivocally a relevant factor in determining firms' financing decisions, as stated in Hypothesis 1, and the magnitude of the effects of family ownership is different across size categories, as stated in Hypothesis 3. Regarding Hypothesis 2, which states that family ownership influences differently the participation and amount debt decisions, the evidence is mixed. On the one hand, we found that family firms are both more prone to use long-term debt and, conditional on its use, to use it more intensively than their non-family counterparts classified in a similar size category. However, these effects are not statistically significant for some size categories in one part of the model, which suggests that, depending on the size category, the effect of family ownership may be important only for one of the two decisions analyzed. Moreover, our results show that it is essential to use a two-part model for analyzing the effect of size category in the context of family firms: clearly, firms in smaller size-based groups have a significantly lower probability of using long-term debt but, at the same time and conditional on its use, they use a significantly larger proportion of long-term debt.

5. Conclusions

In this paper, we analyzed the effect of family ownership and firm size on capital structure decisions using a data set of Portuguese firms and a two-part fractional regression model. The results reveal that both family ownership and size category are important predictors of firms' financial leverage and that not considering the latter factor when studying the importance of the former can bias the conclusions and be at the origins of some contradictory results found in earlier studies. For example, while the average leverage ratio of family firms (19.8%) is lower than that of non-family firms (21.9%) and the proportion of family firms that use long-term debt (47.6%) is also lower than in the non-family case (60.1%), in a regression analysis controlling for several factors including size category we conclude that family ownership actually influences positively both the probability of using long-term debt and the conditional amount of debt issued. This suggests that in previous studies not controlling appropriately for firm size, opposite effects for the family ownership may have been found simply because family firms are, on average, much smaller than non-family firms.

The positive effect found for the family ownership factor provides support to those theories that claim that family firms have the capacity of having higher leverage due to the higher continuity and stability of their organizational structure, which is implied by factors like concern with family reputation and longer investment horizons and may lead to more favorable lending conditions; see *inter alia* Anderson, Mansi and Reeb (2003), Bopaiah (1998) and James (1999). The more efficient management of resources that characterizes many family firms (see, *e.g.*, Andersen and Reeb, 2003a; Maury, 2006; and Chu, 2009) is another factor that may explain the positive impact of family ownership on financial leverage. Nevertheless, even after controlling for family ownership, classical determinants of capital structure are still relevant and we found that their effects conform to the pecking-order theory, apart from the double effect of firm size.

As in Ramalho and Silva (2009), we found that smaller firms have a lower probability of using long-term debt but, once the decision to use debt is taken, they tend to use a larger proportion of long-term debt. While this result is valid for both family and non-family firms, only in the former case is the effect of firm size on both the participation and amount debt decisions distinct across size categories. That is, conditional on the other factors, micro, small and medium/large non-families display similar leverage ratios, while family firms do not. This suggests that family firms are more heterogeneous across size categories than non-family firms, and that the size category variables are actually capturing the effects of other characteristics of family firms that were not controlled for in the regression equation but are

somehow associated to the size category to which the firm belongs to. Finding those characteristics is clearly an interesting avenue for future work.

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Table 1 – Sample

	Family firms		Non-family firms		All firms	
	#	%	#	%	#	%
Micro	11 990	59.4%	1 022	23.9%	13 012	53.2%
Small	6 937	34.4%	1 622	38.0%	8 559	35.0%
Medium/Large	1 247	6.2%	1 630	38.1%	2 877	11.8%
Total	20 174	82.5%	4 274	17.5%	24 448	100.0%

Table 2 – Mean leverage ratios

	Family firms		Non-family firms		Differences in	All firms	
	Mean	St. Dev.	Mean	St. Dev.	means (test)	Mean	St. Dev.
Micro	0.167	0.266	0.172	0.265	-0.511	0.168	0.266
Small	0.236	0.270	0.216	0.264	2.761***	0.232	0.269
Medium/Large	0.278	0.249	0.253	0.258	2.612***	0.263	0.254
Total	0.198	0.269	0.219	0.264	-4.757***	0.202	0.268

Note: ***, ** and * denote test statistics which are significant at 1%, 5% and 10%.

Table 3 – Zero-leverage firms

	Family firms		Non-family firms		Differences in	All firms	
	#	%	#	%	proportions (test)	#	%
Micro	7 423	61.9%	598	58.5%	-2.143**	8 021	61.6%
Small	2 867	41.3%	661	40.8%	-0.425	3 528	41.2%
Medium/Large	290	23.3%	446	27.4%	2.501**	736	25.6%
Total	10 580	52.4%	1 705	39.9%	-14.908***	12 285	50.2%

Note: ***, ** and * denote test statistics which are significant at 1%, 5% and 10%.

Table 4 – Mean leverage ratios for leveraged firms

	Family firms		Non-family firms		Differences in	All firms	
	Mean	St. Dev.	Mean	St. Dev.	means (test)	Mean	St. Dev.
Micro	0.439	0.257	0.414	0.263	1.927**	0.437	0.258
Small	0.402	0.239	0.364	0.252	4.439***	0.396	0.242
Medium/Large	0.362	0.225	0.348	0.242	1.368*	0.354	0.234
Total	0.416	0.248	0.365	0.250	9.263***	0.405	0.249

Note: ***, ** and * denote test statistics which are significant at 1%, 5% and 10%.

Table 5 – Summary statistics for the explanatory variables

	Family firms		Non-family firms		Differences in means (test)	All firms	
	Mean	St. Dev.	Mean	St. Dev.		Mean	St. Dev.
All firms							
Size	-0.648	1.510	1.230	1.976	-69.660***	-0.320	1.753
Profitability	0.061	0.081	0.065	0.277	-1.763**	0.062	0.137
Tangibility	0.243	0.213	0.250	0.231	-2.025**	0.244	0.217
Growth	0.104	0.362	0.121	0.452	-2.644**	0.107	0.379
Age	17.754	11.730	22.054	15.688	-20.409***	18.505	12.618
Liquidity	0.131	0.149	0.088	0.126	17.550***	0.124	0.146
Manufacturing Non Equipment	0.130	0.336	0.173	0.378	-7.364***	0.137	0.344
Manufacturing Equipment	0.090	0.287	0.093	0.290	-0.522	0.091	0.287
Accommodation	0.039	0.193	0.032	0.177	2.021**	0.038	0.190
Firm Services	0.072	0.259	0.083	0.276	-2.474***	0.074	0.262
Trade and Repair Vehicles	0.398	0.489	0.310	0.462	10.811***	0.382	0.486
Transportation	0.048	0.214	0.052	0.222	1.100	0.049	0.217
Financial Activities	0.016	0.125	0.047	0.213	12.963***	0.021	0.145
Agriculture and Mining	0.025	0.156	0.034	0.182	3.430***	0.027	0.161
Zero-leveraged firms							
Size	-1.033	1.415	0.715	2.064	-44.026***	-0.791	1.637
Profitability	0.067	0.093	0.079	0.429	-2.497***	0.069	0.182
Tangibility	0.221	0.210	0.185	0.210	6.581***	0.216	0.210
Growth	0.097	0.362	0.093	0.400	0.369	0.096	0.368
Age	17.486	11.693	21.352	15.392	-12.073***	18.022	12.345
Liquidity	0.162	0.164	0.132	0.155	7.198***	0.158	0.163
Manufacturing Non Equipment	0.110	0.313	0.129	0.335	-2.329***	0.112	0.316
Manufacturing Equipment	0.075	0.264	0.079	0.270	-0.571	0.076	0.265
Accommodation	0.049	0.215	0.038	0.190	2.015***	0.047	0.212
Firm Services	0.079	0.270	0.107	0.309	-3.871***	0.083	0.276
Trade and Repair Vehicles	0.412	0.492	0.362	0.481	3.937***	0.405	0.491
Transportation	0.058	0.234	0.050	0.219	1.270*	0.057	0.232
Financial Activities	0.017	0.130	0.045	0.206	-7.331***	0.021	0.143
Agriculture and Mining	0.027	0.162	0.029	0.167	-0.402	0.027	0.163
Leveraged firms							
Size	-0.223	1.497	1.572	1.838	-51.300***	0.156	1.737
Profitability	0.055	0.066	0.056	0.070	-1.023	0.055	0.067
Tangibility	0.268	0.215	0.294	0.234	-5.402***	0.273	0.219
Growth	0.111	0.361	0.139	0.483	-3.158***	0.117	0.390
Age	18.050	11.763	22.519	15.867	-15.792***	18.993	12.870
Liquidity	0.096	0.121	0.059	0.091	14.515***	0.089	0.117
Manufacturing Non Equipment	0.152	0.359	0.202	0.401	-6.028***	0.163	0.369
Manufacturing Equipment	0.107	0.309	0.102	0.303	0.740	0.106	0.308
Accommodation	0.028	0.164	0.029	0.167	-0.266	0.028	0.165
Firm Services	0.065	0.247	0.068	0.251	0.470	0.066	0.248
Trade and Repair Vehicles	0.382	0.486	0.275	0.447	10.098***	0.359	0.480
Transportation	0.037	0.189	0.053	0.225	-3.677***	0.041	0.197
Financial Activities	0.015	0.120	0.049	0.217	-10.754***	0.022	0.147
Agriculture and Mining	0.023	0.148	0.038	0.191	-4.337***	0.026	0.158

Note: ***, ** and * denote test statistics which are significant at 1%, 5% and 10%.

Table 6 – Regression models for leverage ratios

Variable	Two-part FRM					
	Model 1		Model 2		Model 3	
	Part I	Part II	Part I	Part II	Part I	Part II
Constant	0.347***	-0.008	0.566	-0.044***	0.429	-0.000***
	(0.055)	(0.058)	(0.075)	(0.048)	(0.082)	(0.050)
Size	0.334***	-0.071***	0.277***	-0.053***	0.280***	-0.055***
	(0.010)	(0.007)	(0.014)	(0.010)	(0.014)	(0.010)
Profitability	-1.618***	-3.313***	-1.549***	-3.340***	-1.555***	-3.334***
	(0.183)	(0.174)	(0.183)	(0.174)	(0.183)	(0.174)
Tangibility	1.155***	0.522***	1.128***	0.533***	1.130***	0.531***
	(0.070)	(0.046)	(0.068)	(0.046)	(0.068)	(0.046)
Growth	0.101***	0.253***	0.103***	0.253***	0.101***	0.254***
	(0.039)	(0.051)	(0.039)	(0.051)	(0.039)	(0.051)
Age	-0.003**	-0.009***	-0.004***	-0.009***	-0.004***	-0.009***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Liquidity	-2.453***	-1.522***	-2.423***	-1.544***	-2.419***	-1.551***
	(0.109)	(0.093)	(0.109)	(0.093)	(0.109)	(0.093)
Family Ownership	0.159***	0.128***	0.171***	0.136***	0.477***	0.046
	(0.041)	(0.025)	(0.041)	(0.025)	(0.090)	(0.043)
Micro			-0.370***	0.089**	-0.075	-0.016
			(0.073)	(0.045)	(0.104)	(0.071)
Small			-0.167***	-0.007	-0.019	-0.074
			(0.058)	(0.032)	(0.082)	(0.048)
*Family Ownership * Micro*					-0.471***	0.152**
					(0.114)	(0.069)
*Family Ownership * Small*					-0.319***	0.116**
					(0.106)	(0.056)
Summary of effects of family ownership and size category						
Family firms						
Micro – Small	---	---	-0.203***	0.096***	-0.208***	0.094***
Micro – Medium / Large	---	---	-0.370***	0.089**	-0.546***	0.136***
Small – Medium / Large	---	---	-0.167***	-0.007	-0.338***	0.042
Non-family firms						
Micro – Small	---	---	-0.203***	0.096***	-0.056	0.058
Micro – Medium / Large	---	---	-0.370***	0.089**	-0.075	-0.016
Small – Medium / Large	---	---	-0.167***	-0.007	-0.019	-0.074
Family – Non-Family firms						
Micro	0.159***	0.128***	0.171***	0.136***	0.006	0.198***
Small	0.159***	0.128***	0.171***	0.136***	0.158***	0.162***
Medium / Large	0.159***	0.128***	0.171***	0.136***	0.477***	0.046
Micro – Small	---	---	---	---	-0.152*	0.036
Micro – Medium / Large	---	---	---	---	-0.471***	0.152**
Small – Medium / Large	---	---	---	---	-0.319***	0.116**
Number of observations	24448	12163	24448	12163	24448	12163
Pseudo R^2	0.0995	0.1344	0.1004	0.1354	0.1009	0.1357
RESET test (p-value)	0.256	0.296	0.237	0.241	0.645	0.201

Notes: ***, ** and * denote regression coefficients and test statistics which are significant at 1%, 5% and 10%; all models include industry dummies.