

Mbanyele, William

**Article**

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\*Corresponding author: William Mbanyele, Center for Economic Research, Shandong University, China.  
E-mail: [wmbanyele@gmail.com](mailto:wmbanyele@gmail.com)

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David McMillan, University of Stirling,  
Stirling UK

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## FINANCIAL ECONOMICS | RESEARCH ARTICLE

# Ownership concentration, firm life cycle, and leverage: Evidence from Italian family firms

William Mbanyele<sup>1\*</sup>

**Abstract:** We examine the impact of ownership concentration, firm life cycle, and family ownership on leverage using a sample of listed Italian firms. The study findings reveal that family businesses in Italy have high ownership concentration and use less debt than non-family firms. The study results show that there is a nonlinear relationship between ownership concentration and leverage, and between the firm life cycle and leverage. Furthermore, the study contributes to the literature by showing that firm age positively moderates ownership concentration and leverage linkage. Besides we provide evidence that debt and ownership alternate as disciplining devices at different ownership concentration levels and life cycle stages. Our policy contribution encourages regulators to enforce laws that protect minority shareholders in businesses with high ownership concentration.

**Subjects:** Finance; Corporate Finance; Business, Management and Accounting

**Keywords:** Family firm; leverage; ownership concentration; life cycle; GMM; Italy; financial crisis

### 1. Introduction

Family firms significantly contribute to economic progress across the globe (Aldrich & Cliff, 2003), and they perform better than non-family businesses (Andres, 2008; Villalonga & Amit, 2006). Most listed companies across the world are controlled by families, and family firms are diverse from other businesses (Amit & Villalonga, 2013). These features of family firms have increased interest among financial economics and management scholars to examine the economic behavior of family-controlled businesses (Ashraf et al., 2020; Franks et al., 2012; Ding et al., 2015; Mullins & Schoar, 2016; Anderson & Reeb, 2003a). Scholars made some strides to infer the financing

### ABOUT THE AUTHOR

William Mbanyele (PHD) is a postdoctoral researcher at the Center for Economic Research, Shandong University, China. His research interests are in corporate finance, corporate governance, real options and corporate innovation.

### PUBLIC INTEREST STATEMENT

This study has significant policy contributions for managers, directors, shareholders, and regulators among other business stakeholders. Most listed companies across the world are controlled by families and yet there is little understanding of what determines the capital structure of family firms. This study analyzes how ownership concentration, firm life cycle, and family ownership influence financing decisions using a sample of Italian firms. Research results show that family businesses and firms controlled by few large shareholders prefer less debt financing while old firms use more debt finance. Collectively the study evidence suggest that debt and ownership alternate as disciplining devices at different ownership concentration levels and life cycle stages.

decisions of family-controlled firms based on several theories, but there is currently no agreement on the capital structure of family firms. Thus, there is need for more rigorous study to enhance our understanding of financing decisions in family-controlled firms. Therefore, this study aims to examine the implications of ownership concentration and firm life cycle on financial decision-making in family-owned businesses.

The capital structure literature on family firms is mixed and inconclusive (Amit & Villalonga, 2013; Gottardo & Moisello, 2014; Iacovone et al., 2019; Kharabsheh et al., 2019; Mullins & Schoar, 2016). The agency theory views debt as a monitoring device that can be used to monitor and discipline managers to align their interests with shareholder goals (Ho et al., 2020; Jensen, 1986). According to the incentive effect, ownership concentration can be used to align manager interests with the shareholder objectives (Berle & Means, 1932). Some studies argue that debt and ownership concentration are substitutes that monitor and force managers to work in sync with shareholder interests while another strand of literature shows that they complement each other rather than replace each other. Given the conflict in capital structure literature, this study joins this debate by analyzing the link between ownership concentration and leverage in family-controlled firms.

There is less evidence in literature on how firm age moderates the ownership and leverage relationship in family firms (Keasey et al., 2015; Kieschnick & Moussawi, 2018; Volpin & Wagner, 2012). The behavior of firms is dynamic, and it will be interesting to analyze how financing decisions by owners evolve as family businesses grow. There is little attention in the literature on this linkage, yet it has the potential to inform investors whether to invest in old or mature family firms with a high level of ownership control or less. This link is the focus of this study and has far-reaching policy implications for regulators, investors, and managers.

Our study extends the agency literature by analyzing the financing behavior of family firms in Italy. It is hard to study how ownership concentration affects leverage in family businesses. It has become difficult to define and calculate ownership concentration, which has led to various proxies used in finance literature, thus we use two measures of ownership concentration rather one, that represent outside ownership and inside ownership (see Demsetz & Villalonga, 2001). Outsider ownership is defined as the total percentage of the three largest shareholders in a business, and insider ownership is measured as the total percentage of shareholding owned by directors. It is very intuitive to use both measures of ownership than one; this also helps to analyze the most effective channel of the two in dealing with the agency problem.

Studying the relationship between ownership and leverage is difficult due to endogeneity issues (Demsetz & Villalonga, 2001; Wintoki et al., 2012). We use the fixed effects estimation model firstly to deal with unobservable heterogeneity effects. However, since the firm-fixed effects partially deal with endogeneity concerns, we make use of a dynamic panel model using the two-step system of Generalized Method of Moments (GMM) (Roodman, 2009). This method makes use of internal instrumental variables and lagged dependent variables, which helps to deal with both omitted and unobservable effects.

We examine a sample of listed firms in Italy and show that there is a negative relationship between family ownership and leverage. Next, we examine the impact of ownership concentration on leverage. We find that there is a nonlinear relationship between ownership concentration and leverage. The study evidence suggests that both inside ownership and outside ownership substitute debt as monitoring instruments at high ownership levels. We also establish a nonlinear relationship between business life cycle and leverage.

On further analysis, we find that the negative impact of ownership concentration is more pronounced in family-owned businesses than in non-family firms. Also, the negative relationship between family control and leverage is stronger for old firms than young firms. We also find that

the firms life cycle moderates ownership concentration and leverage linkage. Lastly, we examine the impact of the financial crisis on the capital structure of family firms. We show that the capital structure of firms did not significantly change before and after the financial crises.

Most studies on family firms focus on USA (Anderson & Reeb, 2003b; Mishra & McConaughy, 1999; Villalonga & Amit, 2006), with growing researches from other countries like Canada (King & Santor, 2008; Klein et al., 2005), Australia (Miller & Le Breton-Miller, 2006; Setia-Atmaja et al., 2009), France (Margaritis & Psillaki, 2010), Spain (Crespi-Clareda & Martín-Oliver, 2015), UK (Björnberg & Nicholson, 2012), and Italy (Gottardo & Moisello, 2014). However, there is scarce literature focusing on family firms in countries with weak institutions like Italy. Thus, this study analyzes the determinants of leverage using a sample of Italian family firms and contribute to the growing literature in various ways.

Firstly, considering that institutional settings of a nation significantly influence the study results (Antoniou et al., 2008; La Porta et al., 1999; Sacristán-Navarro et al., 2011), this study focuses on Italy for several reasons. Italy is one of the countries which have many listed family-owned businesses with high ownership concentration in Europe that uses debt as the prominent source of financing. Furthermore, the global financial crisis intensely affected many financial institutions including Italian banks resulting to a decline in credit supply. Since the country is a bank-based economy, it is plausible to assume that firms' capital structures were affected as most businesses use debt finance from banking institutions. During and after the crisis, banks became more cautious and conservative in availing credit on the market, which directly impacted businesses financing decisions. In addition to that, the increase in government debt in Italy has contraction effects on the credit supply, which may lead to crowding out effects on private investment. All these economic implications possibly influence firm capital structure and it is fascinating to investigate how businesses reacted to these market developments. Lastly, Italy is a civil law country with legal laws that are different from other countries and there is low protection for minority investors (La Porta et al., 1999). Large shareholders exert too much control and exploit minority shareholders in economies with low legal protection for minority shareholders like Italy. (Bebchuk, 1999; Burkart et al., 2003; La Porta et al., 1999). Burkart et al. (2003) argue that when there is strong legal protection, there will be less need for monitoring, which lessens the importance of debt as a disciplining instrument. All these conditions and developments in Italy make it a natural laboratory to study how the financial crises impact ownership and debt relationship in family-controlled firms.

Secondly, the study further analyzes the 2008–2009 global financial crisis effect on family firms' capital structure. According to Sacristán-Navarro et al. (2011), the study results can differ depending on the period of study. This study is different from other studies that ignore the structural and economic changes during this period. In a financial crisis, credit supply shrinks, leading to less finance available for lending to firms (Almeida et al., 2012; Benmelech et al., 2011). However, irrespective of a voluminous literature on family firms, there is still no convergence on how family firms are affected by a credit crunch. The study expects financial institutions to have changed their lending behavior, which has some implications on the family businesses' capital structures.

This study builds on a growing literature on family firms' financial decision-making (Amit & Villalonga, 2013; Bianco & Nicodano, 2006; Crespi-Clareda & Martín-Oliver, 2015; Gottardo & Moisello, 2014; Iacovone et al., 2019; Kharabsheh et al., 2019; Lean et al., 2015; Mullins & Schoar, 2016; Rossi & Cebula, 2016). This research is similar in scope with Gottardo and Moisello (2014), who focus on Italian medium and large family firms' capital structure choices. However, this study differs from Gottardo and Moisello (2014) as it focuses on unlisted firms while this study analyzes listed firms in Italy. A study of listed firms offers a more in-depth understanding of how firms decide between the use of equity and debt as listed firms have more flexible sources of financing than unlisted firms. Secondly, this study goes on to establish how the age of the company impacts leverage in family-controlled firms.

Another closely related insightful study by Bianco and Nicodano (2006) focuses on Italian firms just like this study and established a positive impact of family control on leverage. The study by Bianco and Nicodano (2006) analyzes a sample of firms before the global financial crisis, European financial crisis, and Italian sovereign debt crisis, all these economic shocks have direct implications on the capital structures and financing decisions of family-controlled businesses. This study, therefore, seeks to explain the impact posed by the crises on the capital structure of Italian firms, especially considering the indebtedness of the country. Lenders tend to reduce credit supply during crises and implement strict requirements for financial accessibility. It is intriguing to establish how financing decisions of family businesses change in a turbulent environment and a crisis period.

Crespí-Clareda and Martín-Oliver (2015) attempted to explain the behavior of family firms before and during the crises in their study, they highlight that family businesses capital structures were less struck in comparison to non-family businesses because of long-term-orientated commitment that entice lenders to give them credit. This study is different from Crespí-Clareda and Martín-Oliver (2015) in various dimensions. Firstly, we focus on listed firms in Italy, unlike the unlisted firms for Spain that Crespí-Clareda and Martín-Oliver (2015) use. Using listed firms has great potential to change the results because listed businesses have quick access to liquidity through the issuance of equity as compared to unlisted firms. Secondly, this study analyzes the ownership concentration effect on financing decisions before and after the crisis period in family firms rather than only focusing on a general family firm and lender relationship. Thus, this study submits some interesting incites on whether debt and ownership concentration substitute or complement each other in times of financial crisis. Some studies posit that debt and ownership are disciplining instruments used by businesses to solve the agency problem by aligning management interests with that of shareholders (Friend & Lang, 1988). In contrast, some studies posit that debt and large ownership concentration may be complements (Rossi & Cebula, 2016).

This study is also closely related to Rossi and Cebula (2016) study on debt and ownership relationship on Italian-listed firms; however, it differs from this study in several ways. Firstly, we improve the power of the results by using a large sample size of 1956 firm-year observations from 2002 to 2013 compared to their small sample of 369 firm-year observations from 2005 to 2013. Secondly, this study further goes on to disaggregate listed companies into family-controlled and non-family-controlled businesses, which gives a more in-depth perspective on how family control moderates ownership and debt relationships. Thirdly, this study does not only observe the consequence of the financial crisis on ownership and debt relationship but further analyses how capital structure decisions of family-controlled firms were affected by both the global financial crisis and high sovereign debt levels in Italy.

Lean et al. (2015) share some similarities with our study as they explored family control moderation effect on the linkage between ownership and debt in Malaysia. It is essential to note that Asia and Europe have different governance systems and institutional environments that profoundly impact the businesses' capital structures differently (see Antoniou et al., 2008). Unlike Lean et al. (2015), this study analyzes how firm age moderates the relationship between ownership concentration and debt in family-controlled firms. This study enriches our knowledge of how the age of family-controlled firms influences capital structures at different levels of ownership concentration.

The remainder of our study is organized as follows: Section 2 contains literature review and hypothesis development, Section 3 explains the research data and methodology, Section 4 analyses and discusses the empirical results, Section 5 contains the conclusion of the study.

## 2. Literature review and hypothesis development

### 2.1. Family firms and leverage

Family control affects the financing decisions of business activities differently from non-family firms (Neubauer & Lank, 1998). According to the agency theory, family control may be used as a monitoring instrument to avoid manager empire-building, thereby reducing agency costs (Barth et al., 2005; Ho et al., 2020). Furthermore, family-controlled firms may issue more debt to increase monitoring by creditors to deal with the shareholder manager agency problem (Margaritis & Psillaki, 2010).

Several studies found out that large shareholders choose debt financing rather than diluting their ownership through equity financing to maintain control. According to King and Santor (2008), using data for Canada, family-controlled businesses utilize a large proportion of debt to meet their financing needs. Furthermore, in a study of Australian firms, Setia-Atmaja et al. (2009) document a positive impact of family control on business leverage. These results are supported by Björnberg and Nicholson (2012) study using a sample of UK firms, which shows that family firm owners gain more utility in holding ownership rather than diluting their ownership through equity financing. Besides, a study covering businesses in Europe by Croci et al. (2011) find that family-controlled businesses are more leveraged than non-family-controlled businesses. Gottardo and Moisello (2014), in their study on Italian firms, reveal that family-controlled businesses favor debt financing as compared to non-family businesses.

Family-owned businesses are mainly managed and controlled by their owners who want to pioneer innovative activities of the business. However, the controlling power and influence of family owners decreases as the business cedes ownership to multiple owners. Thus, family shareholders opt for debt financing as a non-dilutive instrument to preserve and defend their decision-making power and influence in the business operations (see Demsetz & Lehn, 1985; Liu et al., 2012; Mishra & McConaughy, 1999).

Businesses controlled by families are motivated to finance their activities through debt due to low borrowing costs emanating from their high credit power and long-term commitment to growth (Villalonga & Amit, 2006). Family businesses usually offer their properties as collateral while at the same time they avoid risky investments, which motivate lenders to offer them low capital costs and increased borrowing opportunities (Keasey et al., 2015).

However, there are other studies on family firms that suggest that businesses controlled by families are risk-averse, which results in less debt to avert bankruptcy risk (Bianco et al., 2013; Hiebl, 2012). Ampenberger et al. (2013) and Gama and Galvão (2012) echoed this thought by arguing that family firms prefer equity financing as it reduces financial distress and controlling risk in the event of bankruptcy. Furthermore, in a recent study of listed firms in Chile, Mauricio et al. (2018) show that family-controlled businesses are very conservative and choose to maintain low debt levels.

Family-controlled businesses are believed to perform better than non-family businesses (Andres, 2008). If this is true, this means following the pecking order theory, which posits that highly performing firms opt internal financing to external financing, family-controlled businesses are likely to be less indebted than less performing non-family businesses. In a study on German family-controlled firms, Schmid (2013) shows a negative association between family control and debt. Furthermore, using a sample of study on 12 Western countries, Santos et al.'s (2014) provide evidence that suggest that family-controlled firms that prefer low debt levels except for a panel of UK businesses that show a positive relationship between family control and leverage.

Thus considering the mixed evidence in literature and the Italian institutional environment with weak protection for minority shareholders we family ownership to be negatively associated with leverage, which leads to the following hypothesis:

**Hypothesis 1a.** Family ownership is negatively related to leverage.

## **2.2. Ownership concentration and leverage**

The tie between ownership concentration and debt is highly debated with mixed results in literature. According to the entrenchment hypothesis proponents, large shareholders issue more debt to cement their power by maintaining voting rights to control the firm (Brailsford et al., 2002; Margaritis & Psillaki, 2010; Stulz, 1988). Rossi and Cebula (2016), in their study of Italian-listed firms, give evidence that supports that ownership concentration and leverage are positively related, which supports the entrenchment effect.

Another strand of literature argues from the agency perspective that the presence of large shareholders and owners on the board may mitigate the agency problem leading to less debt. Accordant to the active monitoring hypothesis in the lens of the agency theory, substantial shareholders and debt are internal control mechanisms, and they are substitutes as they can both perform a disciplinary role to mitigate the manager owner agency problem (Shleifer & Vishny, 1986). Some businesses with good governance avoid debt to reduce finance costs, and the owners are responsible for actively monitoring the activities of the management. Large shareholders can use their veto powers to clip the wings of managers from self-expropriation, which reduces the need to use debt as a disciplining instrument (Myers & Majluf, 1984). Too much in the hands of large shareholders gives them the incentive to use less debt to prosecute their self-serving goals at the detriment of minority shareholders without investigation from lenders (Lee & Kuo, 2014; Shleifer & Vishny, 1986). This type 2 agency problem is prominent in nations with low legal security for minority investors (La Porta et al., 1999).

Amidst the mixed results in literature, the nonlinear relationship empirical evidence between ownership concentration and debt has attempted to reconcile the two seemingly contradictory results in the literature. Bruslerie and Latrous (2012), in their study covering 112 firms from France, find a nonlinear association between ownership structure and debt. They show that dominant shareholders prefer debt to equity financing when their ownership stake is low, but they use more equity financing as the magnitude of ownership concentration increases to avoid bankruptcy costs. In support of the tradeoff theory, Kharabsheh et al. (2019) further argue that controlling shareholders prefer debt financing at low ownership levels to maintain control but use less debt after the level of ownership concentration reaches a certain point which explains ownership concentration and leverage U-shaped relationship. Thus, the evidence from these studies suggest that businesses use debt to deal with agency problems when there is low concentration, but as shareholder holding increases, the monitoring function is transferred from creditors to large shareholders leading to less debt financing.

In light of the inconclusive literature, we expect businesses with large ownership concentration to use less debt and use more debt as ownership concentration decreases. Thus, we formulate the hypothesis as follows:

**Hypothesis 2a:** There is a negative relationship between the ownership concentration and leverage

**Hypothesis 2b:** There is a nonlinear relationship between the ownership concentration and leverage



### **2.3. Family control, ownership concentration, and leverage**

According to the agency literature, family control and ownership concentration are internal mechanisms that deal with the agency problem. Family-controlled firms with large shareholders and owner dominated management have lower agency costs for aligning manager interests to shareholder goals (Jensen & Meckling, 1976). Furthermore, debt is also viewed as a disciplining instrument that can be used for monitoring management activities in place of either ownership concentration or family control. Hernández-Cánovas et al. (2014) infer that family control has a significant moderating impact on ownership concentration and debt relationship. In the spirit of Hernández-Cánovas et al. (2014) study results, we argue that firm ownership characteristics influence the capital structure and financing decisions of a business. Thus, we expect the negative impact of ownership concentration on debt to be more pronounced in family-owned businesses, which leads to the following hypothesis:

**Hypothesis 3a:** The negative impact of ownership concentration on leverage is more prominent in family-controlled businesses.

### **2.4. Firm age and leverage**

Prior studies show that the firm's behavior changes as it goes through the various phases of the business cycle (Berger & Udell, 1998; Mitton, 2008). There are two strands of literature that delineate the effect of firm age on the business' capital structure.

One line of evidence purports that as businesses grow, they become financially stable and reputable after gaining a foothold into the market. Older enterprises have a high capacity to generate more income and free cash flows due to fewer growth opportunities, which reduces the need for external financing (see Hovakimian et al., 2001; Jensen, 1986; Sundaresan et al., 2015). La Rocca et al. (2011), in the spirit of the pecking order theory, posit that mature firms use less debt as they prefer using their abundant interior resources compared to young firms that lean on external financing.

On the other hand, other studies suggest that young businesses with growth opportunities may shy away from debt due to some restrictive covenants which limit investment in high-value risky projects. As firms grow old, they develop a good reputation and high credit rating, which attracts lenders to issue them more debt. Mature businesses prefer debt financing as they are charged low borrowing costs due to their size and stability, which further increases more borrowing opportunities (See Berger & Udell, 1998; Dudley, 2012). Literature offers mixed evidence on how business age affects the firm capital structure. Thus, this study expects a positive relationship and a nonlinear relationship between firm life cycle and corporate leverage leading to the following hypotheses:

**Hypothesis 4a:** There is a positive relationship between firm life cycle and leverage.

**Hypothesis 4b:** There is a nonlinear relationship between firm life cycle and leverage.

### **2.5. Family ownership, life cycle and leverage**

Family ownership, age, and debt relationship are affected in several ways. Kimki (1997) argues that growing family businesses use less debt than mature family businesses. Young firms usually use internal funds and loans from friends and relative in contrast to mature firms which use more debt as they accumulate more assets which are pledged as collateral when borrowing (Berger & Udell, 1998).

As family business ownership is passed from one generation to another, the younger generation may have less managerial intimacy with the business leading to the relinquishing of some ownership stake in the business to outsiders (Gedajlovic et al., 2004). This channel leads to more equity financing than debt in older family businesses. Furthermore, as family businesses age there is likely to be fighting for ownership and control among the family members who may result in the sale of more stake in the businesses (Gómez-Mejía et al., 2007; Keasey et al., 2015). Thus, literature connotes that the capital structure favored by founding family members is likely to be diluted as the firm ages. Kieschnick and Moussawi (2018) argued that governance mechanisms moderate the negative relationship between corporate leverage and age. We, therefore, make the following hypothesis:

**Hypothesis 5.** The negative relationship between family ownership and leverage is more pronounced in old firms than in young firms.

### 3. Research data and methodology

#### 3.1. Sample and variables

The study used data for 163 listed Italian firms during the period running from 2002 to 2013. This period is essential as it covers the period before and after the global financial crisis and Euro crisis periods; this allows investigation on how businesses' capital structures were altered in response to the shrinking credit supply. The study uses data shared by Rossi et al. (2018). The other data are sourced from the International Monetary Fund linked World Economic Outlook database (IMF, 2017).

#### 3.2. Variable description

Following other studies, we measure leverage using debt to total assets (Antoniou et al., 2008; MacKay & Phillips, 2005). We did not manage to use two other measures of leverage used in other studies like debt to market value and debt to book value due to data availability. However, according to DeAngelo and Roll (2015), there is a high correlation between book leverage and market leverage, which neutralizes the argument concerning the best measure of leverage.

Ownership concentration is calculated following literature (Hernández-Cánovas et al., 2014; Lean et al., 2015; Rossi & Cebula, 2016; Santos et al., 2014) as the total shareholding percentage for the largest three shareholders (**OCS**), which is a proxy for outsider ownership. The study uses another alternative measure of ownership concentration, the board of directors' total shareholding percentage (**OCB**), which is a proxy for insider ownership.

To distinguish family businesses from non-family firms, all listed firms with single shareholders owning more than 20% are considered to be family-owned, and any ownership stake below 20% by a single shareholder was considered a non-family business. Following other studies, firm age (**Age**) is measured as the number of years from the year of establishment. The study controls for agency costs, firm size, and national leverage. Firm size (**size**) is a major determining factor of leverage; it is measured following prior literature as the natural logarithm of sales. Agency costs are proxied by the sales to assets ratio (**SA**). To control for the dynamic macroeconomic environment that influences financing, we include country leverage as a control variable, which is calculated as a percentage of national debt to GDP (**DG**).

#### 3.3. Methodology

We estimated our model using the Fixed Effects estimation. We use panel data model to reduce endogeneity from unobservable heterogeneity effects, the Fixed Effects model helps to control for unobservable attributes unique to individual firms. The Fixed Effects estimation method was

chosen after conducting the Hausman test, which showed the fixed effects to be better than the Random Effects estimation method (Hausman, 1978).

The following basic leverage model was used for our regressions:

$$\text{Leverage}_{it} = \beta_0 + \beta_1 * \text{Ownership Concentration}_{it} + \text{Ownership Concentration}_{it}^2 + \beta_3 * \text{Age}_{it} + \beta_3 * \text{Age}_{it}^2 + \beta_4 * \text{FF}_{it} + \beta_i \Sigma \text{Control}_{it} + \theta \text{Year}_t + \epsilon_i \quad (1)$$

where  $i$  is the firm and  $t$  is the period with  $i = 1.163$  and  $t = 1.12$ ,  $\beta_0$  is a constant,  $\beta_1$ ,  $\beta_i$  and  $\theta$  are coefficients, **Leverage** is the dependent variable measured as debt to total assets, **Ownership Concentration** represents two alternative ownership measures **OCS** and **OCB**, **Ownership Concentration**<sup>2</sup> represents the two alternative ownership measures **OCS**<sup>2</sup> and **OCB**<sup>2</sup>; **Age** is the logarithm of the number of years from establishment, **Age**<sup>2</sup> is the square of the logarithm of number of years from establishment; **FF** is a dummy variable that equals 1 if one shareholder owns at least 20% shareholding or zero otherwise, **Year** controls for time effects, **Controls** are the explanatory variables used in the study as explained previously.

Some interaction effects were included into the model to test other hypotheses separately; the percentage of three largest shareholders and family control (**OCS\*FF**), the percentage of shareholders in the board and family control (**OCB\*FF**), the percentage of three largest shareholders and firm age (**OCS\*Age**), the percentage of shareholders in the board and firm age (**OCB\*Age**), family control and family age (**FF\*Age**).

## 4. Results and discussion

### 4.1. Descriptive statistics

Table 1 shows two panels of data description; Panel A shows the descriptive statistics of sample groups, and Panel B shows the pairwise correlations between the variables under study. The mean leverage values for all firms, family firms, and non-family firms are 0.274, 0.281, and 0.262, respectively. The results in Panel A show that there are higher levels of ownership concentration in family businesses than in non-family businesses which are shown by the mean values of 0.623 and 0.41 for OCS and OCB, respectively, in family businesses compared with mean values of 0.38 and 0.27 for OCS and OCB in non-family businesses. Furthermore, the mean values of firm age are 1.448 and 1.17 for family businesses and non-family businesses, respectively. These mean age values show that, on average, family businesses are older than

non-family businesses. There is a small difference between mean and median values, which reduces the fear of having the data being affected by outliers.

Table 1 shows the correlation matrix in Panel B of the variables under study. The pairwise correlation values are very low, with only two values above 0.50, and the highest value is 0.61, so the variables are unlikely to suffer from multicollinearity.

### 4.2. Baseline results

Table 2 shows the FE estimation results, which test our hypothesis that family ownership is negatively related to leverage. The study results show a negative relationship between family control and leverage at 1% significance level. The study findings also support our hypothesis that a negative relationship exists between family ownership and leverage. The findings suggest that family businesses employ less debt financing, which is consistent with Santos et al. (2014) results using a sample of firms in Western European. The study results also resonate with other studies, which suggest that family firms are very conservative and take less debt to avoid distress costs and bankruptcy costs (Ampeberger et al., 2013; Bianco et al., 2013; Mauricio et al., 2018). Contrary to Gottardo and Moisello (2014) study results on unlisted Italian family businesses, we

**Table 1. Descriptive Statistics and Correlation**

Panel A Descriptive Statistics										
Variable	All Firms			Family Firms			Non-Family Firms			
	Obs	Mean	Median	Obs	Mean	Median	Obs	Mean	Median	
Leverage	1956	0.274	0.28	1201	0.281	0.29	755	0.262	0.27	
OCS	1956	0.516	0.61	1201	0.623	0.65	755	0.38	0.38	
OCB	1956	0.267	0.296	1201	0.41	0.51	755	0.27	0	
Age	1956	1.341	1.3802	1201	1.448	1.4314	755	1.17	1.2304	
Size	1956	4.982	5.2325	1201	5.366	5.3288	755	4.371	5.0914	
SA	1956	-0.011	0	1201	0.083	0.04	755	-0.16	-0.09	
DG	1956	108.829	102.48	1201	109.435	102.557	755	107.86	102.388	
Panel B Pairwise correlations										
Variables	Leverage	OCS	OCB	FF	Age	Logsize	SA	DG		
Leverage	1.000									
OCS	0.144***	1.000								
OCB	0.006	0.494***	1.000							
FF	0.047**	0.519***	0.610***	1.000						
Age	0.156***	0.423***	0.196***	0.275***	1.000					
Size	0.342***	0.488***	0.182***	0.302***	0.447***	1.000				
SA	0.108***	0.237***	0.247***	0.293***	0.182***	0.503***	1.000			
DG	0.207***	0.233***	0.082***	0.079***	0.164***	0.163***	0.071***	1.000		

\*\*\*, \*\* shows levels of significance at 1% and 5% respectively

established that listed family-controlled businesses in Italy use less debt financing than non-family-controlled firms.

Regarding ownership concentration, the study results in Table 2 show negative and significant coefficients at 1% significance levels across both measures of ownership concentration. However, the coefficient of the percentage of the largest three shareholders (OCS) is higher than the coefficient for the percentage of shareholders who are directors (OCB), this suggests that outside ownership exerts more impact than inside ownership in financing decisions.

Collectively the study findings are consistent with Lean et al. (2015), who postulate that firms with higher owner concentration prefer equity financing and take less debt. This is partially attributed to the construct that when large shareholders expect some private benefits, they reduce debts levels to reduce any monitoring by creditors for them to exploit minority shareholders without scrutiny (Bebchuk, 1999; Shleifer & Vishny, 1986).

Furthermore, after including the square of ownership, the coefficients for ownership changed from being negative to positive, indicating a nonlinear relationship between the level of ownership concentration and leverage. This is consistent with our hypothesis and the active monitoring hypothesis, which posits that as ownership concentration increases, large shareholders exert much power from their voting rights, reducing the need for debt as a disciplining mechanism. The result resonates with other capital structure studies which show a nonlinear association between the level of ownership concentration and debt (Bruslerie & Latrous, 2012; Kharabsheh et al., 2019). The strength of inside ownership (OCB) increases as the level of shareholding increases at a greater magnitude than outside ownership (OCS). This possibly suggests that at high ownership concentration levels, owner-managers have more power than large outside shareholders due to their presence on the board.

**Table 2. Baseline Results—Fixed Effects**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Leverage	Leverage	Leverage	Leverage	Leverage	Leverage	Leverage
Family	-0.062*** (0.011)						
OCS		-0.180*** (0.019)	-0.347*** (0.059)				
OCS <sup>2</sup>			0.215*** (0.073)				
OCB				-0.075*** (0.020)	-0.323*** (0.074)		
OCB <sup>2</sup>					0.358*** (0.103)		
Age						0.143*** (0.030)	0.289*** (0.051)
Age <sup>2</sup>							-0.179*** (0.051)
Size	0.067*** (0.004)	0.077*** (0.004)	0.079*** (0.004)	0.066*** (0.004)	0.067*** (0.004)	0.059*** (0.004)	0.058*** (0.004)
Agency costs	-0.088*** (0.016)	-0.106*** (0.016)	-0.108*** (0.016)	-0.091*** (0.016)	-0.091*** (0.016)	-0.089*** (0.016)	-0.086*** (0.016)
National Debt	0.003*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.002*** (0.001)	0.004*** (0.001)
Constant	-0.369*** (0.062)	-0.457*** (0.061)	-0.456*** (0.061)	-0.381*** (0.062)	-0.376*** (0.062)	-0.387*** (0.062)	-0.462*** (0.065)
Observations	1,956	1,956	1,956	1,956	1,956	1,956	1,956
firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.178	0.204	0.207	0.171	0.176	0.175	0.180

The dependent variable is leverage. All other variables are as defined in Table A1. Year fixed effects are controlled for in all regressions. Standard errors are shown in parenthesis. \*, \*\* and \*\*\* represent significance at the 10%, 5% and 1% statistical levels respectively.

Furthermore, the results in Table 2 column 6 show that business age (Age) is positively related to leverage. Results in column 7 in Table 2 show that there is a nonlinear association between the square of age (Age<sup>2</sup>) with leverage. The study results align with other capital structure studies which assert that mature businesses incur low borrowing costs, thereby leading to more debt financing than in younger firms (Dudley, 2012; Kieschnick & Moussawi, 2018).

All our control variables are very significant at 1% level. As expected, the size of the business exhibits a positive relationship with leverage. This is because large businesses are stable and have long-term commitments which attract lenders at a low cost of debt. Big firms also make lots of profits that attract high taxes; thus, incentivizes businesses to use more debt as a tax shield. Agency costs (SA) are negatively related to leverage, and this means that businesses with sound financial performance incur less agency costs leading to more debt. The coefficient for national leverage is positive, suggesting that businesses incur more debt as country debt increases.

#### 4.3. Interactions effects

We reporting results using interaction effects in Table 3. Study results in Table 3 show a negative and significant coefficient for Family\*OCS at 5 % statistical level. This result suggests the negative

**Table 3. Interactions Effects**

	(1)	(2)
VARIABLES	Leverage	Leverage
Family*OCS	-0.127** (0.055)	
Family*OCB	0.023 (0.089)	
Family*Age		-0.203*** (0.038)
Outsider Ownership*Age		-0.004 (0.040)
Insider Ownership*Age		0.381*** (0.065)
Family Firm	0.017 (0.030)	0.257*** (0.057)
Ownership Concentration	-0.168*** (0.027)	-0.188*** (0.055)
Insider Ownership Concentration	0.075 (0.085)	-0.496*** (0.099)
Firm Size	0.072*** (0.004)	0.072*** (0.004)
Firm Age	0.183*** (0.030)	0.199*** (0.030)
Agency Costs	-0.101*** (0.015)	-0.097*** (0.015)
National Debt	0.002*** (0.001)	0.002*** (0.001)
Constant	-0.466*** (0.061)	-0.455*** (0.061)
Observations	1,956	1,956
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Adjusted R-Squared	0.224	0.238

The dependent variable is leverage. All other variables are as defined in Table A1. Year fixed effects are controlled for in all regressions. Standard errors are shown in parenthesis. \*, \*\* and \*\*\* represent significance at the 10%, 5% and 1% statistical levels respectively.

impact of ownership concentration on leverage is more prominent in family firms than in non-family firms. The results confirm the active monitoring hypothesis which suggests that large shareholders and creditors are substitutes as they both can perform a disciplinary role and monitoring over managers (Shleifer & Vishny, 1986).

Table 3 results in column 1 show a significant and negative coefficient for Family\*Age at 1% level. The study results suggest that the negative relationship between family ownership and leverage is more pronounced in old firms than in young firms. This result is consistent with other literature, which posits that older family businesses relinquish their equity stakes due to family ownership and control problems (Gedajlovic et al., 2004; Keasey et al., 2015).

Furthermore, the results show that the age moderating effect results in a positive ownership concentration and leverage relationship. However, the outcome is only significant on the coefficient of insider ownership (OCB\*Age). This suggests that shareholder-directors wield more power in the long run and issue more debt to avoid diluting their ownership and to maintain management control.

#### 4.4. Leverage and financial crisis

Table 4 shows negative a relationship between family-controlled firms and leverage before and after the crisis period. However, the economic and statistical significance of the negative relation is more prominent before the financial crisis than after the financial crisis period, and its magnitude reduced after the crisis period. These results possibly suggest that family firms became more conservative by borrowing less to reduce bankruptcy costs and distress costs.

Regarding ownership concentration, the results in Table 4 show that ownership concentration coefficients are negatively related to leverage for both measures of ownership during the pre-crisis period and after the crisis period. The study results also show a significant positive relationship between age and leverage in the pre-crisis period and after the crisis period.

Collectively our study results presented in Table 2 continue to hold after splitting the sample suggesting that our study results are robust to different time periods.

**Table 4. Financial Crisis**

VARIABLES	Pre-Crisis (2002–2006)				Post-crisis (2007–2013)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Family	-0.095*** (0.017)				-0.052** (0.021)			
OCS		-0.179*** (0.027)				-0.253*** (0.037)		
OCB			-0.097*** (0.031)				-0.125*** (0.039)	
Firm Age				0.156*** (0.057)				0.153** (0.069)
Firm Size	0.076*** (0.005)	0.079*** (0.005)	0.074*** (0.005)	0.071*** (0.005)	0.049*** (0.007)	0.059*** (0.007)	0.049*** (0.007)	0.046*** (0.007)
Agency Costs	-0.098*** (0.020)	-0.112*** (0.020)	-0.093*** (0.020)	-0.084*** (0.020)	-0.008 (0.024)	-0.015 (0.024)	-0.008 (0.024)	-0.012 (0.024)
Debt/GDP	-0.013 (0.016)	-0.005 (0.016)	-0.021 (0.016)	-0.056*** (0.019)	0.003*** (0.000)	0.004*** (0.000)	0.003*** (0.000)	0.002*** (0.001)
Constant	1.223 (1.599)	0.445 (1.594)	2.008 (1.614)	5.396*** (1.876)	-0.280*** (0.063)	-0.280*** (0.060)	-0.286*** (0.062)	-0.429*** (0.081)
Observations	815	815	815	815	1,141	1,141	1,141	1,141
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.231	0.248	0.208	0.205	-0.0252	0.0167	-0.0208	-0.0265

The dependent variable is leverage. All other variables are as defined in Table A1. Year fixed effects are controlled for in all regressions. Standard errors are shown in parenthesis. \*, \*\* and \*\*\* represent significance at the 10%, 5% and 1% statistical levels respectively.

**Table 5. Two-Step System GMM**

VARIABLES	(1)	(2)	(3)	(4)
Leveraget-1	0.344*** (0.0788)	0.518*** (0.119)	0.395*** (0.121)	0.181** (0.0764)
OSC	-0.282*** (0.0459)	-	-	-
OCB	-	-0.132***	-	-
FF	-	(0.0419)	-0.115***	-
Age	-	-	(0.0380)	-0.0706** (0.0307)
Size	0.0470* (0.0264)	0.0206*** (0.00649)	0.0311*** (0.00733)	0.0384 (0.0308)
SA	-0.0834* (0.0461)	-0.00494 (0.0206)	-0.00383 (0.0220)	-0.0129 (0.0603)
DG	0.00349*** (0.00103)	0.00178*** (0.000650)	0.00224*** (0.000721)	0.00313** (0.00125)
Constant	-0.286*** (0.0792)	-0.124** (0.0582)	-0.158*** (0.0611)	-0.2099*** (0.088)
AR(1)	0.002	0.001	0.003	0.018
AR(2)	0.815	0.452	0.234	0.364
Hansen test	0.351	0.413	0.637	0.136
Observations	1,793	1,793	1,793	1,793
Number of firms	163	163	163	163

The dependent variable is leverage. All other variables are as defined in Table A1. Year fixed effects are controlled for in all regressions. Standard errors are shown in parenthesis. \*, \*\* and \*\*\* represent significance at the 10%, 5% and 1% statistical levels respectively.

### 5. Robust tests and endogeneity

The study of businesses ownership structures is complicated because of endogeneity problems (Demsetz & Villalonga, 2001), Endogeneity is a problem as current actions can affect future performance and also current performance can affect future actions, to fix this problem we make use of a dynamic panel data model (Wintoki et al., 2012). The fixed effects estimation is used to deal with endogeneity issues partially, but it is insufficient due to several reasons. The fixed effects estimation is very effective with a large sample (T) and small (N), but our sample covers 12 years, which is a short period. The GMM estimation is ideal for this study as it is suitable for a small sample T and large observation N. Secondly the Fixed Effects estimation method is ineffective when dealing with reversal causality issues but the two-step GMM estimator eliminates the problem of endogeneity, as suggested by (Arellano & Bond, 1991; Blundell & Bond, 1998; Roodman, 2009). We use the lag of the dependent variable as one of the regressors and a set of instruments (see Kieschnick & Moussawi, 2018; Memon et al., 2019). The two-step system GMM results shown in Table 5 are consistent with the results presented using the fixed effects, which shows that our results do not suffer from endogeneity problems.

Lastly, we winsorize our data at 5% level to remove outliers which may have affected our results. Table 6 shows the results after winsorizing the data, and the results are quantitatively similar to the results presented in Table 2, thus there is no evidence that suggests that our results suffer from skewness bias.



**Table 6. Fixed Effects results after winsorizing at 5% level**

VARIABLES	(1)	(2)	(3)	(4)
OCS	-0.146***	-	-	-
OCB	(0.0148)	-0.0581***	-	-
	-		-	-
FF	-	(0.0156)	-0.0534***	-
	-	-		-
Age	-	-	(0.00855)	0.139***
	-	-	-	
	-	-	-	(0.0389)
Size	0.0779***	0.0690***	0.0700***	0.0604***
	(0.00328)	(0.00321)	(0.00318)	(0.00418)
SA	-0.130***	-0.117***	-0.114***	-0.0962***
	(0.0136)	(0.0138)	(0.0137)	(0.0181)
DG	0.00230***	0.00163***	0.00166***	0.00178***
	(0.000409)	(0.000411)	(0.000408)	(0.000640)
Constant	-0.308***	-0.248***	-0.238***	-0.403***
	(0.0467)	(0.0473)	(0.0469)	(0.0627)
Year Effects	Yes	Yes	Yes	Yes
Observations	1,956	1,956	1,956	1,956
R-squared	0.355	0.325	0.334	0.243
Number of firms	163	163	163	163

The dependent variable is leverage. All other variables are as defined in Table A1. Year fixed effects are controlled for in all regressions. Standard errors are shown in parenthesis. \*, \*\* and \*\*\* represent significance at the 10%, 5% and 1% statistical levels respectively.

## 6. Conclusion

We use a panel of listed Italian firms from 2002 to 2013 to study the relationship between ownership concentration, firm life cycle, and leverage in family-controlled firms. We use the Fixed Effects estimation method and two-step GMM to deal with potential endogeneity issues. Several conclusions emerge from our study on different channels that affect firms financing decisions.

Firstly, we show that family businesses in Italy are less leveraged than non-family businesses; this confirms the assertion that family businesses use less debt financing to avoid bankruptcy risk and external monitoring by creditors. The study results suggest that the negative relationship between

family ownership and leverage is more pronounced in old firms than in young firms. This suggests that family firms can be desirable to risk-averse investors as they protect shareholder wealth by avoiding bankruptcy risk and distress cost by issuing less debt.

Secondly, the study evidence shows that there is a nonlinear relationship between ownership concentration and leverage; firms use a large proportion of debt at low ownership concentration levels and reduce debt financing as ownership concentration increases. The study results suggest that both inside owners and outside owners replace debt as a monitoring instrument at high levels of ownership. In agreement with other civil law countries studies, we show that there is a higher level of ownership concentration in Italian family businesses than in non-family businesses. The study findings also reveal that the negative impact of ownership concentration on leverage is more prominent in family firms than in non-family firms.

Thirdly, we establish a nonlinear relationship between the business life cycle and leverage; this implies that businesses take less debt in their earliest years of existence and take more debt as they grow old. The study findings also reveal that the impact of ownership concentration on debt is more prominent in old firms than young firms. This can be attributed to low costs of debt incurred by mature firms and increased borrowing opportunities. However, a high concentration of insider ownership in family firms results to low debt as businesses grow old.

We show that the financial crises had significant effects on capital structure decision-making channels. Family control and age had strong significance before the financial crises but lost their strength after the financial crises period. The only channel which remained influential on financial decision-making is outside ownership. The policy implication is for investors to target firms with large shareholders as they shield shareholder wealth from bankruptcy risks by taking less debt in times of financial crisis.

Our overall results show that firm life cycle, ownership concentration, and family control have significant impacts on financing decisions. We also found evidence consistent with other studies that debt and ownership alternate as disciplining devices at different ownership concentration levels and age. Family businesses in Italy have high ownership concentration and use less debt financing than non-family-controlled businesses, just like firms in other civil law countries. The policy implication is for the regulations to set laws that safeguard minority shareholders from being exploited by substantial shareholders and insider owners. Law enforcement measures are needed for monitoring large shareholders to reduce type 2 agency problems as there are incentives to expropriate minority shareholders.

#### Author details

William Mbanyele<sup>1</sup>  
E-mail: [wmbanyele@gmail.com](mailto:wmbanyele@gmail.com)  
ORCID ID: <http://orcid.org/0000-0002-5552-4210>  
<sup>1</sup> Center for Economic Research, Shandong University, Jinan, PR China.

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## Appendix A. Definition of variables

**Table A1.**

	Variable	Definition	Definition
	Leverage	DEBT	Total debt to total assets
	OCS	Ownership concentration	The total percentage of shares owned by the three largest shareholders
	OCB	Ownership concentration	The percentage of shares owned by the board of directors
	FF	Family Control	Dummy = 1 if individual shareholding > 20%; 0 otherwise
	SA	Agency Costs	Net sales scaled by total assets
	Size	Firm size	The logarithm of total sales
	Age	Firm Age	The logarithm of the number of years from the time of the establishment
	DG	National Debt	The percentage of national debt to GDP



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