Young family firms: Financing decisions and the willingness to dilute control

Abstract

We study the relationship between leverage and the willingness of listed family firms to dilute control, proxied by the ownership of the main shareholder. We find that the main owner's stake positively impacts on leverage and that this impact is stronger when the business is a young family firm. Furthermore, the life cycle matters when analyzing this relationship. These results allow us to argue that owners with a greater stake prefer to raise finance via debt rather than dilute their position via equity, and that family firms face a trade-off between their control risk aversion and the need for external financing.

Keywords: family firm, willingness to dilute control, life-cycle stages, financing behavior

Classification codes: G02, G32

1. Introduction

Family firms form a significant part of most economies (Faccio and Lang, 2002; Morck et al., 2005; Barontini and Caprio, 2006), but their financing decisions (capital structure) have been relatively ignored by mainstream finance. Research on capital structure within mainstream finance is based primarily on four theories: trade-off, pecking order, timing and inertia (Welch, 2004; Kayhan and Titman, 2007; Jong et al., 2010; Serrasqueiro and Maçãs, 2012). The incentives of controlling shareholders to influence capital structure decisions have not, however, been studied extensively (Schmid, 2013).

A major feature of family firms that is likely to impact on their financing decisions is the willingness of the main owner to dilute their control over the business. On the premise that the equity in the hands of the main owner can be used as a proxy for their willingness to dilute control, this paper specifically analyses the relationship between leverage and the equity holding of the main owner, among listed family firms. This allows us to understand how target leverage is dependent on the specific behavior of a firm's main owner, whose aversion to diluting control over the business is studied in different situations. In particular, we compare the willingness to dilute control in family and non-family firms; we consider the particular case of young family firms; and we study this willingness over the different life-cycle stages of the business.

Using a European sample of 1,050 listed firms (8,357 observations) for the period 2000–2009, we find that leverage is positively related to the ownership of the main shareholder, and that this relationship is stronger when the business is a young family firm (because such firms are less willing to dilute control through equity issue). In addition, we find that the relationship between ownership and leverage is positive for

mature firms, neutral for revival firms and negative for growth firms (given their different investment opportunities and access to debt financing).

This paper differs from prior work on capital structure (Berger et al., 1997; Harvey et al., 2004; Du and Dai, 2005; Berry et al., 2006; Liu and Tian, 2012) in several ways. First, we study the ownership–leverage relationship in the context of listed firms only, where there is more potential to finance investment via equity than debt. This study is therefore different from the research on small and medium-sized businesses, such as in La Rocca et al. (2011), where the two relevant sources of financing are debt and internal funds (with debt possibly offering the better funds for investment). Consideration of a listed firm sample in this context is important to understanding that the willingness of a firm to dilute control has a different effect on leverage depending on the financing source that represents the greatest loss of control.

Second, we consider different predispositions to dilute control between family and non-family firms, since owners of the former group may have non-economic as well as economic goals and be more attached to the business. While our results show no differences between family and non-family firms, we find that differences do exist when the business is a young family firm. Thus we provide an understanding of the different importance that old and young family firms attach to the financing options for the business. The conflicts between family members that often occur during the succession process (arising from the dilution of family ownership and varying attachments to the family firm; see Blumentritt et al., 2013) lead to different propensities to dilute control between young family firms (where this succession process has not yet occurred) and old family firms (where the succession process does need to be handled).

Third, we include the organization's life-cycle stages as another variable moderating the ownership–leverage relationship. We contribute by considering two

factors that affect the willingness of a firm's main owner to dilute control: the firm's investment opportunities and its access to debt financing. The more the investment opportunities and the less the access to debt financing, the greater will be the willingness to dilute control via the issue of equity. These two factors appear to be different for growth, mature and revival businesses. Thus, by studying the willingness to dilute control for different life-cycle stages, we are able to control for these two factors affecting the financing decisions of firms.

Fourth, we contribute to the life-cycle literature with the development of a hybrid clustering method to identify a firm's life-cycle stages. Cluster analysis allows us to consider jointly multiple variables that categorize the stages, and the hybrid method enables us to overcome the problem of hierarchical methods in large samples where early combinations persist throughout the analysis and induce artificial results.

Our final contribution relates to the system generalized method of moments (system GMM) estimator used to test the hypotheses. This approach makes it possible to overcome two common problems in the ownership structure literature: first, the study of the relationship between ownership and leverage suffers from problems of endogeneity that can be solved with the use of instrumental variables; second, some unobservable factors or individual effects are correlated with the independent variables and affect the dependent variable. For instance, the family attachment to the business, which affects leverage, may influence the level of ownership, the length of stay of family members in the firm, and other firm characteristics. The system GMM estimator allows us to mitigate these two problems, which cannot be overcome by other estimators such as ordinary least squares.

The remainder of the paper is structured as follows: Section 2 provides a literature review and describes the theoretical framework and hypothesis development.

Section 3 presents the research method. Section 4 reports and discusses the main findings and Section 5 concludes.

2. Literature review and research hypotheses

2.1. Capital structure and the willingness to dilute control

One strand of the capital structure literature is the relationship between ownership and leverage. Firms with a higher ownership concentration will have access to better conditions when issuing debt, since the blockholders' commitment to the business will be seen as more reliable. But blockholders have to balance the trade-off between the need for funds and the costs associated with a dilution in control. Bettignies and Brander (2007) develop this idea in a mathematical model where the firm has to choose between bank finance (which does not dilute ownership) and venture capital (which offers funds and managerial input but dilutes control).

From an empirical perspective, Berger et al. (1997) find that CEO ownership and the presence of a significant blockholder positively impact on leverage. They attribute these findings to the idea that managers with ownership stakes are more closely tied to shareholders and pursue more leverage to increase the value of the business. This explanation, related to the signaling role of debt, is not supported in research by Du and Dai (2005), which instead endorses the non-dilution entrenchment argument. This argument states that firms prefer to finance their investments with debt over equity to avoid diluting their controlling position. In particular, they find that the entrenchment effect is stronger when there is divergence between cash flow and control rights, in accordance with other literature (Harvey et al., 2004; Liu and Tian, 2012). This idea of a firm's controlling shareholders avoiding dilution of their controlling position is in line with the work by Donelli et al. (2013), who study changes in ownership control and find

that the main shareholders are reluctant to sell their shares, their blockholdings being on average high and stable over time.

On the basis of the non-dilution entrenchment effect, we expect that main shareholders with a significant ownership stake will be less willing to dilute their control. Consequently, we state the following hypothesis:

Hypothesis 1: The higher the ownership in the hands of the main shareholder, the higher the leverage.

2.2. Family firms and the willingness to dilute control

The relationship between the use of debt and the willingness to dilute control can be moderated by the type of firm (particularly family *vs* non-family). Empirical studies find that the type of owner matters; for instance, the willingness to dilute control can be inferred from the changes in control in a firm over time. In this vein, Holderness and Sheehan (1988), in their study of listed firms, state that firms with an individual majority shareholder undergo fewer changes in control than firms with a corporate majority shareholder. Some recent articles find family control positively impacts on debt use in Australian (Setia-Atmaja et al., 2009), Canadian (King and Santor, 2008) and continental European firms (Croci et al., 2011). These articles state that family firms issue more debt than non-family firms, in order to grow the business without diluting ownership. Similarly, Fu and Subramainan (2011) develop a mathematical model to examine the financing behavior of undiversified owner–managers and explain that these managers gain non-pecuniary benefits from controlling the business, which increase with the equity stake. These non-pecuniary benefits are well explained in the research by Björnberg and Nicholson (2012), who interview UK family firm owners and find that ownership for them has more emotional than financial value.

Family firms are seen as having these non-pecuniary benefits and are more reluctant to dilute control by reducing their equity stakes. More specifically, family firms are a special type of business where the main shareholders are more committed to the business and less willing to dilute control due to their control risk aversion (Mishra and McConaughy, 1999). Their greater amenity potential (Demsetz and Lehn, 1985), which refers to the utility of being able to influence the type of goods produced by the business, makes them more reluctant to dilute their stake in it. Moreover, the psychological ownership described by Liu et al. (2012), although sometimes developed by non-family individuals, is more likely to exist among family owners, given their greater control, in-depth knowledge of the business, and self-investment in it. For these reasons, they are less willing than non-family firms to raise capital through equity offerings (Croci et al., 2011). This is viewed as a drawback of family firms by Sirmon and Hitt (2003), since these businesses thereby have limited sources of external finance. For this reason, it is important for family firms to have greater access to other funding sources in order to finance their investments.

Family firms are able to access higher levels of debt financing, since they usually have a lower cost of debt. There are potentially three reasons for this. First, family members may be prepared to use their wealth as collateral. Second, family firms represent a unique class of shareholders with undiversified portfolios (Anderson et al., 2003), which makes them less likely to invest in risky projects (Naldi et al., 2007); thus, bondholders will demand lower rents than from non-family firms, which are typically held by more diversified shareholders. Third, the reputation of the family (Anderson and Reeb, 2003) and the ability to borrow (relational) social capital (Du et al., 2013) through family involvement (Chua et al., 2011) can also lead, respectively, to a lower cost of debt and improved access to debt financing.

Thus, given the aversion of family firms to control risk and their greater access to debt financing, we state the following hypothesis:

Hypothesis 2a: The main owner's stake in the business impacts more positively on leverage for family firms than for their non-family counterparts.

Additionally, Hoy (2006) suggests that studies should compare not only family and non-family firms, but also multi-generational and single-generation family firms. As a result of making such comparisons, we posit that the willingness to dilute control differs between young and old family firms, since the succession process entails a change of control. Franks et al. (2012), when studying the existence of an ownership life cycle in family firms, state that the control in the business varies among different types of family firms. When the firm is owned by the first generation, founders are generally unwilling or reluctant to dilute their control in the business (Gedajlovic et al., 2004). However, as the firm grows older and control is in the hands of different family members, this may lead to family conflict over control and ultimately to a sale of the business itself. Therefore, it is expected that the owners of family firms in second and subsequent generations will be more willing to dilute control in the business than their counterparts in the first generation.

Gómez-Mejía et al. (2007) also find different degrees of willingness to dilute control for different family firms. Willingness is lowest in those stages where the family influence is strongest or, as they put it, when the socio-emotional endowment is at its highest. This strong family influence is more likely to be found in young family firms than in older ones. This is consistent with the idea that the original entrepreneur's ownership is distributed mainly to the family when there are more, and closer, family ties (Kotha and George, 2012).

Therefore, although family owners typically seek to transfer the business to the next generation of the family (Westhead et al., 2001), there are many scenarios that result in indecision and conflict among family members (Blumentritt et al., 2013) and eventually lead to a dilution of their stake. Amore et al. (2011) study the relationship between the use of debt and managerial succession in listed and non-listed family firms. They find that the appointment of a professional manager to run the business increases debt, and that this increase is greater when the family firm is young. In their analysis they explain that family firms avoid issuing equity to prevent the dilution of control, and prefer to issue debt .

In addition, Michiels et al. (2013) conclude that agency costs related to parental altruism are lower in later generations of family firms. One form of parental altruism can be the avoidance of diluting the family stake, in order to secure the interest of future generations in the family business. Thus, family firms in the first generation will tend to show more altruistic behavior, resulting in greater unwillingness to dilute control. From this, we state the following hypothesis:

Hypothesis 2b: The positive impact of the main owner's stake on leverage is stronger when the business is a young family firm.

2.3. Firm life cycle and the willingness to dilute control

The use of equity and debt financing varies for firms in different stages of the life cycle. Similarly, different capital structures are optimal at different stages (Berger and Udell, 1998), because of changes in firm characteristics that in turn represent a change in its optimal level of debt (Mitton, 2008). Advantages and disadvantages from a trade-off perspective are examined in a few papers (Jensen, 1986; Shleifer andVishny, 1997), which find that the control afforded by debt is less important in growing young businesses with less free cash flow, since these organizations go regularly to the

financial markets in order to obtain capital (e.g., via venture capital investors; Popov and Roosenboom, 2013). One of the reasons why growing businesses choose a lower level of debt to finance their investments is because the control function of debt (known as "opportunity wealth loss" in Jensen and Meckling, 1976) is costly when bondholders do not allow the business to undertake investments even with positive net present value. Furthermore, Stulz (1990) examines how the capital structure of a business depends on its investment opportunities and the distribution of cash flow, which are among the characteristics that differentiate a firm's life-cycle stages.

The broad literature on capital structure includes only a few papers explicitly analyzing the impact of life cycle on a firm's financing decisions (Hirsch and Walz, 2011), and most of them differentiate only between growth and maturity stages. For instance, Bulan and Yan (2009) find that mature businesses have higher leverage since they prefer debt to equity and are able to borrow more easily and at a lower cost. Furthermore, Dudley (2012) observes that firms issue more equity to finance the initial stages of a project, but when assets are in place that serve as collateral in the later stages, they issue more debt.

Thus, we expect that the willingness to dilute control will be moderated by the life-cycle stage of the business. There are two main characteristics that differentiate our three life-cycle stages – growth, revival and maturity – in terms of their impact on capital structure: the firm's investment opportunities and its access to debt financing. First, growth and revival businesses are characterized by having high financing needs because of their growth opportunities, and their willingness to dilute control via equity is greater than in mature businesses, since it is not possible to finance their investment demands without increasing capital. Second, not all businesses can access debt financing, and where they can, not all can do so at the same costs. Businesses that are

stable and thriving, and enjoy a higher reputation, such as those in the maturity and revival stages, will be able to access debt at better contract conditions, and thus their leverage will be higher. This is in line with Bessler et al. (2013), who find that most zero-leverage businesses are in fact constrained by their debt capacity.

Given these two characteristics that differentiate the life-cycle stages (investment opportunities and access to debt financing), we expect financing behavior to be different at different stages, and we state the following hypothesis:

Hypothesis 3: The positive impact of the main owner's stake on leverage is moderated by life-cycle stage.

3. Research method

3.1. Sample and data

We use several data sources for our analysis. First, financial and stock data are collected via the Worldscope database. Then, to ensure that the age variable corresponds to the firm's age from foundation (and not, e.g., from the first IPO or merger) we establish the year of foundation from the individual corporate websites. Second, ownership concentration, based on the voting rights of the main shareholder, is extracted from Amadeus, a database from Bureau van Dijk that makes it possible to differentiate between different types of owners. Following Bena and Ortiz-Molina (2013), we then construct an annual panel of ownership data using a DVD update for each year. Finally, for the construction of one of our dependent variables of leverage, we require macroeconomic variables such as the rate of interest of long-term and short-term debt, and the growth of capital goods prices. The Organisation for Economic Co-operation and Development (OECD) and Eurostat are the sources used to extract these variables.

Our starting point is all European listed firms where the above-mentioned information is available. From these we obtain a sample of publicly traded firms from the following European countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the UK. We note that Europe is an excellent environment in which to study the willingness of the main owner to dilute control, since ownership concentration is high; on average, half of the firms in our European sample have a significant shareholder with more than 40.50% of voting rights. We exclude financial firms (SIC codes 6000–6999) and regulated public utilities (SIC codes 4812, 4813, 4900–4999, 2830–2833), since government regulation potentially affects the equity ownership structure of these businesses.

The time period for our analysis is 2000–2009. We consider only those firms with at least six consecutive years of available data; a requirement for building the m_2 statistic that tests the absence of second order serial correlation in the first difference residuals, since we use the GMM. We thus obtain an unbalanced panel of 1,050 firms (8,357 observations). The use of an unbalanced panel for a long time period is the best way to resolve the attrition bias caused by the fact that some firms may be delisted (e.g., those that file for bankruptcy) and, consequently, removed from the database.

3.2. Method of life-cycle stage identification

[Insert Table 1 here]

Table 1 summarizes a number of research papers that empirically determine different organizational life-cycle stages. Levie and Lichtenstein (2010) review 104 research papers on business growth stage models published between 1962 and 2006. These authors' main conclusion is that there is no consensus within the business life-cycle literature concerning the number of stages, the nature of each stage or the reasons for

moving between them. This lack of unity also leads to the development of different methodologies to determine the stages. Some of these articles establish a priori the number of stages using different quantitative variables (Grabowski and Mueller, 1975; Berger and Udell, 1998; Dickinson, 2011), such as size, age, dividends, sales and, in some cases, subjective criteria (Miller and Friesen, 1984). Some use only an age variable in their study of the relationship between life-cycle theory and capital structure (Bulan and Yan, 2009; La Rocca et al., 2011; Serrasqueiro and Maçãs, 2012). However, these studies suffer from limitations in their definition of the life-cycle stages. Age on its own may be misleading; for instance, some young businesses disappear after the first years of their existence (especially in high technology industries; Song et al., 2008), and with only an age variable they would therefore be categorized in a growth stage when they are actually in a decline stage.

In general terms, the above articles find the same stages as noted by Miller and Friesen (1984): birth, growth, maturity, revival and decline. We follow Pashey and Philippatos (1990) and Lester et al. (2004) in using a cluster analysis to identify the life-cycle stages. The main advantage of this methodology is that it allows us to jointly consider multiple variables in the analysis. Additionally, our methodology follows the dynamic stage approach mentioned by Levie and Lichtenstein (2010), where there is not a pre-established number or sequence of stages, and each stage is driven by the market and the capacity of the business to create opportunities. In Appendix 1 there is a detailed explanation of the factor analysis and cluster technique process.

Based on these analyses, we conclude that Cluster 1 represents the group of firms in a maturity stage, Cluster 2 those in a revival stage and Cluster 3 those in a growth stage. Thus, we consider three out of the five most common stages: maturity, growth and revival. The other two stages – birth and decline – do not appear in our

sample. First, since the sample is composed of listed firms, there is no birth stage. Second, given that we need information on the firms for at least six consecutive years (as mentioned above), it is very likely that firms in a decline stage will have been excluded from the sample. In addition, following life-cycle stage theory, we study the possible changes from one stage to another, as explained in Appendix 2.

3.3. Variables

[Insert Table 2 here]

All the variables are defined in detail in Table 2. Our main dependent variable is market leverage, defined as the book value of long-term debt divided by the sum of the book value of long-term debt, the book value of short-term debt and the market value of equity. In addition, we use as robustness tests two other dependent variables. The first of these is another market variable, market leverage 2, defined as for our main market leverage variable but using a proxy for the market value of long-term debt as in Pindado et al. (2011). The second is book leverage, defined as the book value of long-term debt to total assets.

To test our hypotheses we use ownership concentration as the explanatory variable, measured by the percentage of shares in the hands of the main shareholder. We interact this continuous variable with several dummy variables to study their moderating impact on the ownership–leverage relationship. The first two dummy variables are related to the type of owner, and the other three to the firm's life-cycle stages. The first dummy variable, family firm dummy, is coded 1 for a family firm. For this, the firm should satisfy three requirements: (i) "family shareholdings" to be those of a family or, in the case of multiple stakes held by individuals, aggregated across individuals within the same family (Cronqvist and Nilsson, 2003; Franks et al., 2012); (ii) these shareholdings to be larger than 15%; and (iii) the family shareholding to be the largest

stake in the firm. The second dummy variable, young family firm dummy, is coded 1 for a young family firm. For this, the firm should satisfy two requirements: it must (i) be a family firm, and (ii) be younger than 30 years old since foundation[1]. The third dummy variable, maturity, is coded 1 if the firm is in the maturity stage of its organizational life-cycle. The fourth dummy variable, revival, is coded 1 if the firm is in a revival stage. Finally, the fifth dummy variable, growth, is coded 1 if the firm is in a growth stage.

As control variables we use the variables commonly used in the capital structure literature (Rajan and Zingales, 1995; Miguel and Pindado, 2001; Korajczyk and Levy, 2003; Welch, 2004; Flannery and Rangan, 2006). These variables are profitability, size, tangibility, market-to-book ratio, non-debt tax shields, financial distress costs and stock returns.

3.4. Model

We develop a partial adjustment model of leverage, where we assume market imperfections such as transaction costs (Flannery and Rangan, 2006). The equation that describes the adjustment model can be written as shown in Eq. (1).

$$LEV_{i,t} - LEV_{i,t-1} = \alpha(LEV^{*}_{i,t} - LEV_{i,t-1}) \,, \qquad (1)$$

where $LEV_{i,t}$ is the current leverage ratio, $LEV_{i,t-1}$ is the leverage ratio of the previous year; and $LEV^{*}_{i,t}$ is the target leverage ratio. α is the adjustment coefficient, ranging from zero to 1. If α is 1, this means that the business is totally adjusted to its target leverage, which could only happen in a complete and perfect market. The model for the target leverage can be expressed as Eq. (2).

[1] We use the same approach as Fiss and Zajac (2004), who consider firms younger than 30 years old to be controlled by the founder or their offspring, and older firms to be controlled by later generations. Our aim is to show the differences between young and old family firms, since succession decisions involve changes in ownership structure, which in turn involve a change in financing preferences.

$$LEV_{i,t}^{*} = \beta_1 Ownership\ concentration_{it}$$

$$+(\Upsilon Dummy_{it}) Ownership\ concentration_{it} + \varphi Control_{it} + \eta_i + \epsilon_{it}\ , \quad (2)$$

where the term $Dummy_{it}$ represents each of the dummy variables, as explained above, that moderate the relationship between ownership and leverage; $Control_{it}$ contains the explanatory variables explained previously, η_i includes the individual effect, and ϵ_{it} includes the temporal dummies and the error term.

If we introduce Equation 2 into Equation 1 and realign the terms, we obtain the following model in Eq. (3):

$$LEV_{i,t} = (1-\alpha) LEV_{i,t-1} + \alpha\beta_1 Ownership\ concentration_{it}$$

$$+(\alpha\Upsilon Dummy_{it}) Ownership\ concentration_{it} + \alpha\varphi Control_{it} + \eta_i + \epsilon_{it} \quad (3)$$

We test our hypotheses using Equation 3, since our main goal is to study the relationship between ownership and leverage, and the moderating effects of business type and life-cycle stage on this relationship.

3.5. Econometric analysis

We estimate the models using panel data methodology, which has two main advantages. First, it controls for individual effects or unobserved heterogeneity, such as the family attachment that causes some family owners to be less willing than others to dilute control and, as a result, affects their level of ownership in the business. We take first differences to eliminate any unobserved heterogeneity. Second, this method helps to mitigate the endogeneity problem that occurs when the error term is correlated with any of the explanatory variables. To solve this problem we use a method of instrumental variables: the GMM, which encompasses all methods of instrumental variables. Specifically, we use the system GMM (as Bonaimé et al., 2014) to overcome the weak instruments problem that the difference GMM suffers from.

First of all, following Wintoki et al. (2012), we choose a set of instruments that fulfill two requirements: exogeneity and strength. As usual in the GMM literature we use as instruments the lags of the explanatory variables. However, in order to decide how many lags to use as instruments, we take into account the trade-off between the exogeneity and strength of each instrument; longer lags are more exogenous but the instrument will also be weaker.

To choose the best instruments, we first use the following set of instrumental variables: for the equations in differences the dependent variable is at t–2 and the explanatory variables are from t–1 to t–2; for the equations in levels the dependent variable is at t–1 and the explanatory variables are at t. To analyze the exogeneity of these instrumental variables we use the Hansen test, which tests the validity of the instruments. Thus, if the instruments are exogenous, we will not reject the null hypothesis of a lack of correlation between the instruments and the random disturbance. Therefore, this is a joint test that analyzes the validity or exogeneity of all the variables used as instruments. However, we reject the null hypothesis of the Hansen test where there is a subset of instruments that are not exogenous. To determine which instruments are exogenous we run a difference-in-Hansen test of exogeneity for this subset, under the null hypothesis that the instruments are exogenous. To undertake this estimation strategy, we first need to find a large subset of instruments that are exogenous, and then we separately test for the exogeneity of the smaller subsets of instruments that we are investigating. In this way, all non-exogenous instruments are deleted from the instrument set.

[Insert Table 3 here]

Following the strategy outlined above, we find the instruments in the model that satisfy the exogenous requirement along with the strength requisite (explained below).

In our model, we have nine endogenous variables: all the explanatory variables except for the time, country and sector dummies; together with the dependent variable, which enters into the model lagged one period. The final instruments used for each endogenous variable, based on the results obtained in Table 3, are as follows.

First, column 3 shows the difference-in-Hansen test of the exogeneity of the instruments for the equations in differences (where the instruments are in levels). In these equations we use as an instrument for the dependent variable its lag in t–4 (here we do not reject the null hypothesis, p-value = 0.540), since the lags from t–2 and t–3 are not exogenous (here we do reject the null hypothesis, p-values = 0.000 and 0.034, respectively). Furthermore, the instruments for the equations in differences range from t–1 to t–2 for ownership concentration, profitability, non-debt tax shields and financial distress costs, since we find in column 3 that all these instruments are exogenous. Also, we see in column 3 that the lags in t–1 of size, tangibility, market-to-book and stock returns are not exogenous (the Diff-in-Hansen test for these instruments is rejected), thus we use as instruments their lagged values from t–2 to t–4 (the Diff-in-Hansen test for these instruments is not rejected). Consequently, the lags for the above-mentioned variables should be one period further; we therefore choose three instruments for this set of variables to increase the strength of the instruments set.

Second, column 4 of Table 3 shows the Diff-in-Hansen test of the exogeneity of the instruments for the equations in levels, where the instruments are in differences. For the dependent variable, size, market-to-book and stock returns, the instruments used are in t–1, since they are exogenous when lagged one period but they are not in t. The instruments are in t for ownership concentration, profitability, non-debt tax shields and financial distress costs, since they are exogenous in t (see column 4). We do not use further lags because they are already included in the difference equations. Finally, we

use two instruments for tangibility, in t and t–1, since both are exogenous (in column 4 we do not reject the null hypothesis).

We also evaluate the strength of the instruments following Wintoki et al. (2012), who, based on prior work from Staiger and Stock (1997) and Stock and Yogo (2005), carry out two different sets of tests to assess the strength of the instruments with the endogenous variables. In the first tests we study each endogenous variable separately to assess whether the instruments provide significant explanatory power over the endogenous variables, examining the *F*-statistic from the first-stage OLS regressions. We run two different regressions for each endogenous variable: one for the equations in differences, where the instruments are in levels, and the other for the equations in levels, where the instruments are in differences. In the second tests, we obtain two Cragg-Donald statistics from a two-stage OLS regression: one for the equations in differences and the other for the equations in levels. This is a joint test that is more informative than the *F*-statistic when there is more than one endogenous variable in the model.

[Insert Table 4 here]

In Table 4 we find the *F*-statistics from the first-stage OLS regressions and the Cragg-Donald statistics from the two-stage OLS regressions. For both the level and difference equations (Panels A and B respectively), all *F*-statistics are significant and higher than 10, which is the critical value corroborating the strength of the instruments (Staiger and Stock, 1997). This means that the lagged values of the endogenous variables used as instruments have significant power to explain the endogenous variables. Additionally, we obtain Cragg-Donald statistics for the level and difference equations. We compare these values with the critical values from Table 5.1 of Stock and Yogo (2005), which yields critical values for models containing up to three endogenous regressors. In our model we have nine endogenous variables and obtain for the

equations in levels and equations in differences Cragg-Donald statistics of 4.19 and 3.51, respectively. We use 10 instruments for the equations in levels, and 17 for the equations in differences. Thus we compare the Cragg-Donald statistic of 4.19 with the relevant critical value of 4.45 from Stock and Yogo (2005), for when there are 10 instrumental variables and three endogenous regressors. Since the critical value under these conditions decreases 0.2 points with the increase of another endogenous variable in the model, it seems that the value of 4.19 for a model of nine endogenous variables falls within the critical value range. We also compare the Cragg-Donald statistic of 3.51 with the relevant critical value of 4.34 from Stock and Yogo (2005), for when there are 17 instrumental variables and three endogenous regressors. With a decrease of 0.11 every time the model has one more endogenous regressor, it seems that the Cragg-Donald statistic of 3.51 falls within the limits of these critical values. With these Cragg-Donald statistics we can confirm that the bias from using the above instruments is less than 30% of the bias from an OLS regression, at the 5% level of significance. Overall, the first-stage OLS regressions and the Cragg-Donald statistics for the equations in levels and the equations in differences reaffirm that the endogenous variables are strongly correlated with the instruments, and thus that the estimates from the system GMM regressions are not biased due to weak instruments.

Have established a set of instruments that pass the exogeneity and strength tests, we estimate the model and conduct several specification tests. First, we run the Hansen test, the joint test that checks for a lack of correlation between the instruments and random disturbance. Second, we run the difference-in-Hansen test of exogeneity of the instruments in levels, following Eichembaum et al. (1988), which checks whether any correlation between the endogenous variables and individual effects is constant over time. Third, we run the m_2 test, derived by Arellano and Bond (1991), which tests for a

lack of second order serial correlation of the first differenced residuals. Finally, we run four Wald tests to check for the joint significance of reported coefficients, and (unreported) time, country and industry variables. All the models pass these specification tests.

4. Results and discussion

4.1. Univariate analysis

[Insert Table 5 here]

Table 5 contains the mean, standard deviation, and minimum and maximum values of the variables used in the models, together with their correlation matrix. Panel A presents the summary statistics of our dependent variables (the two market leverage measures and book leverage), the explanatory variable of interest (ownership concentration) and the rest of the control variables defined in Table 2. The mean values for the two market leverage variables and the book leverage variable are 0.19, 0.19 and 0.16, respectively; the latter value is lower than a sample of small and medium-sized enterprises (SMEs) with an average book value of 0.65 (Molly et al., 2012). This lower level of debt is consistent with listed firms, where there are other important external financing sources that allow them to reduce their level of debt. For instance, the mean market leverage for industrial listed firms in the work by Barclay et al. (2013) is 0.18. Our main explanatory variable, ownership concentration in the hands of the main shareholder, has an average value of 0.41; while this is a high level for listed firms, it is usual for countries with lower protection for minority shareholders.

Panel B of Table 5 presents the correlation matrix of the variables used in the models. Our two market-dependent variables are highly correlated (0.99) and both are also highly correlated with the book leverage measure (0.81 and 0.81). Regarding the

correlations between the explanatory variables, only the financial distress costs variable has a high correlation with profitability. However, the value of the Variance Impact Factor for these two variables is smaller than 5, so it is unlikely that we have multicollinearity problems across these variables.

[Insert Table 6 here]

Panel A of Table 6 presents mean tests comparing the mean values of our variables in the model between family and non-family firms. All of the firm-level characteristics appear to have differences, with ownership concentration and size being the most significant. Moreover, family firms have lower financial distress costs and tangibility at the 10% significance level, lower non-debt tax shields at the 1% level, and higher market-to-book, profitability and stock returns at the 10%, 5% and 1% levels, respectively.

Panel B of Table 6 contains mean tests that compare the differences between young family firms and the rest of the firms. Most of the variables in the model are statistically different for these two samples at the 99% level. Young family firms, in comparison with their non-family and old family counterparts, have higher ownership, financial distress costs, market-to-book ratios and stock returns; but lower size, tangibility and non-debt tax shields.

4.2. Multivariate analysis

[Insert Table 7 here]

Table 7 provides the results from the estimation of Eq. (3) using our main market leverage variable. Columns 1, 2, 3 and 4 show the results for Hypotheses 1, 2a, 2b, and 3, respectively. In column 1 of Table 7, we find that ownership concentration in the hands of the main shareholder has a positive effect (β=0.051, $p<.01$) on leverage. This supports Hypothesis 1, which states that the higher the ownership in the hands of the

main shareholder, the higher the leverage. The avoidance of control loss is also explained by Cho et al. (2014), who find that strong creditor protection reduces long-term debt. They only focus, however, on the loss of control represented by the likelihood of financial distress, and do not explain the loss of control that shareholders face when issuing equity.

A contradictory result is the one found by La Rocca et al. (2011), who also include ownership concentration as one of their explanatory variables to determine the level of debt in small and medium-sized Italian firms, and obtain a negative relationship; that is, those firms with higher ownership concentration are more involved in the business and have lower incentives to give part-control to the bank. This contradictory result may be because they focus on a sample comprising small and medium-sized firms that do not have access to public financial markets. In this environment, where investments require less financing, debt can be replaced by internal funds more easily than in the context of listed firms, where investments require external financing and the greatest dilution of control is not represented by the issue of debt, but of equity. Thus, one important consideration when studying the determinants of capital structure is the size of the firms included in the study. This argument is in agreement with Beck et al. (2008), who find different financing behavior between large and small firms, especially in the use of bank finance, which is lower for smaller firms.

Furthermore, differences in financing behavior between listed and non-listed firms are obvious. The choice of listing or not listing the firm can be a signal of the type of entrepreneur who runs it (Schwienbacher, 2007). Claessens and Tzioumis (2006) find different ownership structures between listed and non-listed firms in their database comprising 19 European countries. Specifically, 85.45% of non-listed firms have a shareholder with a stake of 50% or more, while the percentage decreases to 30% for the

listed sample. When the firm is not listed, the financing choice will be made between two main options, debt and internal funds, with debt implying a greater loss of control (Huyghebaert and Van de Gucht, 2007). However, when the firm is listed, financing with internal funds may not be enough, and the main question is whether to finance chiefly with debt or equity. In this case, the financing choice that represents the greater loss of control is equity, not debt. Ownership continues to have the same meaning (that is, an aversion of the main owner to diluting control) but the difference between a privately and publicly held framework is the extent to which each of the financing sources represents a loss of control.

Column 2 of Table 7 extends our basic model by entering a family firm dummy variable. Despite family firms being characterized by their long-term perspective – and it is this "continuity" goal of family firms that leads them to behave as stewards of the organization (Miller et al., 2008; Eddleston et al., 2012) – we find no support for Hypothesis 2a, which states that the main owner's stake in the business impacts more positively on leverage for family firms than for their non-family counterparts

However, we do find differences between young family firms and the rest of the sample. Column 3 of Table 7 tests for the young family firm effect since we enter a dummy variable that captures this effect. The coefficient of ownership concentration for young family firms is 0.2 ($\beta + \gamma = 0.029 + 0.171$), which is stronger than for their non-family and old family counterparts (0.029). This result provides empirical support for Hypothesis 2b, which states that the positive impact of the main owner's stake on leverage is stronger when the business is a young family firm. One of the most striking differences between young and old family firms is the occurrence of family conflicts in old family firms when a succession process takes place. Blumentritt et al. (2013) discuss scenarios that create conflicts among family members, such as the lack of capacity or

interest of a founder's offspring to replace them, or competition between several offspring to reach the top position in the business. Some of these conflicts may result in greater dilution of family ownership and diminish the attachment of family owners to the business. Thus, ownership is the way to guarantee the power and legitimacy to fulfill one's non-economic goals for the business (Chrisman et al., 2012). However, such goals may be more prevalent and intense in young family firms, where the attachment to the business and these non-economic goals can make young family firms less willing to dilute control than non-family and old family firms.

The model whose coefficients are presented in column 4 of Table 7 tests for the life-cycle differences addressed in Hypothesis 3, which establishes that the positive impact of the main owner's stake on leverage is moderated by life-cycle stage. The coefficients of ownership concentration for mature, revival and growth firms are 0.064, 0.016 ($\beta + \gamma = 0.064 - 0.048$), and –0.03 ($\beta + \gamma = 0.064 - 0.094$), respectively. Thus, as ownership concentration increases, leverage increases for businesses in the maturity stage, remains neutral for those in revival and decreases for those in growth. However, La Rocca et al. (2011) find a contradictory result. They find a quadratic relationship between leverage and age, where age is used to analyze the capital structure decisions across the life-cycle. They conclude that in the early stages debt is used as the main source of financing, while in the maturity stage internal capital is preferred. This is again consistent with a framework of small and medium-sized businesses, where the two sources of financing are debt and internal funds. In this environment, the source with more potential to finance investment is debt, and more will be required when the business is in a growth stage. In a framework of publicly held firms, however, it is equity rather than debt that represents the most accessible source of financing to develop new investments.

Regarding the control variables, we find that leverage is negatively related to profitability. More profitable businesses have greater internal funds, thus there is less need for debt financing, following a pecking order theory. Furthermore, leverage is positively related to tangibility, in line with the static theory of capital structure that which states that businesses with higher liquidation value (for instance, those with tangible assets) have higher debt levels, since they can use such tangibles as collateral (Norden and Van Kampen, 2013). Size also has a positive effect on leverage, since larger firms have better reputations and can reach higher levels of debt. The results of these control variables are in line with previous research, such as by Fan et al. (2012).

In addition, leverage is positively related to investment opportunities, proxied by the market-to-book ratio. Businesses with a high market-to-book ratio tend to have greater capacity to borrow and hence have higher leverage. Furthermore, leverage is negatively related to non-debt tax shields, thus supporting trade-off theory; this reflects the substitutability of the benefits of tax deduction for depreciation and the tax benefits of debt (Richardson et al., 2014). The positive effect of our financial distress costs measure on market leverage is explained by the fact that when the probability of insolvency increases, investors sell their stock, the market value of equity diminishes and leverage increases. Interestingly, when we use book leverage as the dependent variable, the relationship is negative or not significant, and this likely reflects the variable not being part of investors' expectations. Finally, in line with the previous logic, stock return is negatively related to leverage: when stock price increases, the market value of equity increases and the leverage ratio decreases.

4.3. Additional tests

[Insert Table 8 here]

We proposed Hypothesis 1 on the basis that any positive relationship between leverage and ownership concentration would be due to the non-dilution entrenchment effect; that is, firms with significant shareholders are more averse to diluting control via the issue of equity and prefer to obtain financing through debt. However, this positive relationship might also be explained by signaling theory, which states that controlling owners prefer debt in order to signal to the outside capital market that they are willing to maintain financial discipline with high leverage. To ascertain whether our results are driven by the entrenchment effect or by signaling theory, we follow the work by Du and Dai (2005), who investigate which theory explains the positive relationship between ownership and debt. They study this relationship in countries with different levels of creditor rights protection; if the relationship is stronger in countries with stronger creditor rights, they posit that signaling theory is the driving force, because debt can play a credible role in signaling when creditor rights and bankruptcy procedures are more robust.

We undertake the same analysis in Table 8. We use the creditor rights index of Djankov et al. (2007), which updates the index of La Porta et al. (1998); it uses the same four attributes to construct the index, which ranges from 0 to 4 with higher values representing stronger protection of creditor rights. The only differences between the two indexes are in the Netherlands (an index of 2 that changes to 3) and Sweden (an index of 2 that changes to 1); the original index has been stable over the period 1978–2003. Among the 16 countries that compose our sample, the only country with a creditor rights index of 4 is the United Kingdom; there is also only one country, France, with an index of 0, and the index varies from 1 to 3 across the other 14 countries. Then we construct a dummy variable that is coded 1 if the creditor rights index is above the median and zero otherwise, and interact this dummy with the ownership concentration

variable. We also use another index, suggested by Du and Dai (2005), to consider the effectiveness of creditor rights enforcement: the enforceable creditor rights index. This index is the result of the interaction of the Djankov et al. (2007) creditor rights index with the La Porta el al. (1998) rule of law index, and again, we construct a dummy variable coded 1 if the built index is above the median and zero otherwise. Then we interact this second dummy with the ownership concentration variable.

Estimated from the original model, the results of the interaction term of ownership concentration and the creditor rights index dummy are displayed in column 1 of Table 8. If the signaling effect was the driving force of the positive relationship between ownership concentration and leverage, the interaction term would be positive, suggesting that firms use debt as a signal of financial discipline more intensively in countries with stronger creditor rights than elsewhere because such a signal is more credible and effective. However, the interaction term is not significant, suggesting that the impact of ownership concentration on leverage is the same for firms regardless of the strength of creditor rights. As can be seen in column 2 of Table 8, we find the same result when we interact the ownership concentration variable with the enforceable creditor rights index dummy, from which the interaction term is again not significant. Thus, in line with the results of Du and Dai (2005), we find that signaling theory does not seem to explain the positive impact of ownership concentration on leverage.

Additionally, as in Kale et al. (2013), we derive further results using book leverage as the dependent variable (defined in Table 2). Hypotheses 1, and 2b are supported by these results. Hypothesis 3 is partially supported, since growth (mature) firms are found to be the most (least) willing to dilute control, but differences between mature and revival firms are not supported. (These results are available upon request.) In addition, we perform another series of robustness tests (also available upon request),

which support Hypotheses 1, 2b and 3 and the signs of the control variables. First, we estimate the models using the alternative definition of market leverage. Second, we use three different thresholds in defining the family firm and young family firm dummy variables (10%, 20% and 25%). Third, we construct our control variables using total assets instead of the replacement value of total assets. Fourth, we test our hypotheses using a reduced sample that excludes businesses exhibiting stage changes (Changes 7 and 8) not supported by a life-cycle theory, as explained in Appendix 2.

5. Conclusion

This paper studies the relationship between leverage and a firm's willingness to dilute control, proxied by the percentage of shares held by the main owner. It also analyzes the moderating effects of two factors on this relationship: ownership type and business life-cycle stage. In particular, we study the moderating effect of family *vs* non-family; and mature *vs* revival *vs* growth firms. We use panel data of 1,050 firms (8,357 observations) from 16 European countries for the period 2000–2009.

Our study reaches several conclusions. First, the relationship between leverage and the main shareholder's stake is positive. Specifically, larger stakes in the firm are associated with more involvement and a greater attachment to the business, and less willingness to dilute control. This is known as the non-dilution entrenchment effect, and leads the firm to issue more debt, a financing source with less loss of control for listed firms.

Second, the positive relationship between leverage and ownership is stronger when the business is a young family firm. Family firms are a special type of firm, more tied to the business (thus more averse to control risk) and more able to issue debt at lower costs given their undiversified portfolios and reputation. These two reasons lead them to increase their aversion to diluting control and to strengthen the effect of

ownership on leverage. In addition, young family firms are typically characterized by the presence of the founder, who may be reluctant to dilute family control given their long-term perspective. However, as a family firm grows older, more succession conflicts arise and this can lead to a dilution of the family stake.

Third, the relationship between ownership and leverage is moderated by the life-cycle stage of a business: positive for those in the maturity stage, neutral for those in revival and negative for those in growth. Thus, mature businesses will be more leveraged than revival, and revival more leveraged than growth.

Finally, this study offers practical implications. Our results provide some understanding for shareholders about the financing behavior of young family firms. When investors select a business to invest in, they should consider the ownership distribution, and the type and organizational stage of the business. Trade-offs between the control risk aversion of young family firms and the need for external financing should be balanced by investors when valuing the relevant financing decisions made by the firm.

Appendix 1: Factor and cluster analysis of life-cycle stages.

Prior to the cluster technique, we use a factor analysis to reduce the number of variables that determine the different organizational life-cycle stages. We use the following variables (as defined in Table 2 above) as raw inputs into the factor analysis, for empirical or theoretical categorization of the life-cycle stages: size, age, profitability, cash flow, Tobin's *q*, volatility, sales growth and dividends. Before applying the factor analysis, we check the fitness of these variables for analysis. We test for correlation via the correlation matrix, the Bartlett test of sphericity, the measure of sampling adequacy (MSA) also known as the Kaiser–Meyer–Olkin (KMO) test, and the anti-image correlation matrix. The null hypothesis of the Barlett test of sphericity states that the correlation matrix is the identity matrix. We reject this hypothesis at the 99.99% level. The MSA or KMO tests check whether or not the information in the sample should be reduced. This test should be higher than 0.5 or 0.6. In our studies it takes the value of 0.698. In the anti-image correlation matrix the coefficients of the diagonal should be higher than 0.5. All the coefficients follow this requirement.

[Insert Table A.1.1 here]

Once we have checked that all variables meet the criteria to be considered in the analysis, we assess the number of factors to extract, using the eigenvalue or latent root criterion. The first four eigenvalues were: 2.9918, 1.6837, 1.0201 and 0.8900. We retain the first three factors, which explain almost 71.20% of the variance of the data set. Table A.1.1 contains the factor loadings of the orthogonal varimax matrix, the communality of each variable, and the factor scores. We rotate the first matrix using an orthogonal varimax rotation method, the preferred approach when the goal is to reduce the data to a set of variables for subsequent use in other multivariate techniques.

We can see in Table A.1.1 the variables that strongly define each factor. The uniqueness gives the proportion of the common variance of the variable not associated with the factors. Thus, the communality that is the uniqueness – 1 gives the proportion of variance that each variable retains after the factor extraction. The variables with less communality (but still an acceptable level) are age, Tobin's q and sales growth. With respect to the loadings, we consider those that are practically significant; that is, greater than or equal to ±0.50. We find no problematic variables; for example, with no practically significant loadings, with communality deemed too low or with cross-loadings (that is, significant loadings for more than one factor). Furthermore, most of the significant loadings are greater than 0.70, which is indicative of a well-defined structure.

Factor 1 is positively associated with profitability and cash flow, and negatively with volatility (in this order); thus representing the economic survivorship of the business. Factor 2 is positively associated with size and dividends; thus perhaps reflecting the reputation of the business. Factor 3 is positively associated with the growth of sales and Tobin's q, and negatively with age; thus representing the growth opportunities of a business. We use as robustness tests other rotation methods such as quartimax, equamax and parsimax, and the results and interpretations remain essentially the same. The only small difference occurs with the equamax method, where age does not reach the 0.50 loading, and has very similar loadings for Factors 2 and 3; however, this difference disappears when we validate the results. To test the validity of the analysis we randomly split the sample and do the analysis for both samples, where the interpretations of the results are the same for each of the rotation methods.

[Insert Table A.1.2 here]

We now use these three factors in the cluster analysis. Given the substantial size of the sample (8,357 observations), we use a hybrid method of analysis which consists of developing a hierarchical clustering method in the first step, and a non-hierarchical clustering method (*k*-means) in the second step, using the number of cluster and seed points (centroids) from the previous step. We find a three-cluster solution where the distribution of the observations is 76.95%, 10.83% and 12.22%, respectively, for each of the three groups, (see Panel A of Table A.1.2). In summary (see Panel B of Table A.1.2), Cluster 1 is the group with the highest economic survivorship (Factor 1), lowest growth opportunities (Factor 3) and moderate level of reputation (Factor 2). Cluster 2 is the group with the highest growth opportunities (along with Cluster 3) and reputation, and moderate economic survivorship. Cluster 3 is the group with the lowest economic survivorship and reputation, but highest growth opportunities (along with Cluster 2). We can conclude that Cluster 1 represents the group of firms that are in a maturity stage, Cluster 2 those in a revival stage, and Cluster 3 those in a growth stage. The main difference between Clusters 2 and 3 is that, despite both including firms with high growth opportunities, they have different structures. Cluster 2 appears to represent the characteristics of a firm coming from a stable maturity stage (since economic survivorship and reputation are higher) but experiencing new opportunities in the market; hence the description of this stage by some authors as the "revival" stage. Cluster 3, however, seems to represent the characteristics of a firm in a growth stage, where economic survivorship (given the lack of stability and internal funds) and reputation are lower.

Appendix 2: Concordance between sample and life-cycle theory

We present the possible changes made from one organizational life-cycle stage to another in the sample. As can be seen in Table A.2.1, Changes 1, 2 and 3 capture the firms and observations that remained constant in the maturity, revival and growth stages, respectively. More than half of firms in the sample did not change their life-cycle stage for any period: 58.26% (3,747*100/6,431) of the observations are for a constant maturity stage, 48.06% (435*100/905) for a constant revival stage and 4.9% (50*100/1021) for a constant growth stage. Thus, the most stable stage is the maturity stage followed by revival and finally by growth. Changes 4, 5 and 6 are already explained in the life-cycle literature, while Changes 7, 8 and 9 are not considered by any sequential logic theory in the literature. Changes 7 and 8, however, represent a tiny proportion of the sample (0.16% and 0.02%, respectively). Change 4 (growth to maturity) is explained in Table A.2.2, where we compare Change 9 (maturity to growth) with Change 5 (maturity to revival), which is already considered in the literature. Both changes have in common the initial stage before they change: the maturity stage. We find that firms that experience Change 5 have higher age, size, cash flow, tangibility and profitability variables, and pay more dividends. Thus, these firms have a more stable situation the year before they experience growth than the group experiencing Change 9.

[Insert Table A.2.1 here]

[Insert Table A.2.2 here]

References

Amore, M., Minichilli, A., Corbetta, G., 2011. How do managerial successions shape corporate financial policies in family firms? J. Corp. Finance 17, 1016–1027.

Anderson, R., Mansi, S., Reeb, D., 2003. Founding family ownership and the agency cost of debt. J. Financ. Econ. 68, 263–285.

Anderson, R., Reeb, D., 2003. Founding-family ownership, corporate diversification, and firm leverage. J. Law Econ. 46, 653–684.

Arellano, M., Bond, S., 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations? Rev. Econ. Stud. 58, 277–297.

Barclay, M., Heitzman, S., Smith, C., 2013. Debt and taxes: Evidence from the real estate industry. J. Corp. Finance 20, 74–93.

Barontini, R., Caprio, L., 2006. The effect of family control on firm value and performance: Evidence from Continental Europe. Eur. Financ. Manag. 12, 689–723.

Beck, T., Demirgüç-Kunt, A., Maksimovic, V., 2008. Financing patterns around the world: Are small firms different? J. Financ. Econ. 89, 467–487.

Bena, J., Ortiz-Molina, H., 2013. Pyramidal ownership and the creation of new firms. J. Financ. Econ. 108, 798–821.

Berger, P., Ofek, E., Yermack, D., 1997. Managerial entrenchment and capital structure decisions. J. Financ. 52, 1411–1438.

Berger, A., Udell, G., 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.

Berry, T., Fields, P., Wilkins, M., 2006. The interaction among multiple governance mechanisms in young newly public firms. J. Corp. Finance 12, 449– 466.

Bessler, W., Drobetz, W., Haller, R., Meier, I., 2013. The international zero-leverage phenomenon. J. Corp. Finance 23, 196–221.

Bettignies, J., Brander, J., 2007. Financing entrepreneurship: Bank finance versus venture capital. J. Bus. Venturing 22, 808–832.

Björnberg, A., Nicholson, N., 2012. Emotional ownership: The next generation's relationship with the family firm. Family Bus. Rev. 25, 374–390.

Blumentritt, T., Mathews, T., Marchisio, G., 2013. Game theory and family business succession: An introduction. Family Bus. Rev. 26, 51–67.

Bonaimé, A., Öztekin, Ö., Warr, R., 2014. Capital structure, equity mispricing, and stock repurchases. J. Corp. Finance 26, 182–200.

Bulan, L., Yan, Z., 2009. The pecking order theory and the firm life cycle. Bank. Financ. Lett. 3, 129–40.

Cho, S., Ghoul, S., Guedhami, O., Suh, J., 2014. Creditor rights and capital structure: Evidence from international data. J. Corp. Finance 25, 40–60.

Chua, J., Chrisman, J., Kellermanns, F., Wu Z., 2011. Family involvement and new venture debt financing. J. Bus. Venturing 26, 472–488.

Chrisman, J., Chua, J., Pearson, A., Barnett, T., 2012. Family involvement, family influence, and family-centered non-economic goals in small firms. Entrep. Theory Pract. 36, 267–293.

Claessens, S., Tzioumis, K., 2006. Ownership and financing structures of listed and large non-listed corporations. Corp. Gove. Int. Rev. 14, 266–276.

Croci, E., Doukas, J., Gonenc, H., 2011. Family control and financing decisions. Eur. Financ. Manag. 17, 860–897.

Cronqvist, H., Nilsson M., 2003. Agency costs of controlling minority shareholders. J. Financ. Quant. Anal. 38, 695–719.

Demsetz, H., Lehn, K., 1985. The structure of corporate ownership: Causes and consequences. J. Polit. Econ. 93, 1155–1177.

Dickinson, V., 2011. Cash flow patterns as a proxy for firm life cycle. Account. Rev. 86, 1969–1994.

Djankov, S., McLiesh, C., Shleifer, A., 2007. Private credit in 129 countries. J. Financ. Econ. 84, 299–329.

Donelli, M., Larrain, B., Úrzua, F., 2013. Ownership dynamics with large shareholders: An empirical Analysis. J. Financ. Quant. Anal. 48, 579–609.

Du, J., Dai, Y., 2005. Ultimate corporate ownership structures and capital structures: Evidence from East Asian economies. Corp. Gove. Int. Rev. 13, 60–71.

Du, J., Guariglia, A., Newman, A., 2013. Do social capital building strategies influence the financing behavior of Chinese private small and medium-sized enterprises? Entrep. Theory Pract. DOI: 10.1111/etap.12051.

Dudley, E., 2012. Capital structure and large investment projects. J. Corp. Finance 18, 1168–1192.

Eddleston, K., Kellermanns, F., Zellweger, T., 2012. Exploring the entrepreneurial behavior of family firms: Does the stewardship perspective explain differences? Entrep. Theory Pract. 36, 347–367.

Eichenbaum, M., Hansen, L., Singleton, K., 1988. A time series analysis of representative agent models of consumption and leisure choice under uncertainty. Q. J. Econ. 103, 51–78.

Faccio, M., Lang, L., 2002. The ultimate ownership of western European corporations. J. Financ. Econ. 65, 365–395.

Fan, J., Titman, S., Twite, G., 2012. An international comparison of capital structure and debt maturity choices. J. Financ. Quant. Anal. 47, 23–56.

Fiss, P., Zajac, E., 2004. The diffusion of ideas over contested terrain: the (non)adoption of a shareholder value orientation among German firms. Adm. Sci. Q. 49, 501–534.

Flannery, M., and Rangan, K., 2006. Partial adjustment toward target capital structures. J. Financ. Econ. 79, 469–506.

Franks, J., Mayer, C., Volpin, P., Wagner, H., 2012. The life cycle of family ownership: international evidence. Rev. Financ. Stud. 25, 1675–1712.

Fu, R., Subramainan, A., 2011. Leverage and debt maturity choices by undiversified owner–managers. J. Corp. Finance 17, 888–913.

Gedajlovic, E., Lubatkin, M., Schulze, W., 2004. Crossing the threshold from founder management to professional management: A governance perspective. J. Manag. Stud. 41, 899–912.

Gómez-Mejía, L., Haynes, K., Núñez, M., Jacobson, K., Moyano, J., 2007. Socio-emotional wealth and business risk in family-controlled firms: Evidence from Spanish olive oil mills. Adm. Sci. Q. 52, 106–137.

Grabowski, G., Mueller, D., 1975. Life-cycle effects on corporate returns on retentions. Rev. Econ. Stat. 57, 400–409.

Harvey, C., Lins, K., Roper, A., 2004. The effect of capital structure when expected agency costs are extreme. J. Financ. Econ. 74, 3–30.

Hirsch, J., Walz, U., 2011. Financing decisions along a firm's life-cycle: Debt as a commitment device. Eur. Financ. Manag. 17, 898–927.

Holderness, C., Sheehan, D., 1988. The role of majority shareholders in publicly held Corporations. J. Financ. Econ. 20, 317–346.

Hoy, F., 2006. The complicating factor of life cycles in corporate venturing. Entrep. Theory Pract. 30, 831–836.

Huyghebaert, N., Van de Gucht, L., 2007. The determinants of financial structure: New insights from business start-ups. Eur. Financ. Manag. 13, 101–133.

Jensen, M., 1986. Agency costs of free cash flow, corporate finance, and takeovers. Am. Econ. Rev. 76, 323–329.

Jensen, M., Meckling, W., 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. J. Financ. Econ. 3, 305–360.

Jong, A., Verbeek, M., Verwijmeren, P., 2010. The impact of financing surpluses and large financing deficits on tests of the pecking order theory. Financ. Manag. 39, 733–756.

Kale, J., Meneghetti, C., Shahrur, H., 2013. Contracting with nonfinancial stakeholders and corporate capital structure: The case of product warranties. J. Financ. Quant. Anal. 48, 699–727.

Kayhan, A., Titman, S., 2007. Firms' histories and their capital structures. J. Financ. Econ. 83, 1–32.

King, M., Santor, E., 2008. Family values: Ownership structure, performance, and capital structure of Canadian firms. J. Bank. Financ. 32, 2423–2432.

Korajczyk, R., Levy, A., 2003. Capital structure choice: macroeconomic conditions and financial constraints. J. Financ. Econ. 68, 75–109.

Kotha, R., George, G., 2012. Friends, family, or fools: Entrepreneur experience and its implications for equity distribution and resource mobilization. J. Bus. Venturing 27, 525–543.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1998. Law and finance. J. Polit. Econ. 106, 1113–1155.

La Rocca, M., La Rocca, T., Cariola, A., 2011. Capital structure decisions during a firms's life cycle. Small Bus. Econ. 37, 107–130.

Lester, D., Parnell, J., Carraher, S., 2004. Organizational life cycle: A five-stage empirical scale. Int. J. Org. Anal. 11, 337–352.

Levie, J., Lichtenstein, B., 2010. A terminal assessment of stages theory: Introducing a dynamic states approach to entrepreneurship. Entrep. Theory Pract. 34, 317–350.

Liu, Q., Tian, G., 2012. Controlling shareholder, expropriations and firm's leverage decision: Evidence from Chinese Non-tradable share reform. J. Corp. Finance 18, 782–803.

Liu, J., Wang, H., Hui, C., Lee, C., 2012. Psychological ownership: How having control matters. J. Manag. Stud. 49, 869–895.

Michiels A., Voordeckers W., Lybaert, N., Steijvers, T., 2013. CEO compensation in private family firms: Pay-for-performance and the moderating role of ownership and management. Family Bus. Rev. 26, 140–160.

Miguel, A., Pindado, J., 2001. Determinants of capital structure: New evidence from Spanish panel data. J. Corp. Finance 7, 77–99.

Miller, D., Friesen, P., 1984. A longitudinal study of the corporate life cycle. Manag. Sci. 30, 1161–1183.

Miller, D., Le Breton-Miller, I., Scholnick, B., 2008. Stewardship vs. Stagnation: An empirical comparison of small family and non-family business. J. Manag. Stud. 45, 51–78.

Mishra, C., McConaughy, D., 1999. Founding family control and capital structure: the risk of loss of control and the aversion to debt. Entrep. Theory Pract. 23, 53–64.

Mitton, T., 2008. Why have debt ratios increased for firms in emerging markets? Eur. Financ. Manag. 14, 127–151.

Molly, V., Laveren, E., Jorissen, A., 2012. Intergenerational differences in family firms: Impact on capital structure and growth behavior. Entrep. Theory Pract. 36, 703–725.

Morck, R., Wolfenzon, D., Yeung, B., 2005. Corporate governanace, economic entrenchment, and growth. J. Econ. Lit. 43, 655–720.

Naldi, L., Nordqvist, M., Sjöberg, K., Wiklund, J., 2007. Entrepreneurial orientation, risk taking, and performance in family firms. Family Bus. Rev. 20, 33–47.

Norden, L., Van Kampen, S., 2013. Corporate leverage and the collateral channel. J. Bank. Financ. 37, 5062–5072.

Pashey, M., Philippatos, G., 1990. Voluntary divestitures and corporate life-cycle: Some empirical evidence. Appl. Econ. 22, 1181–1196.

Pindado, J., Rodrigues, L., de la Torre, C., 2008. Estimating financial distress likelihood. J. Bus. Res. 61, 995–1003.

Pindado, J., Requejo, I., de la Torre, C., 2011. Family control and investment–cash flow sensitivity: Empirical evidence from the Euro zone. J. Corp. Finance 17, 1389–1409.

Popov, A., Roosenboom, P., 2013. Venture capital and new business creation. J. Bank. Financ. 37, 4695–4710.

Rajan, R., Zingales, L., 1995. What do we know about capital structure? Some evidence from international data. J. Financ. 50, 1421–1460.

Richardson, G., Lanis, R., Leung, S., 2014. Corporate tax aggressiveness, outside directors, and debt policy: An empirical analysis. J. Corp. Finance 25, 107–121.

Schmid, T., 2013. Control considerations, creditor monitoring, and the capital structure of family firms. J. Bank. Financ. 37, 257–272.

Schwienbacher, A., 2007. A theoretical analysis of optimal financing strategies for different types of capital-constrained entrepreneurs. J. Bus. Venturing 22, 753–781.

Serrasqueiro, Z., Maçãs, P., 2012. Is age a determinant of SMEs' financing decisions? Empirical evidence using panel data models. Entrep. Theory Pract. 36, 627–654.

Setia-Atmaja, L., Tanewski, G., Skully, M., 2009. The role of dividends, debt and board structure in the governance of family controlled firms. J. Bus. Financ. Account. 36, 863–898.

Shleifer, A., Vishny R., 1997. A survey of corporate governance. J. Financ. 52, 737–783.

Sirmon, D., Hitt, M., 2003. Managing resources: Linking unique resources, management, and wealth creation in family firms. Entrep. Theory Pract. 27, 339–358.

Song, M., Podoynitsyna, K., Van der Bij, H., Halman, J., 2008. Success factors in new ventures: A meta-analysis. J. Prod. Innovat. Manag. 25, 7–27.

Staiger, D., Stock, J., 1997. Instrumental variables regression with weak instruments. Econometrica 65, 557–586.

Stock, J., Yogo, M., 2005. Testing for weak instruments in linear IV regression. In: Andrews, D., Stock, J. (Eds.), Identification and Inference for Econometric Models. Cambridge University Press, Cambridge, pp. 80–108.

Stulz, R., 1990. Managerial discretion and optimal financing policies. J. Financ. Econ. 26, 3–27.

Welch, I., 2004. Capital structure and stock returns. J. Polit. Econ. 112, 106–131.

Westhead, P., Cowling, M., Howorth, C., 2001. The development of family companies: Management and ownership issues. Family Bus. Rev. 14, 369–385.

Wintoki, M., Linck, J., Netter, J., 2012. Endogeneity and the dynamics of internal corporate governance. J. Financ. Econ. 105, 581–606.

Table 1
Empirical papers on organizational life-cycle stages.

This table summarizes the literature review of papers that have empirically determined organizational life-cycle stages. It includes the year of publication, the number and name of the stages identified and the variables used to determine these stages.

Paper	Year	Nº stages	Stages	Discriminating variables
Grabowski and Mueller	1975	2	Mature, non-mature	Age (young or mature) and product technology (new or mature)
Miller and Friesen	1984	5	Birth, growth, maturity, revival, decline	Numeric (age and sales growth) and subjective criteria (e.g., formalization of processes, organization structure, product innovation)
Pashey and Philippato	1990	4	Late expansion/early maturity, regenerating maturity, late maturity/early decline, decline	Cluster: liquidity, financial leverage, operating profitability, dividend payment policy, sales-generating ability and market power
Berger and Udell	1998		Not determined	Age and size
Lester, Parnell and Carraher	2004	5	Existence, survival, success, renewal, decline	Cluster: 20-item scale of managers' perceptions
Bulan and Yan	2009	2	Growth, mature	Age
La Rocca, La Rocca and Cariola	2011	Continuous variable	Early stages, maturity stages	Age
Dickinson	2011	5	Introduction, growth, mature, shake-out, decline	Sign of net operating, investing and financing cash flows
Serrasqueiro and Maçãs	2012	2	Old, young	Age

Table 2
Variable definitions.

Variable	Measurement
Dependent variables	
Market leverage	Book value of long-term debt/(book value of long-term debt + book value of short-term debt + market value of equity)
Market leverage 2	Following Pindado et al. (2011): Market value of long-term debt /(market value of long-term debt + book value of short-term debt + market value of equity)
Book leverage	Book value of long-term debt/total assets
Explanatory variables	
Ownership concentration	Percentage of shares held by the largest shareholder
Family firm dummy (FFD)	Coded 1 for a family firm and 0 otherwise
Young family firm dummy (YFFD)	Coded 1 for a young family firm and 0 otherwise
Maturity dummy	Coded 1 for a business at a maturity stage and 0 otherwise
Revival dummy	Coded 1 for a business at a revival stage and 0 otherwise
Growth dummy	Coded 1 for a business at a growth stage and 0 otherwise
Control and factor analysis variables	
Profitability	Earnings before interests and taxes (EBIT)/replacement value of total assets (K).
Size	Log of replacement value of total assets
Tangibility	Book value of tangible fixed assets/K
Market-to-book ratio	(Market value of equity + book value of total debt)/total assets
Non-debt tax shields	Book depreciation/K
Financial distress costs	Following the logistic model of Pindado et al. (2008), we predict these as a continuous variable ranging from 1 (high financial distress costs) to 0 (low financial distress costs)
Stock returns	Common equity/K
Volatility	(Standard deviation of EBIT – mean of EBIT)/K
Cash flow	(Net profit + book depreciation)/K
Dividends	Cash dividends paid
Age	Log of years since the firm was founded
Tobin's *q*	(Market value of equity + market value of debt)/K
Sales growth	Growth of net sales

Table 3
Difference-in-Hansen tests of exogeneity.

This table reports the Diff-in-Hansen tests for the equations in differences, in column 3, where the instruments are the endogenous variables lagged in levels; and the Diff-in-Hansen tests for the equations in levels, in column 4, where the instruments are the endogenous variables in differences. This test yields a J-statistic distributed as X^2, under the null hypothesis that the subset of instruments is exogenous.

Endogenous variable	**Instrument**	**Diff-in-Hansen: equations in differences (p-value)**	**Diff-in-Hansen: equations in levels (p-value)**
Market leverage	$Market\ leverage_{t-1}$		0.508
	$Market\ leverage_{t-2}$	0.000	
	$Market\ leverage_{t-3}$	0.034	
	$Market\ leverage_{t-4}$	0.540	
Ownership concentration	$Ownership\ concentration_{t}$		0.527
	$Ownership\ concentration_{t-1}$	0.525	
	$Ownership\ concentration_{t-2}$	0.999	
Profitability	$Profitability_{t}$		0.790
	$Profitability_{t-1}$	0.634	
	$Profitability_{t-2}$	0.061	
Non-debt tax shields	$Non\ debt\ tax\ shields_{t}$		0.706
	$Non\ debt\ tax\ shields_{t-1}$	0.883	
	$Non\ debt\ tax\ shields_{t-2}$	0.700	
Financial distress costs	$Financial\ distress\ costs_{t}$		0.427
	$Financial\ distress\ costs_{t-1}$	0.303	
	$Financial\ distress\ costs_{t-2}$	0.353	
Size	$Size_{t}$		0.001
	$Size_{t-1}$	0.000	0.111
	$Size_{t-2}$	0.223	
	$Size_{t-3}$	0.367	
	$Size_{t-4}$	0.922	
Tangibility	$Tangibility_{t}$		0.717
	$Tangibility_{t-1}$	0.008	0.585
	$Tangibility_{t-2}$	0.656	
	$Tangibility_{t-3}$	0.402	
	$Tangibility_{t-4}$	0.597	
Market-to-book ratio	$Market-to-book_{t}$		0.000
	$Market-to-book_{t-1}$	0.000	0.586
	$Market-to-book_{t-2}$	0.119	
	$Market-to-book_{t-3}$	0.526	
	$Market-to-book_{t-4}$	0.372	
Stock returns	$Stock\ returns_{t}$		0.000
	$Stock\ returns_{t-1}$	0.000	0.734
	$Stock\ returns_{t-2}$	0.777	
	$Stock\ returns_{t-3}$	0.545	
	$Stock\ returns_{t-4}$	0.352	

Table 4
First-stage OLS regressions and Cragg-Donald statistics for system GMM estimates.

This table reports the *F*-statistics and R^2 values of the first-stage OLS regressions of levels and first-differenced variables on lagged differences and lagged levels, respectively. The variables used and the Cragg-Donald statistics are explained in Subsection 3.5.

	***F*-statistic**	***p*-value**	R^2
Panel A. Dependent variable in levels, explanatory variables (instruments) in differences			
Market leverage (–1)	322.24	0.00	0.0645
Ownership concentration	1957.90	0.00	0.1098
Profitability	501.34	0.00	0.2190
Size	43.35	0.00	0.0072
Tangibility	51.53	0.00	0.0317
Market-to-book ratio	123.18	0.00	123.18
Non-debt tax shields	682.54	0.00	0.0694
Financial distress costs	2992.76	0.00	0.2630
Stock returns	107.76	0.00	0.0269
Cragg-Donald statistic: 4.19			
Panel B. Dependent variable in differences, explanatory variables (instruments) in levels			
ΔMarket leverage (–1)	17.81	0.00	0.0050
ΔOwnership concentration	254.54	0.00	0.1523
ΔProfitability	179.29	0.00	0.1757
ΔSize	12.11	0.00	0.0087
ΔTangibility	22.47	0.00	0.0160
ΔMarket-to-book ratio	65.51	0.00	0.1173
ΔNon-debt tax shields	176.54	0.00	0.1141
ΔFinancial distress costs	545.99	0.00	0.2045
ΔStock returns	21.11	0.00	0.0294
Cragg-Donald statistic: 3.51			

Table 5
Summary statistics and correlation matrix.

Panel A of this table reports the mean, standard deviation, and minimum and maximum values of each variable. Panel B reports the correlation matrix of the variables used in the empirical models. The sample comprises 1,050 firms (8,357 observations) for the period 2000–2009. All variables are defined in Section 3 and Table 2.

Panel A. Summary statistics

	Mean	**Std. dev.**	**Min.**	**Max.**
1. Market leverage	0.19	0.15	0.00	0.74
2. Market leverage 2	0.19	0.15	0.00	0.75
3. Book leverage	0.16	0.12	0.00	0.74
4. Ownership concentration	0.41	0.24	0.00	0.99
5. Profitability	0.06	0.08	–0.47	0.46
6. Size	0.04	1.78	0.84	11.86
7. Tangibility	0.27	0.19	0.00	1.14
8. Market-to-book ratio	0.97	0.53	0.09	4.01
9. Non-debt tax shields	0.02	0.02	0.00	0.11
10. Financial distress costs	0.24	0.35	0.00	1.00
11. Stock returns	0.39	0.35	–0.65	1.19

Panel B. Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11
1	1.00										
2	0.99	1.00									
3	0.81	0.81	1.00								
4	0.00	0.00	–0.05	1.00							
5	–0.18	–0.19	–0.03	0.00	1.00						
6	0.19	0.18	0.22	–0.05	0.15	1.00					
7	0.33	0.33	0.34	–0.00	0.01	0.03	1.00				
8	–0.37	–0.37	0.03	–0.08	0.38	0.00	–0.06	1.00			
9	0.06	0.06	0.07	–0.06	–0.00	0.03	0.41	0.00	1.00		
10	0.12	0.12	–0.03	0.00	–0.79	–0.19	–0.04	–0.27	–0.01	1.00	
11	–0.40	–0.40	–0.39	–0.01	0.18	–0.19	0.04	0.21	0.01	–0.12	1.00

Table 6
Differences of mean tests.

Panel A of this table reports the differences between family firms and non-family firms. Panel B reports the differences between young family firms and non-young-family firms. The *t*-statistic is the difference of means test under the null $H_0: mean_{family} - mean_{non-family} = 0$ for Panel A and $H_0: mean_{youngfamily} - mean_{non-youngfamily} = 0$ for Panel B. Section 3 and Table 2 provide a detailed explanation of the variables.

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

Panel A. Family firms vs *non-family firms*

	All firms	**Family**	**Non-family**	***t*-statistic**
N° observations	8,357	2,045	6,312	
Market leverage	0.19	0.18	0.20	5.167***
Market leverage 2	0.19	0.18	0.20	5.183***
Book leverage	0.15	0.14	0.16	6.178***
Ownership concentration	0.40	0.48	0.38	–17.864***
Profitability	0.06	0.06	0.06	–1.934**
Size	6.04	5.24	6.29	23.931***
Tangibility	0.27	0.26	0.27	1.380*
Market-to-book ratio	0.97	0.98	0.96	–1.601*
Non-debt tax shields	0.02	0.02	0.02	7.434***
Financial distress costs	0.24	0.24	0.25	1.402*
Stock returns	0.39	0.40	0.38	–4.140***

Panel B. Young family firms vs *non-young-family firms*

	All firms	**Young family**	**Non-young-family**	***t*-statistic**
N° observations	8,357	750	7,607	
Market leverage	0.19	0.15	0.20	7.399***
Market leverage 2	0.19	0.15	0.20	7.400***
Book leverage	0.15	0.13	0.16	6.251***
Ownership concentration	0.40	0.51	0.39	–13.290***
Profitability	0.06	0.06	0.06	0.420
Size	6.04	4.77	6.16	20.850***
Tangibility	0.27	0.20	0.27	9.723***
Market-to-book ratio	0.97	1.10	0.95	–6.970***
Non-debt tax shields	0.02	0.01	0.02	10.776***
Financial distress costs	0.24	0.26	0.24	–1.318*
Stock returns	0.39	0.41	0.39	–3.568***

Table 7
Willingness to dilute control and market leverage.

This table presents the coefficients and standard deviations of the variables (defined in Section 3 and Table 2) of the models, estimated by the system GMM. The dependent variable is market leverage. Time, country, and sector dummies are included but not reported. Robust standard errors are used in calculating *t*-statistics (in parenthesis). t_1 and $t_2$are *t*-statistics for linear restriction tests. The null hypothesis of t_1 states that the sum of the coefficients of ownership concentration and revival is equal to zero. The null hypothesis of t_2 states that the sum of the coefficients of ownership concentration and growth is equal to zero. z_1, z_2, z_3 and $z_4$are Wald tests of the joint significance of the explanatory variables and the time, country and sector dummies, respectively, under the null of no relation, with the degrees of freedom in parenthesis. m_i is a serial correlation test of order *i* using residuals in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation. Hansen is a test of the over-identifying restrictions, asymptotically distributed as X^2 under the null of no correlation between the instruments and the error term. Diff-in-Hansen is also a test distributed as X^2 under the null hypothesis that the subset of instruments used in the level equations are not correlated with the error term.

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

Dep.var:$MLEV_{it}$	**1** Hypothesis 1	**2** Hypothesis 2a	**3** Hypothesis 2b	**4** Hypothesis 3
Market leverage(–1)	0.500***	0.498***	0.494***	0.497***
	(0.029)	(0.029)	(0.029)	(0.028)
Ownership concentration	0.051***	0.050***	0.029**	0.064***
	(0.010)	(0.011)	(0.014)	(0.010)
$OC1_{it}$*FFD_{it}		0.003		
		(0.018)		
$OC1_{it}$*$YFFD_{it}$			0.171**	
			(0.087)	
$OC1_{it}$*REV_{it}				–0.048***
				(0.017)
$OC1_{it}$*$GROW_{it}$				–0.094***
				(0.016)
Profitability	–.151***	–0.143***	–0.184	–0.193***
	(0.050)	(0.050)	(0.115)	(0.051)
Size	0.019***	0.019***	0.022***	0.019***
	(0.002)	(0.002)	(0.003)	(0.002)
Tangibility	0.150***	0.149***	0.162***	0.153***
	(0.033)	(0.033)	(0.034)	(0.033)
Market-to-book ratio	0.030***	0.029***	0.023**	0.031***
	(0.008)	(0.008)	(0.010)	(0.008)
Non-debt tax shields	–0.342**	–0.317**	–0.338**	–0.344**
	(0.153)	(0.151)	(0.147)	(0.151)
Financial distress costs	0.026***	0.027***	0.006	0.042***
	(0.009)	(0.008)	(0.029)	(0.009)
Stock returns	–0.160***	–0.166***	–0.180***	–0.167***
	(0.034)	(0.034)	(0.037)	(0.034)
t_1				0.858
t_2				–1.722**
z_1	174.14 (9)	156.76 (10)	160.87 (10)	146.88 (11)
z_2	52.19 (7)	52.31 (7)	43.19 (7)	52.17 (7)
z_3	3.04 (15)	3.03 (15)	3.06 (15)	2.99(15)
z_4	2.86 (6)	2.82 (6)	2.87 (6)	2.81 (6)
m_1 (*p*-value)	(0.000)	(0.000)	(0.000)	(0.000)
m_2 (*p*-value)	(0.164)	(0.163)	(0.147)	(0.241)
Diff-in-Hansen (*p*-value)	(0.226)	(0.228)	(0.146)	(0.286)
Hansen (*p*-value)	(0.053)	(0.053)	(0.057)	(0.081)

Table 8
Signaling *vs* entrenchment effects.

This table reports the coefficients and standard deviations of the variables (defined in Section 3 and Table 2) of the models, estimated by the system GMM. We interact two dummy variables with the ownership concentration variable. CRD_{it} denotes the creditor rights dummy, coded 1 if the creditor rights index is above median and zero otherwise; and $ECRD_{it}$ denotes the enforceable creditor rights dummy, coded 1 if the enforceable creditor rights index is above median and zero otherwise The dependent variable is market leverage. Time, country, and sector dummies are included but not reported. Robust standard errors are used in calculating *t*-statistics (in parenthesis). z_1, z_2, z_3 and $z_4$are Wald tests of the joint significance of the explanatory variables and the time, country and sector dummies, respectively, under the null of no relation, with the degrees of freedom in parenthesis. m_i is a serial correlation test of order I using residuals in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation. Hansen is a test of the over-identifying restrictions, asymptotically distributed as X^2 under the null of no correlation between the instruments and the error term. Diff-in-Hansen is also a test distributed as X^2 under the null hypothesis that the subset of instruments used in the level equations are not correlated with the error term.

***, ** indicate significance at the 1% and 5% levels, respectively.

Dep.var:$MLEV_{it}$	**1**	**2**
Market leverage(–1)	0.499***	0.499***
	(0.029)	(0.029)
Ownership concentration	0.050***	0.053***
	(0.011)	(0.011)
$OC1_{it}$*CRD_{it}	0.000	
	(0.016)	
$OC1_{it}$*$ECRD_{it}$		–0.004
		(0.015)
Profitability	–0.150***	–0.151***
	(0.050)	(0.050)
Size	0.019***	0.019***
	(0.002)	(0.002)
Tangibility	0.148***	0.148***
	(0.033)	(0.033)
Market-to-book ratio	0.030***	0.030***
	(0.008)	(0.008)
Non-debt tax shields	–0.339**	–0.339**
	(0.152)	(0.152)
Financial distress costs	0.026***	0.026***
	(0.009)	(0.009)
Stock returns	–0.164***	–0.163***
	(0.033)	(0.033)
z_1	157.54 (10)	157.77 (10)
z_2	52.80 (7)	53.05 (7)
z_3	2.03 (15)	1.97 (15)
z_4	1.98 (6)	1.91 (6)
m_1 (*p*-value)	(0.000)	(0.000)
m_2 (*p*-value)	(0.163)	(0.163)
Diff-in-Hansen (*p*-value)	(0.263)	(0.225)
Hansen (*p*-value)	(0.079)	(0.076)

Table A.1.1
Unrotated factor pattern and factor scores from principal component analysis with varimax rotation.

This table reports the varimax rotated loadings and factor scores from principal component analysis using the varimax rotation method. The variables used for the factor analysis are: size, age, profitability, cash flow, Tobin's *q*, volatility, sales growth and dividends. These variables are defined in Table 2.

* denotes loadings greater than ±0.50.

	Varimax-rotated loadings			**Factor scores**			**Uniqueness**
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3	
Size	0.1213	0.8706*	–0.0764	–0.0393	0.5094	0.0107	0.2215
Age	0.1528	0.4883	–0.5086*	0.0622	0.2262	–0.4285	0.4796
Profitability	0.9588*	0.0550	0.0930	0.3535	–0.0605	–0.0153	0.0690
Cash flow	0.9308*	0.0601	0.0516	0.3467	–0.0589	–0.0493	0.1274
Tobin's *q*	0.4291	0.0128	0.5259*	0.1059	0.0179	0.4339	0.5392
Volatility	–0.8871*	–0.1234	0.0477	–0.3340	0.0262	0.1284	0.1955
Sales growth	0.1741	–0.2452	0.7070*	–0.0683	0.1211	0.6967	0.4098
Dividends	0.3323	0.6966*	0.3767	–0.0869	0.5255	0.1901	0.2623

Table A.1.2
Factor mean values and differences by cluster.

This table reports the mean values and order, from higher to lower values, of Factors 1, 2 and 3 by cluster. Factor 1 represents economic survivorship, Factor 2 represents firm reputation and Factor 3 represents growth opportunities. These factors are explained in more detail in the text of this Appendix.

	Cluster 1	**Cluster 2**	**Cluster 3**
Panel A: Variable mean values by cluster			
Factor 1	0.2868	0.0546	–1.8548
Factor 2	–0.2358	2.1446	–0.4156
Factor 3	–0.0877	0.2352	0.3437
Nº cases	6,431	905	1,021
% cases	76.95	10.83	12.22
Cluster name	Maturity stage	Revival stage	Growth stage
Panel B: Variable order by cluster			
Factor 1	high	moderate	low
Factor 2	moderate	high	low
Factor 3	low	high	high

Table A.2.1
Change between organizational life-cycle stages.

This table reports the nine different changes from one life-cycle stage to another. These stages are explained in Section 3.

Change	% observations	Nº observations	Nº firms
1. Constant maturity	44.84	3747	468
2. Constant revival	5.20	435	54
3. Constant growth	0.59	50	7
4. Growth to maturity	4.36	364	314
5. Maturity to revival	1.77	148	126
6. Revival to maturity	1.05	88	82
7. Growth to revival	0.02	2	2
8. Revival to growth	0.16	13	13
9. Maturity to growth	4.46	373	310

Table A.2.2
Difference of means tests between maturity-to-revival and maturity-to-growth firms.

This table reports the *t*-statistic for the difference of means test under the null H_0: $mean_{maturity-to-revival} - mean_{maturity-to-growth}$ =0. All the variables are defined in Table 2.

*** denotes significance at the 1% level.

	All firms	Maturity to revival	Maturity to growth	*t*-statistic
Nº observations	521	148	373	
Age	3.72	4.34	3.48	–10.32***
Size	6.11	8	5.36	–22.28***
Cash flow	0.06	0.09	0.05	–9.27***
Tangibility	0.23	0.26	0.22	–2.53***
Dividends	22.86	65.49	5.95	–24.76***
Profitability	0.06	0.1	0.05	–10.12***