

DEATH AND TAXES: HOW DO INHERITANCE TAX AND SHAREHOLDER PROTECTION AFFECT THE MARKET VALUE OF FAMILY FIRMS?

Matias Braun^a
Michael Carney^b
Patricio Duran^a
Marcelo Ortiz^{a*}
Julio Riutort^a

Abstract

We investigate about how the market value of family firms improves when stricter inheritance taxes are in-place, and how greater level of minority protection weakens the positive effect of inheritance tax laws on the market value of family firms, thus producing a substitutive relation between these two institutional roadblocks. We test these hypotheses using a sample of 284 firms across 31 countries and we find robust supporting evidence.

^a Universidad Adolfo Ibáñez, Escuela de Negocios.

^b Concordia University, John Molson School of Business.

* Corresponding author. E-mail address: m.ortiz@uai.cl.

INTRODUCTION

How does the family affect the value of family-owned firms? The germinal studies of family business believed it to be axiomatic that family is the distinguishing feature of family firms and between family and non-family firms (e.g. Dyer, 1986; Gersick, Davis, Hampton, & Lansberg, 1997; Ward, 1987) yet the role of the family in family firms is surprisingly understudied in the literature (Bertrand & Schoar, 2006 Bertrand, Johnson, Samphantharak, & Schoar, 2008). This omission is now attracting belated attention with studies focusing on family transitions such as marriage (Bunkanwanicha, Fan, & Wiwattanakantang, 2013), divorce (Belenzon, Patacconi, & Zarutskie, 2015), and adoption (Mehrotra, Morck, Shim, & Wiwattanakantang, 2013) and their impact on firm functioning and value. However, studies of the role of family in family firms typically focused on a single jurisdiction but there are persistent differences in family structures across societies (Alesina & Giuliano, 2010) and these differences can be partially attributed to the legal and normative environment in which families are situated.

An equally consequential but under-investigated family transition is the passing of a business family patriarch and its financial impact on a firm arising from various estate and inheritance tax that can substantially deplete a firm's capital structure. In aggressive inheritance tax regimes the prospect of a considerable negative liquidity event will cast a long shadow over the firm's future prospects. Because family firms are known for their farsighted, long-term orientation (James, 1999) they are likely to plan for the eventuality of these family events, which can be expected to have an important influence over a range of governance and strategic decisions (Meier & Schier 2016 Zellweger, Richards, Sieger, & Patel, 2016). Senior family members will typically hold altruistic, dynastic ambitions toward younger generations (James, 2006; Schulze, 2002; Silverstein & Bengtson, 1997) that can be realized by either passing on ownership and control of

the firm to successors, or alternatively through the transmission substantial financial wealth to their beneficiaries through *in vivo* gifts, bequests, and inheritances (Carney & Nason, in press; Keister, 2004). The former is likely if families have substantial emotional investments in the specific firm (Gómez-Mejía, Cruz, Berrone, & De Castro, 2011) but less likely if there are no successors who are willing and able to take on the task of monitoring or managing the family firm (Chrisman, Chua, De Massis, Frattini, & Wright, 2015). In the latter case families may elect to sell the firm and realize their dynastic intentions through the transfer of financial assets rather than control of a specific firm (Morck, Strangeland, & Yeung, 2000; Wasserman 2017)

In this paper we focus upon the formal institutional incentives (namely inheritance and minority shareholder protection laws) shaping dynastic choices of family businesses by examining the following research question: How might country institutional factors combine to impact the market value of family firms? To address it, we first turn to the effects of strict inheritance tax rules on the market value of family firms. We then explore how minority shareholder protection laws will interact with the inheritance taxation regime. In so doing, we develop cross-level theory to address an issue of critical importance for family owners, investors, and policymakers. We reason that the interaction of two key formal institutions will strongly influence dynastic succession planning; specifically the severity of inheritance tax regime and the ability to realize the true value of the firm's assets, which in publicly listed firms will be determined by the strength of the shareholder protection regime (Maury, 2006). The inheritance tax regime will shape incentives governing long term family planning pertaining to tax minimization and deferral, through corporate structures such as holding companies, trusts, and foundations and the use of professional wealth management agents whereas the latter will shape incentives pertaining to family wealth maximization. While it is true that families can protect their wealth by

offshoring financial assets through various trust and holding company instruments (Harrington, 2016) and this will surely play into family wealth preservation and transmission strategies. But the public listing of the firm and its fixed assets associated with an established business will be more concretely shaped by national institutional environment. We test these ideas using a cross-sectional sample of 284 firms across 31 countries and develop two hypotheses about how the market value of family firms improves when stricter inheritance taxes are in-place, and how greater level of minority protection weakens the positive effect of inheritance tax laws on the market value of family firms, thus producing a substitutive relation between these two institutional roadblocks.

There is an abundant literature on the impact of shareholder protection and firm value (Dow & McGuire, 2016) as well as studies how the regime affects family's decisions to liquidate or hold on to their ownership stakes (Franks, Mayer, Volpin, & Wagner, 2012). However studies of inheritance regimes and family firm valuations are sparse. Hence, the primary contribution of our paper lays in the unexamined intersection of the inheritance tax and shareholder protection institutions by theorizing and providing evidence that different levels of strictness of each type of institution acting simultaneously in a country generate diverse outcomes that are beneficial or detrimental to the market value of family firms relative to non-family firms. More specifically, we suggest that stricter inheritance taxes and stronger levels of minority protection in a country would constitute a suboptimal institutional configuration for family heirs motivated to realize dynastic intentions by wealth transferring and minority shareholders interested in reducing the negative consequences for firm value stemmed from the control exercised by family heirs in a family firm.

Our paper makes two important contributions. First we contribute to the theoretical literature accumulating under the institutional view of the firm (Peng, Sun, Pinkham, & Chen, 2009) by extending understandings of the role of inheritance tax and capital market institutions on the market value of family firms. While much is known about the direct impact of the latter, less is known about how inheritance plays into firm and national level consequences of the two together. Second, we contribute to understandings of the heterogeneity of family firms' strategic behavior in differing institutional settings (Chua, Chrisman, Steier, & Rau, 2012). In particular, we provide theoretical insight into family firms' complex goal structures in different institutional contexts. While shareholder wealth protection affects family firms' ability to realize its economic goals, inheritance tax affects family firms' ability to realize its non-economic dynastic goals. Hence, we consider how jurisdiction specific interactions are likely to affect family firms' abilities to balance their economic and noneconomic goals, and, further, how prevalent theories of family firm behavior such as socioemotional wealth (Gomez-Mejia, Haynes, Nuñez-Nickel, Jacobson, & Moyano-Fuentes, 2007), principal-principal (Morck & Yeung, 2003) and stewardship (Miller & Le Breton-Miller, 2005) perspectives might provide a better account of family firms' goals preferences in particular jurisdictions.

In the following sections, we develop hypotheses on family firm, firm market value, inheritance tax laws, and the interaction of such laws with the protection of minority shareholders. This is followed by a description of the methodology, analysis, results, and robustness tests. We conclude with a discussion of the theoretical implications, limitations, and new avenues for future research.

THEORY AND HYPOTHESES

FAMILY FIRMS AND MARKET VALUE

Two contradictory perspectives of family control and firm market value are prominent in the literature. On the one hand, family involvement may have beneficial effects on the firm's market value for several reasons. First, having family owners in the board mitigates the agency problem since families enjoy greater incentives to monitor the behavior of managers (Demsetz & Lehn, 1985) and minimize the free-rider problem associated with ownership (Anderson & Reeb, 2003). Second, family owners have a long-term commitment to the success of the firm with the aim to safeguard the survivability of the family business for future generations (Anderson, Mansi, & Reeb, 2003; Barontini & Caprio, 2006; Lumpkin & Dess, 2013; Sirmon & Hitt, 2003; Wilson, Wright, & Scholes, 2013). This commitment is manifested by longer-term investment horizon and patient capital that encourages explorative behavior and innovative strategies (Teece, 1992; Sirmon & Hitt, 2003; Zellweger, 2007). Third, the family owners' concerns to protect the family's reputation increases their stewardship behavior, which can be manifested in disciplining countermeasures against expropriation of non-family owners (Zellweger, Nason, Nordqvist, & Brush, 2013).

On the other hand, family control may be harmful for the firm market value. In addition to focusing on profit maximization, family owners are motivated to pursuing family-oriented noneconomic objectives such as the ability to exercise family influence and the perpetuation of the family dynasty (Gomez-Mejia et al., 2007). To achieve these family-oriented goals, family owners put in extra work efforts to maintaining family control of the firm and behaving altruistically toward family members (Burkart, Panunzi, & Shleifer, 2003; Schulze, Lubatkin, & Dino, 2003; Schulze, Lubatkin, Dino, & Buchholtz, 2001). This orientation exacerbates principal-principal conflicts since family members may pursue their private benefits at the expense of the firm and minority shareholders (Bennedsen & Nielsen, 2010; Bertrand, Johnson,

Samphantharak, & Schoar, 2008; Bhaumik & Gregoriou, 2010; Claessens, Djankov, & Lang, 2000; Faccio, Lang, & Young, 2001; Luo & Chung, 2013; Morck & Yeung, 2003), make sub-optimal investment decisions at the eyes of non-family shareholders (Fama & Jensen, 1985), and increase inefficiency because of the family heirs' lower managerial talent (Caselli & Gennaioli, 2013).

The inconsistency of evidence of prior studies suggests that the implication of family control on firms' market value represent a substantially more complex phenomenon than previously understood. Recently, country-level institutional approaches have been helpful in understanding the crucial role of the context behind the family control-firm performance relationship (e.g., Almeida & Wolfenzon, 2006; Bertrand & Schoar, 2006; Dow & McGuire, 2016; Miller, Le Breton-Miller & Lester, 2013; Peng & Jiang, 2010). For example, Dow and McGuire (2016) show that both legal context (e.g., rule of law, investor protection) and natural culture (e.g., uncertainty avoidance) mitigates the negative effect of family ownership on firm market performance. The authors suggest that stringent regulations safeguard against family opportunism and the investment strategy of family firms becomes more closely aligned with investors in high uncertainty avoidance countries.

We propose to extend this line of reasoning to the impact of inheritance tax laws on the family control-firm market value relationship and examine its role as a substitute for investor protection institutions.

INHERITANCE TAX LAWS

Inheritance tax laws represent specific legal rules that govern the transfer of assets among family heirs at death of the family patriarch. They include inheritance taxation (i.e., individual taxation of beneficiaries) and estate taxation (i.e., tax on the transfer of the estate of a deceased person).

Inheritance tax rates vary considerably across countries. Research reported in this paper shows that inheritance tax rates could reach as high as 40 percent in the U.S. and are absent in countries such as Australia, Hungary, and Mexico, among others.

The potential benefits and costs of inheritance tax laws in societies is a topic of continual debate. Supporters argue that inheritance taxes are suitable regulatory instruments to redistribute wealth and increase social equality (Heer, 2001). Opponents, in turn, believe that death taxes are detrimental to business activity and job creation (Cagetti & Nardi, 2009). For example, Bertrand and Schoar (2006, p. 80) argue that “rigid inheritance rules may be constraining to family businesses,” for example, aggressive inheritance taxes that reduce family wealth may generate intensive conflicts that spillover into business decision-making. In particular, the phenomenon of dead money (Carney, Gedajlovic, & Strike, 2014), which refers to “the potential for the division, reduction, and misallocation of family firms assets during intergenerational wealth transfer” (Wright, Chrisman, Chua, & Steier, 2014: 1250) is a matter of relevant concern, both for scholars and practitioners. Carney and colleagues (2014) argue that potentially dead money in family firms could stem from “family successors lacking either the capability or interests in either monitoring or managing an inherited firm” (p. 1262). Therefore, the existence and strictness of inheritance laws are of major importance for both family and non-family shareholders given the effect of these laws on the intergenerational ownership and leadership succession in family firms. Inheritance tax laws create both direct and indirect costs in family successors that might put family-based non-economic objectives, such as keeping family control of the business and dynastic succession, at risk (Burkart et al., 2003). Stricter inheritance tax laws can force family heirs to reallocate their capital, sell or even close their businesses and/or create obstacles to the intrafamily succession intentions (Brunetti, 2006; Caselli & Gennaioli, 2013; Grossmann &

Strulik, 2010; Holtz-Eakin et al., 2001; Tsoutsora, 2015), which have an impact on the market value of family firms.

INHERITANCE TAX LAWS AND THE MARKET VALUE OF FAMILY FIRMS

Keeping family control of the business is a fundamental goal of family owners with transgenerational succession intentions. Family members reach such objective by owning the majority of the firm's shares and occupying the highest executive office of the firm. Putting family members in top positions allow them to influence a family-oriented decision making over the firm's strategic decisions (Arregle, Naldi, Nordqvist, & Hitt, 2012; Gentry et al., 2016; Gomez-Mejia, Makri, & Larraza-Kintana, 2010; Minichilli et al., 2014; Zahra, 2003). Thus family owners may favor conservative strategies that avoid entrepreneurial endeavors posing a risk to the family's wealth (e.g., lower international diversification, debt acquisition, and R&D investment relative to non-family firms; Arregle, Duran, Hitt, & van Essen, in press; Duran et al., 2016; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011). However, non-family shareholders perceive these family-centric priorities as a source of nepotism, family conflicts, incompetency, and significant opportunism risk that might harm the efficiency and competitive advantage of the family firm (Carney, 2005). Since family influence and identification diminishes in later generations (Chua, Chrisman, & Sharma, 1999; Gomez-Mejia et al., 2007; Mishra & McConaughy, 1999; Schulze et al., 2003), investors are attentive to events that will affect the balance of powers in the boardroom from insiders to non-family shareholders such as a deceased of a family member.

It is commonly argued that many families concentrate a significant part of their wealth in the family firm (Anderson et al., 2003). So family owners may face liquidity constraints to pay tax obligations caused by the death of the patriarch. To comply with the tax requirement, family

heirs mitigate their lack of liquidity in at least two ways: first, by selling a fraction of their shares to the public; and second, by acquiring personal debt or liquidating personal assets. The former mechanism reduces the levels of family ownership, which undermines the family influence in the firm or, at the extreme, transfer the family control to outsiders (Ellul, Pagano, & Panunzi, 2010; Grossmann & Strulik, 2010).¹ The latter increases the weight of the family firm in the family's portfolio. Both the lower successors' influence in the firm and the higher weight of the family firm for family heirs' financial security can be perceived positively by non-family shareholders. A lower degree of ownership stake in the hands of family members reduces the likelihood that the family constitutes the dominant coalition in the firm. This constraints family heirs' managerial discretion in making use of the firm to pursue family-centric noneconomic objectives (Gentry et al., 2016). In turn, family members feel more pressure to make strategic decisions that are more aligned to the interests and expectations of non-family shareholders. In other words, non-family investors will expect higher operating efficiency, more investment in new products and promotion, and higher risk-taking behavior (Grossmann & Strulik, 2010; Miller et al., 2013). Altogether, non-family shareholders expect that more profit maximizing attitudes followed by the family heirs would generate future positive cash flows and the consequent payment of gains via dividends.

Gomez-Mejia and colleagues (2010) argue that in family firms that face certain conditions that threaten its short-term survivability, family owners are more willing to trade firm risk for lower socioemotional wealth preservation. Following this line of reasoning, we argue that family heirs acquiring personal debt to comply with inheritance tax obligations put the family name and reputation at risk; thus they will be more willing to freeze the pursuit of noneconomic goals on

¹ It is important to note that under the presence of dual-class shares, family owners can keep voting shares and only sell non-voting (common) stock to maintain the control of the firm (Burkart et al., 2003)

behalf of profit maximization until such risk is reduced. In a similar vein, the greater reliance on the family firm for family heirs' financial security provokes successors' fears of losing their source of economic wealth. Since successors' managerial ability to improve firm performance is viewed with suspicion by investors (Bloom & van Reenen, 2007; Carney et al., 2014; Caselli & Gennaioli, 2013; Fahlenbrach, 2009; Perez-Gonzalez, 2006; Villalonga & Amit, 2006), family heirs avoid making decisions that deviate from industry practice to maintain support from stakeholders (Miller et al., 2013), with positive consequences for the firm's market performance. In sum, stricter inheritance tax laws act as an important institutional roadblock that helps to diminish agency conflicts between family and non-family shareholders. The death of the patriarch provokes financial obligations and insecurity to family heirs that induce them to reduce their influence over the firm or be more attentive to non-family shareholders' objectives, with positive consequences for the family firm's market value. Other things equal, higher inheritance taxes increase family firms' market value because it is a mechanism for decoupling family control over publicly-listed family-controlled firms. Thus, we hypothesize that:

Hypothesis. 1. Inheritance tax laws moderates the relationship between family firm and firm's market value. The higher the rates of inheritance tax, the higher the market valuation of family firms relative to non-family firms.

SHAREHOLDER PROTECTION LAWS AND THE MARKET VALUE OF FAMILY FIRMS

Shareholder protection laws aim to protect shareholders against directors' misuse of corporate assets for personal gain (World Bank). These regulations help to "limit expropriation of minority shareholder wealth by promoting wider shareholder involvement and input in corporate governance" (Dow & McGuire, 2016: 587). There is a large body of evidence which indicates a

positive relationship between minority shareholder protection and firm's value (see, for example, Dodge, Karolyi, & Stulz, 2004; Gompers, Ishii, & Metrick, 2003; Klapper & Love, 2004; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2002). Empirical evidence shows that family control is positively associated to firm value, particularly when family firms are embedded in contexts with high shareholder protection (see, for example, Dow & McGuire, 2016; Maury, 2006). In these contexts, family owners are more constrained to pursue noneconomic family-oriented goals that may lead to wealth expropriation of minority shareholders. Thus, family owners act as stewards of the firm, limiting the consumption of private benefits and exploitation of minority shareholder resources (Anderson & Reeb, 2004; Zellweger et al., 2013).

INTERACTION EFFECT BETWEEN INHERITANCE TAX AND SHAREHOLDER PROTECTION LAWS ON THE MARKET VALUE OF FAMILY FIRMS

Recently, scholars call to attention of the limits of legal protection in family firms (for a review, see Stevens, Kidwell, & Sprague, 2015). Excessive regulations against family ownership may produce counterproductive effects on the firms' expected outcome (Dow & McGuire, 2016). We follow this reasoning by suggesting that combining stricter inheritance tax laws and stronger minority shareholder protection in a country can be detrimental to family firms' market value.

Stronger protection laws fuel the market for corporate control. So minority shareholders are more capable to monitor and discipline the behavior of family owners, which leads to wealth maximization (Anderson & Reeb, 2003) and higher value (Dow & McGuire, 2016; Maury, 2006). Here, family owners have stronger incentives to sell the firm with the aim to gain takeover premiums (Franks, Mayer, Volpin, & Wagner, 2012) and dynastic intentions are realized by intergenerational wealth transfer (Morck, Strangeland, & Yeung, 2000) rather than passing control of a specific firm to the next generation (Gomez-Mejia et al., 2007). This is of

particular interest to family heirs since they may be less concerned with socioemotional wealth objectives than first generation owners (Gomez-Mejia et al., 2007).

Inheritance tax laws may facilitate or impede the benefits associated to stronger shareholder protection on family firms' market value and the consequent desire of family owners to liquid high-value assets. Permissive inheritance tax regulations in combination with stronger shareholder protection in a country provide the optimal conditions for family heirs' wish to sell the family firm and diversify wealth. Lower rates of inheritance tax reduce tax liability on wealth transfer, providing the incentives for family heirs to realize value with minimum costs (Franks et al., 2012; Meier & Schier, 2016). Stronger shareholder protection laws, in turn, fuel the market for corporate control. Thus, family owners have stronger incentives to sell the firm with the aim to gain takeover premiums (Franks et al., 2013). On the contrary, both stricter death taxes and stronger shareholder protection acting simultaneously in a country provide incentives for family owners to both, to minimize firm value to reduce tax liability at the death of the patriarch, and to realize gains through the family business by holding their influence on firm's decisions. Despite minority shareholders enjoying favorable institutional conditions to protect their interests in the family firm, descendants in top managerial positions can be detrimental to firm performance (Bloom & van Reenen, 2007; Carney et al., 2014; Caselli & Gennaioli, 2013; Fahlenbrach, 2009; Perez-Gonzalez, 2006; Villalonga & Amit, 2006).

In short, the interaction between stricter inheritance tax laws and stronger minority shareholder protection regulation act in opposite directions with regard to the market value of family firms. In other words, death taxes become a liability in contexts where minority shareholders enjoy greater protection since inheritance laws may damage the superior performance of family firms. Consequently, we hypothesized that:

Hypothesis. 2a. The moderating effect of inheritance tax laws on the relationship between family firm and firm's market value weakens as the level of protection for minority shareholder increases.

RESEARCH METHOD

Data collection

We obtained estate and inheritance tax data from the E&Y's "Worldwide Estate and Inheritance Tax 2014" report and the Deloitte's "Deloitte International Tax Source 2016" guides. The combination of these reports offers information on inheritance tax rates for 51 countries. For each of these countries, we identified the five largest and five smallest firms by market capitalization from the main local stock market index.² We excluded companies from the financial and utilities sectors since regulation impacting these industries might affect the firms' financial policies and market value (Anderson & Reeb 2003). We obtained financial and accounting data from Worldscope. To identify the ultimate owner of these firms, we collected the names of the individual board members for each firm from Bloomberg as of 2015. After removing firms with either insufficient financial data or where the information concerning board members impeded us from identifying the firm's ultimate owner, we were left with a cross-sectional sample of 284 firms from 31 countries.³

Variables and measures

Dependent variable

For our main measure of firm market value, we use *Price-to-book ratio* (P/B), estimated as the natural logarithm of the ratio between market capitalization and the book value of common

² Appendix A shows a list of the stock market indexes included in our sample.

³ Countries not included in the final sample are: China, Cyprus, Czech Republic, Hong Kong, India, Indonesia, Israel, Japan, Latvia, Liechtenstein, Luxembourg, Malaysia, Malta, Philippines, Poland, Russia, Singapore, South Korea, Turkey and Ukraine.

equity (Berrone et al., 2010; Chong & Lopez-de-Silanes 2007; Schmid et al., 2015). For robustness, as an alternative measure we used *Tobin's q*, estimated as the ratio of market capitalization plus total debt over total asset (Villalonga & Amit 2006; Anderson & Reeb 2003).

Independent variable

The independent variable is *Family firm*. We operationalize this variable using a dichotomous variable with a value of 1 if a firm is classified as family firm and 0 otherwise. A firm is classified as family firm when at least two directors share the same first last name as of 2015 and where the same last name directors represent at least 20 percent of the board.⁴ The presence of family ties in a firm board was determined comparing the last name of its directors (Ward & Dolan 1998, Gomez-Mejia et al. 2001, Li et al. 2008, Deslandes et al. 2016).

Country-level moderators: Inheritance tax and protection for minority shareholders

Our measure of *Inheritance tax* is the maximum tax rate that offsprings pay to inherit a firm (Tsoutsoura, 2015), independently of whether it is via inheritance law or indirectly via a capital gain tax.⁵ Our proxy for the protection of minority shareholders is the *Anti-self-dealing index* of Djankov et al (2008). This index measures the legal protection of minority shareholders against expropriation by corporate insiders and has been commonly used to assess the level of shareholder-rights protection across countries (cf. Franks et al., 2012; Jara-Bertin, López-Iturriaga, & López-de-Foronda 2008; Lins et al., 2013). Table 1 shows our measure of *Inheritance tax* and the *Anti-self-dealing index* of all the countries included in our sample.

Insert Table 1 here

⁴ In the case the firm's members of the board and CEO share more than one last name, we followed a conservative approach by only considering the last name with the higher number of repetitions.

⁵ When information about sons' exemption was not explicit, we searched for this information in either the respective Tax Authority website or Globalpropertyguide.com.

Control variables

We included several control variables that are likely to influence the market value of firms: (1) *Firm size* (natural log of total assets); (2) *Sales growth* (the annual growth rate of sales); (3) *Sales risk* (the standard deviation of the annual growth rate of sales, computed using all years with sales data available in Worldscope); (4) *Leverage* is (the ratio of the firm's total debt to total debt plus market capitalization); (5) *Investment* (the ratio of capital expenditures (capex) over beginning of the year net property, plant and equipment); (6) *Foundational longevity* (the natural log of the number of years since firm's foundation); and (7) *Incorporation longevity* (the natural log of the number of years since firm's incorporation).⁶ All financial-based control variables were calculated using a 10-year average (2005-2014) and winsorized at the top and bottom one percent to mitigate outliers effects (Chung & Zhang, 2011). Table 2 provides the description and sources of data for all variables in the study.

Insert Table 2 here

Method

As noted by Dow and McGuire (2015), country-level variables might be correlated, and this can reduce the significance of individual OLS coefficients if several of these variables are included in a regression due to problems associated with multicollinearity. However, omitting a relevant but correlated variable, would bias the OLS coefficients of the included variables. In our

⁶ Both longevity variables (Foundational and Incorporation longevity) have many missing values: 213 for *Foundational longevity* and 56 for *Incorporation longevity*. To make use of all observations, we add an extra dummy variable for each longevity variable. This dummy variable is equal to one where there is a missing value in the respective longevity variable. Then we replace with zero all missing values in the longevity variables. This permits the use of all observations and control for missing values.

theoretical model, both the inheritance tax and investor protection are important determinants of firm's market value, therefore omitting either one of them has the potential to bias the estimated coefficient of the remaining one included in the empirical model. For this reason, we decide to include both variables in our empirical specification at the cost of potentially finding statistically non-significant results.

One reason for our cross-sectional approach is data availability. A possibly preferred empirical approach is a panel setting, however, this would be useful to the extent that there is enough within country variation in inheritance laws and sufficient firm-level data. Unfortunately, this is not the case in the countries for which we can obtain enough firm-level data. This limits our ability to flexibly control for institutional variables to the use of country fixed effect, and in the process losing identification of the level effect of country institutions.

Our baseline model is:

$$\begin{aligned}
P/B_{i,j,k} = & \alpha + \beta_1 \text{Family firm}_{i,j,k} \\
& + \text{Family firm}_{i,j,k} \\
& \times ([\beta_{H1} \text{Inheritance tax}_k + \beta_2 \text{Anti-self-dealing}_k \\
& + \beta_{H2} \text{Inheritance tax}_k \\
& \times \text{Anti-self-dealing}_k]) + \beta_3 \text{Inheritance tax}_k \\
& + \beta_4 \text{Anti-self-dealing}_k + \beta_5 \text{Inheritance tax}_k \times \text{Anti-self-dealing}_k \\
& + Z_{i,j,k} \delta + \eta_j + \varepsilon_{i,j,k}
\end{aligned} \tag{1}$$

Where $Z_{i,j,k}$ is a vector of firm-level control variables. η_j is a set of eleven dummy variables based on the GICS sector codes that control for potential industry-level effects. In additional specifications, we include a full set of country level fixed effects and exclude the direct and

interactive effect of the country-level variables. Due to the potential for correlated errors within countries, we correct for clustering at country-level in all model specification.

Our first hypothesis posits that inheritance tax law positively moderates the family firm-firm's market value relationship. A positive estimate of β_{H1} would be consistent with this hypothesis. In the same line, our second hypothesis posits that the moderator effect of inheritance tax law is weaker in countries with high level of minority shareholder protection. Consequently, a negative estimates of β_{H2} would support this hypothesis.

RESULTS

Table 3 presents descriptive statistics and Pearson's correlation coefficients between the regression variables. This table shows generally low levels of correlation among the predictors we used for the analyses and the dependent variable. Potential collinearity among the variables was tested by estimating variance inflation factors (VIF). The average VIF is 1.18 (with a maximum of 1.29), ruling out multi-collinearity (Kutner, Neter, Nachtsheim and Li, 2005).

Table 4 reports results of the regression analyses. In a preliminary part of our analysis we estimate models including one at the time the two country-level moderator variables. In Model 1, we include only the *Inheritance tax* variable, and in Model 2 we include only the *Anti-self-dealing* index. These analyses do not show significant evidence of differences in the effect of the country-level moderators on family firms' equity valuations. These results highlight the importance of studying the effect of inheritance taxes and investor protection jointly as in equation 1.

In Model 3, we test our base model (equation 1) with the three-way interaction. This specification shows a positive and significant coefficient of the interaction of inheritance tax on

family firms ($\hat{\beta}_{H1} = 5.40$, p -value < 0.01), consistent with hypothesis 1, and a negative and significant coefficient of the interaction between inheritance tax and shareholder protection on family firms ($\hat{\beta}_{H2} = -10.27$, p -value < 0.05), in line with the substitution effect of hypothesis 2. Overall, these results provide evidence to show that stricter inheritance tax laws in a country positively influence the market value of publicly-listed family firms relative to other non-family publicly-listed firms. Additionally, we provide evidence of a substitution effect between inheritance and shareholder protection laws on the market value of family firms. More specifically, higher levels of minority protection in countries weaken the positive effect of inheritance tax rates on the market value of family firms. To calculate the practical significance of this finding, in Model 3 we set all variables to their mean to estimate the effect of an increase of one standard deviation of *Inheritance tax* considering three levels of *Anti-self-dealing*: the mean minus one standard deviation, the mean, and the mean plus one standard deviation. This change results in a change of 73.4, 14.6, -44.2 percent of the *P/B* ratio in family firms, relative to non-family firms, respectively.

 Insert Table 4

Robustness

In Table 5, we performed several robustness checks of empirical results reported in Table 4.

First, we test the hypotheses using alternatives measures for family firms. In Model 1 we use the variable *Family firm & family CEO* as a more stringent measure of family control. Using of this measure produces same direction but larger magnitude effects ($\hat{\beta}_{H1} = 8.14$ and $\hat{\beta}_{H2} = -16.96$, both with p -value < 0.05). In Model 2 we use our continuous measure of family control intensity.

The results are once more consistent with our hypotheses ($\hat{\beta}_{H1} = 20.44$, and $\hat{\beta}_{H2} = -36.72$,

with p-value lower than 0.001 and 0.01, respectively). In Model 3 we tested a more restrictive specifications of the family firm variable. One concern with the family classification scheme is the choice of a minimum board percentage threshold (our baseline specification requires at least 20 percent of the board to share the same first last name); requiring a higher (lower) minimum percentage of the board results in less (more) firms being classified as family firms, and also decreases the probability of mistakenly classifying a firm as family firm because of non-family coincidences in last name. Moreover, the influence of the family in the firm should be positively related to its relative representation in the board. For these reason we estimate our baseline model redefining the *Family firm* dummy to require at least 25 percent of the board. Using this higher threshold reduces the fraction of firms classified as family firms to 10.5 percent. Consistent with our hypotheses the moderator effect of inheritance tax and the substitution effect between inheritance tax and investor protection are even stronger under this definition. The estimates in Model 3 of Table 5 show that $\hat{\beta}_{H1} = 9.96$ and $\hat{\beta}_{H2} = -18.07$, both coefficient estimates are higher than the corresponding estimates in Model 3 of Table 4 for the 20% minimum threshold.⁷

Second, we use *Tobin's Q* as an alternative measurement of firm's market value (Villalonga & Amit 2006; Anderson & Reeb 2003). In Model 4, Table 5, we found a positive and significant estimate of $\hat{\beta}_{H1} = 3.26$ and a negative, but insignificant estimate of $\hat{\beta}_{H2} = -4.63$. These results are broadly consistent with our hypotheses.

Third, it is reasonable to argue that both inheritance law and the protection of minority shareholders may be related to a number of other country-level institutional factors omitted from our baseline specification. Consequently, an omitted variable is likely to occur. To deal with this

⁷ In unreported results we obtained qualitatively similar results for a 30% minimum threshold.

bias, we add country fixed effects to Model 5. By so doing, we found similar results to those presented in the main model.

Fourth, we wished to determine whether the results in Table 4 were affected by endogeneity (Villalonga & Amit 2006). Following Miller et al. 2013, we used a Heckman two-step procedure to correct for self-selection of family firms. The first step consists in a Probit model of the probability that a firm is classified as family firm as in Table 2. The second step is a linear regression of the firm's *P/B* ratio, using the same control variables included in our base model (see Model 3, Table 4). Heckman's model requires finding an instrument that will predict the first step probability that a firm is a family firm, but that will not affect the dependent variable in the second step. We used *sales risk* for these exclusion restriction because family firm owners are imperfectly diversified investors (Villalonga & Amit, 2006), and therefore a lower level of *sales risk* may favor the presence of family owners, but it should not affect the firm market value, because according to Capital Asset Pricing Model, the firm market value should only depend of the market risk. To conserve space, we report the second step coefficients in the Model 6 of Table 5, and once again, they confirm both hypotheses.

Insert Table 5 here

DISCUSSION AND CONCLUSIONS

Limitations and future research

The findings and limitations of this study suggest several directions for future research. First, future work should examine the effect of changes in inheritance laws under different investor protection contexts. This panel setting allows for a deeper study of how changes in both investor protection and inheritance laws generate different outcomes in family-controlled firms. Researchers will need to overcome a few data availability obstacles to accomplish this. There are

both limited number of countries with changes in inheritance laws and insufficient information on firms' ownership in the neighborhood of this event. Further, changes in inheritance laws often involve adjustments in many dimensions (for example: tax rates, tax exemptions, assets valuation methods), therefore it is hard to get an overall sense of the magnitude of the changes in the law. Second, futures studies can complement our research highlighting how the substitutive effect of inheritance law and investor protection varies across different family characteristics, such as whether the founder is alive, descendants' structure and involvement in the firm (Bertrand et al., 2008; Villalonga & Amit, 2006).

Conclusions

The relationship between family control and firm value is a complex and nuanced one. Prior studies suggest that while family control is on average associated with lower firm market values (Bertrand et al., 2008; Gomez-Mejia et al., 2007; Villalonga & Amit, 2006), this relationship is highly dependent on country-level contingencies. In particular, investor protection has been found to mitigate the negative effect of family control on firm value (Dow & McGuire, 2016; Maury, 2006). We add to this literature by focusing on the role that inheritance tax also plays on the expected market value of family firms. Drawing on agency and socioemotional theory, we build and offer robust support to our arguments regarding the positive moderator effect of inheritance taxes on the family firm-and firm' market value relationship, and how such benefits of stricter inheritance tax rates are reduced when higher level of protection of minority shareholder are also in-place in a country.

Our results offer both theoretical and practical implications. First, we find consistent evidence that inheritance taxes reduce agency costs between the controller family and minority shareholders, an aspect of agency theory that has not been fully explored in the corporate governance literature. Second, we show that the inheritance obligation can be a threat to the

socioemotional wealth of family members, therefore pushing families to focus more on value maximization and less on pursuing family-centric goals that conflict with firm's profit maximization. Third, from a practical point of view, our results corroborate that policymakers' concerns regarding the protection of minority shareholders must not consider only investor protection laws, but also how investor protection interact with other institutions such as inheritance law.

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TABLE 1
Inheritance Tax and Minority Shareholder Protection by Country ^a

Country	(1) Inheritance tax	(2) Max. inheritance tax	(3) Anti-self-dealing index
Argentina	yes	4%	0.34
Australia	no	0%	0.76
Austria	no	0%	0.21
Belgium	yes	30%	0.54
Brazil	yes	4%	0.27
Bulgaria	yes	0%	0.65
Canada	no	0%	0.64
Chile	yes	25%	0.63
Colombia	indirect	0%	0.57
Denmark	yes	15%	0.46
Finland	yes	20%	0.46
France	yes	45%	0.38
Germany	yes	0%	0.28
Greece	yes	10%	0.22
Hungary	yes	0%	0.18
Ireland	indirect	33%	0.79
Italy	yes	4%	0.42
Lithuania	yes	0%	0.36
Mexico	no	0%	0.17
Netherlands	yes	20%	0.20
New Zealand	no	0%	0.95
Norway	no	0%	0.42
Peru	no	0%	0.45
Portugal	no	0%	0.44
Romania	no	0%	0.44
South Africa	indirect	20%	0.81
Spain	yes	34%	0.37
Sweden	no	0%	0.33
Switzerland	yes	0%	0.27
UK	yes	40%	0.95
USA	yes	40%	0.65
Mean		11%	0.47
Std. Dev.		15%	0.22

^a Column (1) indicates whether the country has inheritance tax (“yes”), or if bequest is indirectly levied by other tax (“indirect”), or if the country has no inheritance tax (“no”); Column (2) shows the maximum tax rate that sons pay to inherit a firm. Columns (1) and (2) were obtained from “Worldwide Estate and inheritance Tax E&Y 2014”, “Deloitte International Tax Source” website, the respective Tax Authority Website, and Globalpropertyguide.com. Column (3) reports the Djankov et al (2008)’s index of legal protection for minority shareholders against expropriation by controller

TABLE 2
Definition of variables

Variable	Measure	Source
<i>Family firm</i>	dichotomous variable with a value of 1 if the ratio between the number of firm's directors with the same first last name in the board and the total number of directors as on 2015 is equal or greater than 20 percent, and 0 otherwise.	Bloomberg
<i>Family board percentage</i>	the ratio between the number of firm's directors with the same first last name in the board and the total number of directors as on 2015 if the firm is classified as family firm, and 0 otherwise.	Bloomberg
<i>Family firm & family CEO</i>	dichotomous variable with a value of 1 if <i>Family firm</i> is equal to 1 and the CEO has the same first last name of the family, and 0 otherwise.	Bloomberg
<i>Price-to-book ratio (P/B)</i>	the natural logarithm of the ratio between market capitalization and the book value of common equity.	Worldscope
<i>Tobin's q</i>	the natural logarithm of the ratio of market capitalization plus total debt over total asset.	Worldscope
<i>Inheritance tax</i>	the maximum tax rate that sons pay to inherit a firm, independently of whether it is via inheritance law or indirectly via a capital gain tax.	E&Y, Deloitte, Globalpropertyguide.com and the respective tax authority website
<i>Anti-self-dealing index</i>	measure of the legal protection of minority shareholders against expropriation by corporate insiders.	Djankov et al (2008)
<i>Firm size</i>	the natural log of total assets.	Worldscope
<i>Sales growth</i>	the annual growth rate of sales.	Worldscope
<i>Firm risk</i>	the standard deviation of the annual growth rate of sales.	Worldscope
<i>Leverage</i>	the ratio of the firm's total debt to total debt plus market capitalization.	Worldscope
<i>Investment</i>	the ratio of capital expenditures (capex) over beginning of the year net property, plant and equipment.	Worldscope
<i>Foundational longevity</i>	the natural log of the number of years since firm's foundation.	Worldscope
<i>Incorporation longevity</i>	the natural log of the number of years since firm's incorporation.	Bloomberg

TABLE 3
Statistics and Correlation Matrix

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Family board percentage	0.05	0.12	1.0										
2. Family firm	0.15	0.36	0.94*	1.0									
3. Family firm & family CEO	0.07	0.25	0.63*	0.63*	1.0								
4. Inheritance tax	0.12	0.15	-0.04	-0.03	-0.03	1.0							
5. Anti-self-dealing index	0.47	0.21	-0.16*	-0.14*	-0.16*	0.30*	1.0						
6. P/B	0.69	0.80	-0.18*	-0.15*	-0.07	0.22*	0.09	1.0					
7. Tobin's Q	0.15	0.59	-0.17*	-0.14*	-0.08	0.14*	0.15*	0.84*	1.0				
8. Investment	0.33	0.65	-0.09	-0.09	-0.05	0.03	0.01	0.01	0.0	1.0			
9. Leverage	0.28	0.20	0.11	0.13*	0.08	-0.07	-0.14*	-0.53*	-0.62*	-0.10	1.0		
10. Firm size	14.95	2.41	-0.16*	-0.13*	-0.09	0.26*	-0.05	0.14*	0.0	-0.27*	0.03	1.0	
11. Sales growth	0.18	0.54	0.03	0.03	0.10	-0.06	0.10	0.02	0.10	0.37*	-0.11	-0.25*	1.0
12. Sales risk	0.82	3.00	0.05	0.07	0.16*	-0.08	0.02	-0.01	0.0	0.20*	0.02	-0.06	0.60*

N= 284 Firms. * p<0.05.

For variable definitions see Table 2.

TABLE 4
 OLS Model: Dependent Variable natural log of Price-to-Book Ratio

VARIABLES	(1)	(2)	(3)
	FF= <i>Family firm</i>	FF= <i>Family firm</i>	FF= <i>Family firm</i>
Inheritance tax	0.59+ (0.31)		-0.30 (0.82)
Anti-self-dealing index		0.10 (0.17)	-0.27 (0.27)
Inheritance tax x Anti-self-dealing index			1.65 (1.25)
FF	-0.19 (0.20)	-0.20 (0.28)	-0.61* (0.26)
FF x Inheritance tax (H1)	0.52 (0.82)		5.40** (1.62)
FF x Anti-self-dealing index		0.21 (0.61)	1.02 (0.82)
FF x Inheritance tax x Anti-self-dealing index (H2)			-10.27* (3.85)
Investment	-0.09 (0.10)	-0.07 (0.10)	-0.10 (0.10)
Leverage	-1.99*** (0.27)	-1.98*** (0.28)	-2.01*** (0.27)
Firm size	0.05* (0.02)	0.06** (0.02)	0.05* (0.02)
Sales growth	0.03 (0.11)	0.01 (0.11)	0.03 (0.11)
Incorporation age	-0.01 (0.04)	0.00 (0.05)	-0.01 (0.05)
Foundational age	-0.23* (0.10)	-0.25* (0.10)	-0.25* (0.10)
Constant	1.50** (0.48)	1.40* (0.52)	1.73** (0.50)
Observations	284	284	284
R-squared	0.41	0.39	0.41
Country dummy	NO	NO	NO
Industry dummy	YES	YES	YES

Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1
 For variable definitions see Table 2.

TABLE 5
Robustness

VARIABLES	(1) FF=Family firm & family CEO	(2) FF= Family board percentage	(3) FF= dummy for Family board percentage ≥25%	(4) FF= Family firm and DV: Tobin's Q	(5) FF= Family firm and country effect	(6) treatment effect for Family firm
Inheritance tax	-0.14 (0.84)	-0.36 (0.82)	-0.33 (0.80)	-0.61 (0.61)		-0.38 (0.72)
Anti-self-dealing index	-0.23 (0.27)	-0.30 (0.27)	-0.29 (0.26)	-0.01 (0.18)		-0.16 (0.27)
Inheritance tax x Anti-self-dealing index	1.39 (1.24)	1.72 (1.24)	1.67 (1.20)	1.24 (0.96)		1.66 (1.19)
FF	-1.15* (0.52)	-2.13* (0.84)	-0.89* (0.36)	-0.34 (0.21)	-1.04*** (0.28)	-0.13 (0.44)
FF x Inheritance tax (H1)	8.14* (3.59)	20.44*** (4.73)	9.96** (2.77)	3.26* (1.38)	4.75** (1.61)	5.15+ (2.68)
FF x Anti-self-dealing index	3.06 (1.82)	2.81 (3.02)	1.19 (1.42)	0.37 (0.59)	2.11** (0.77)	1.16 (0.80)
FF x Inheritance tax x Anti-self-dealing index (H2)	-16.96* (7.17)	-36.72** (12.73)	-18.07* (7.24)	-4.63 (3.16)	-10.26* (3.77)	-9.75+ (5.45)
Investment	-0.09 (0.10)	-0.10 (0.10)	-0.11 (0.10)	-0.08 (0.06)	-0.16 (0.11)	-0.10 (0.06)
Leverage	-2.04*** (0.28)	-2.02*** (0.26)	-2.05*** (0.28)	-1.56*** (0.16)	-2.21*** (0.31)	-2.01*** (0.20)
Firm size	0.05* (0.02)	0.04* (0.02)	0.04* (0.02)	0.01 (0.01)	0.00 (0.02)	0.05* (0.02)
Sales growth	0.02 (0.12)	0.04 (0.11)	0.04 (0.11)	0.06 (0.08)	0.04 (0.09)	0.02 (0.08)
Incorporation age	-0.01 (0.04)	-0.01 (0.04)	-0.01 (0.04)	-0.00 (0.04)	-0.05 (0.04)	-0.01 (0.05)
Foundational age	-0.26* (0.10)	-0.25* (0.10)	-0.25* (0.10)	-0.12 (0.07)	-0.22* (0.09)	-0.29* (0.13)
Constant	1.70** (0.49)	1.80** (0.50)	1.81*** (0.49)	1.04* (0.38)	1.99*** (0.44)	1.72** (0.60)
Observations	284	284	284	284	284	284
R-squared	0.41	0.42	0.43	0.49	0.54	
Country dummy	NO	NO	NO	NO	YES	NO
Industry dummy	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1

For variable definitions see Table 2.

Appendix A

Stock market indexes

Country	Stock Index Name
Argentina	MERVAL
Australia	S&P/ASX200
Austria	VIENA STOCK EX
Belgium	BEL20
Brazil	IBOVESPA
Bulgaria	SOFIX
Canada	S&P/TSX Equity Index
Chile	IPSA
Colombia	COLCAP
Denmark	KAX
Finland	OMX Helsinki
France	CAC 40
Germany	DAX
Greece	ASE
Hungary	BUDAPEST STOCK INDEX
Ireland	ISEQ
Italy	FTSE MIB
Lithuania	VILSE
Mexico	IPC
Netherland	AEX
New Zealand	S&P/NZX 50
Norway	OBX
Peru	S&P/BVL LIMA 25
Portugal	PSI 20
Romania	BET
South Africa	FTSE/JSE AFRICA ALL SHARE
Spain	IBEX
Sweden	OMX Stockholm 30
Switzerland	SMI
UK	FTSE 100
USA	S&P 500

Appendix B
Firm classification

Country	(1)	(2)	(3)	(4)
	N° Firms	<i>Family firm</i>	Percentage of: <i>Family firm & family CEO</i>	Average of: <i>Family board percentage within family firms</i>
Argentina	6	0.0	0.0	0.0
Australia	10	0.0	0.0	0.0
Austria	10	0.0	0.0	0.0
Belgium	10	0.0	0.0	0.0
Brazil	10	30.0	10.0	31.5
Bulgaria	10	20.0	0.0	25.4
Canada	10	0.0	0.0	0.0
Chile	10	50.0	10.0	29.3
Colombia	8	37.5	12.5	21.5
Denmark	10	20.0	10.0	45.0
Finland	10	30.0	0.0	36.9
France	10	10.0	0.0	21.4
Germany	10	0.0	0.0	0.0
Greece	10	60.0	60.0	35.9
Hungary	6	33.3	0.0	36.7
Ireland	6	0.0	0.0	0.0
Italy	10	10.0	10.0	30.8
Lithuania	10	10.0	10.0	33.3
Mexico	9	44.4	22.2	35.0
Netherlands	9	0.0	0.0	0.0
New Zealand	9	0.0	0.0	0.0
Norway	10	0.0	0.0	0.0
Peru	10	30.0	0.0	47.8
Portugal	10	30.0	20.0	24.3
Romania	2	0.0	0.0	0.0
Spain	10	20.0	10.0	30.3
South Africa	9	0.0	0.0	0.0
Sweden	10	0.0	0.0	0.0
Switzerland	10	10.0	10.0	33.3
UK	10	0.0	0.0	0.0
USA	10	10.0	10.0	22.2
Total	284	15.1	6.7	
Mean	9.2	14.7	6.3	32.6