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Public family firms and capital structure: A meta-analysis

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Abstract

Research Question/Issue: In this study, we examine the impact of family firm status on publicly listed firms' leverage ratios. Furthermore, we investigate the moderating role of a country's institutional setting, especially its shareholder and creditor rights, on this relationship.

Research Findings/Insights: Conducting a meta-analysis on 869 effect sizes from 613 studies, we find an overall slightly negative but significant relationship between family firm status and leverage. Our results reveal a large amount of heterogeneity and considerable mean effect size differences across the 48 countries included in the study. The results of our meta-regression analysis reveal significant moderating effects of shareholder and creditor rights on family firms' capital structure decisions. Whereas stronger shareholder rights have a positive impact on family firm leverage, stronger creditor rights have a negative impact.

Theoretical/Academic Implications: Our study combines the two dominating and competing views on family firm leverage. On the one hand, the overall lower leverage ratio of family firms confirms the risk-aversion view of family firms. On the other hand, control considerations also have a significant impact on leverage ratios, as family firms adjust their capital structure dependent on shareholder and creditor rights in their home country. Our study highlights the importance of the institutional setting on firms' financing patterns.

Practitioner/Policy Implications: The results suggest a significant impact of a country's institutional setting in general, and its strength on shareholder and creditor rights in particular, on family firms' capital structure decisions. Control considerations result in a strategic use of debt financing that ensures the owner family's dominant position in the firm and prevents potentially harmful conflicts with minority shareholders or creditors.

KEYWORDS

Corporate Governance, capital structure, family firms, leverage, meta-analysis

1 | INTRODUCTION

Corporate governance attributes such as ownership and board characteristics are important determinants of firms' capital structures (Berger, Ofek, & Yermack, 1997; Brailsford, Oliver, & Pua, 2002; Wen, Rwegasira, & Bilderbeek, 2002). Families are the most common shareholders around the world and analyzing the capital structure of family firms has gained increased interest in research (Michiels & Molly, 2017;

Motylska-Kuzma, 2017; Thiele, 2017). In the literature, there exist two competing views on the relative use of debt by family firms compared to other firm types. The first perspective highlights the risk aversion of family firms due to their owners' low wealth diversification (Anderson & Reeb, 2003) and argues that family firms avoid debt because of the accompanying increased bankruptcy risk (Mishra & McConaughy, 1999). The second perspective highlights the importance of family owners' control considerations for capital structure decisions. Following this argumentation, family firms prefer debt as a nondiluting financing strategy over the issuing of new equity (Croci, Doukas, & Gonenc, 2011). The empirical findings so far are inconclusive, and results supporting each view exist. The results also differ across countries. Lower leverage ratios have been found for family firms in Chile (Jara, Pinto-Gutiérrez, & Núñez, 2018), France (Benkraiem, Hamrouni, Miloudi, & Uyar, 2018; Latrous & Trabelsi, 2012; Margaritis & Psillaki, 2010), Germany (Ampenberger, Schmid, Achleitner, & Kaserer, 2013; Schmid, 2013), Saudi Arabia (Al-Ajmi, Abo Hussain, & Al-Saleh, 2009), and the United States (Mishra & McConaughy, 1999). In contrast, higher leverage ratios have been found for family firms in Australia (Setia-Atmaja, 2010; Setia-Atmaja, Tanewski, & Skully, 2009), Brazil (Kayo, Brunaldi, & Aldrighi, 2018), Canada (King & Santor, 2008), Egypt (ElBannan, 2017), Italy (Morresi & Naccarato, 2016), Poland (Jewartowski & Kałdoński, 2015), Thailand and Indonesia (Bunkanwanicha, Gupta, & Rokhim, 2008; Wiwattanakantang, 1999), the United States (Keasey, Martinez, & Pindado, 2015), and multi-country samples (Croci, Doukas, & Gonenc, 2011; Ellul, 2009).

In this study, we conduct a meta-analysis examining the relationship between family firm status and leverage ratio. Meta-analysis is a powerful tool to summarize the findings of a research field and to identify underlying moderators of a relationship of interest (Gonzalez-Mulé & Aguinis, 2018). Given the contradicting empirical findings and perspectives on family firm leverage, there is a need for a meta-analysis. We focus on publicly listed firms, which have a wider array of financing choices than private firms, are less credit constrained, and can adjust their capital structures at lower cost (Faulkender & Petersen, 2005; Myers, 2001). The capital structure choices of public firms are thus different from those of private firms.

Based on a sample of 869 effect sizes from 613 primary studies across 48 countries, our univariate meta-analysis reports an overall slightly negative relationship between public family firms and leverage. This result supports the view of the risk-averse family firm that eschews debt. However, in line with the literature, we find considerable differences across countries. To explore this heterogeneity, we investigate the moderating roles of country-level shareholder and creditor rights in a multivariate hierarchical meta-regression analysis. Our results show that control considerations matter and lead to a strategic use of debt, which guarantees the owner family a higher level of control. Specifically, stronger shareholder rights have a positive moderating impact on the relationship between family firms and leverage, whereas stronger creditor rights have a negative moderating effect. Post hoc analyses further show that the positive effect of shareholder rights on family firm leverage is especially driven by minority shareholders' rights in corporate governance. Another

analysis shows that the legal origin of a country seems not to have an impact on the relationship between family firms and leverage ratios.

Our study contributes to corporate governance, corporate finance, and family business research in multiple ways. Following initial works by Modigliani and Miller (1958), Myers (1977, 1984), and numerous other scholars, the investigation of firms' capital structure decisions is at the heart of both theoretical and empirical corporate finance research. Although a large number of empirical studies already exist, the findings on the determinants and consequences of firms' capital structure decisions are often inconclusive, which is why a meta-analysis such as ours can fill an important gap. Our meta-analysis on the capital structure of public family firms shows that these firms differ from nonfamily firms and that their capital structure is influenced by country-level shareholder and creditor rights. Hence, our study contributes to an important discussion in corporate governance and corporate finance research about how ownership types and differences in national corporate governance systems influence corporate financing and capital structure decisions (e.g., Brailsford et al., 2002; Boubakri & Ghouma, 2010; Godlewski, 2020; Shah, Shah, Smith, & Labianca, 2017). Such an aggregated form of evidence was previously lacking in capital structure research. Our study also contributes to the family business literature, where several meta-analyses already exist, especially with regard to firm performance. Whereas some of these studies investigate family firm performance in a general context (e.g., Hansen & Block, 2020; Hansen, Block, & Neuenkirch, 2020; O'Boyle, Pollack, & Rutherford, 2012; Taras, Memili, Wang, & Harms, 2018; Wagner, Block, Miller, Schwens, & Xi, 2015), others focus exclusively on private firms (Carney, Van Essen, Gedajlovic, & Heugens, 2015), publicly listed US firms (Van Essen, Carney, Gedajlovic, & Heugens, 2015), or publicly listed family firms in emerging markets (Duran, Van Essen, Heugens, Kostova, & Peng, 2019; Wang & Shailer, 2017). Further meta-analyses have been conducted to shed light on family firms' internationalization (Arregle, Duran, Hitt, & Van Essen, 2017), innovation (Duran, Kammerlander, Van Essen, & Zellweger, 2016), and corporate social responsibility (CSR) behavior (Canavati, 2018). Our study offers a unique contribution beyond these existing studies in that it is the only meta-analysis to date that focuses on family firms' financing behavior. Based on our findings, we suggest that differences in national corporate governance systems matter for family firm's financing behavior (Aguilera, Talaulicar, Chung, Jimenez, & Goel, 2015). In this sense, we follow the calls for further research by Ampenberger et al. (2013), Gómez-Mejía et al. (2014), and Michiels and Molly (2017), and highlight the importance of countries' institutional settings in family firms' financial decision making, especially concerning capital structure decisions. We identify shareholder and creditor rights as important moderators of the relationship between family firms and leverage ratios. These institutions matter because they constitute the framework and context for owner families' control considerations. Furthermore, our results enhance the understanding of potential principal–principal conflicts in family firms concerning financing decisions. Most research on principal–principal conflicts in family firms so far has been conducted regarding firm performance (Madison, Holt, Kellermanns, &

Ranft, 2016). Our study suggests that these principal–principal conflicts do not only impact firm performance but also structural characteristics such as capital structure. Finally, our results show that the risk-aversion (e.g., Mishra & McConaughy, 1999) and control-consideration perspectives (e.g., Croci, Doukas, & Gonenc, 2011) that have been suggested for explaining family firm leverage are not mutually exclusive but that their explanatory power depends on the national institutional setting.

2 | THEORY AND HYPOTHESES

2.1 | Family firms and leverage ratios

From an agency theory perspective, the optimal leverage ratio is an interplay of agency conflicts between owners, managers, and creditors. Yet this view provides arguments for both higher and lower leverage ratios of family firms compared with nonfamily firms. As the relationship between family firm status and leverage ratio is theoretically unclear and an open research question, we formulate competing hypotheses that illustrate the different conceptual arguments.

Debt (and the resulting interest and principal payments) is a powerful tool to discipline managers and to prevent self-serving actions and empire building (Harris & Raviv, 1991; Jensen, 1986; Stulz, 1990). In family firms, agency costs from owner–manager conflicts are typically lower than in nonfamily firms (Jensen & Meckling, 1976), as family members often hold management positions and thereby ensure the alignment of interests between the management and the firms' owners (Fama & Jensen, 1983). Furthermore, family owners have a strong incentive to monitor the firm's actions because of their high wealth concentration in the firm even if they are not actively involved in the management (Grossman & Hart, 1980; Shleifer & Vishny, 1997). The lower agency costs result in a lower need for family firms to use debt and predict lower leverage ratios in family firms compared with nonfamily firms. Another reason for lower leverage ratios among family firms is rooted in behavioral agency theory (Wiseman & Gomez-Mejia, 1998). In general, the firm owners' diversification level is positively related to the risk level of corporate investments (Faccio, Marchica, & Mura, 2011; Lyandres, Marchica, Michaely, & Mura, 2019). Family owners are comparably undiversified shareholders (Anderson & Reeb, 2003) and attach great value to the preservation of socioemotional wealth (SEW; Gómez-Mejía et al., 2007). A higher leverage ratio, however, increases bankruptcy and thereby firm-specific risk, which in turn threatens families' SEW. Family owners' fear of loss in SEW results in more risk-averse strategic decisions, such as lower research and development (R&D) spending (Chrisman & Patel, 2012) and lower leverage ratios (Jara, Pinto-Gutiérrez, & Núñez, 2018; Mishra & McConaughy, 1999). According to Strebulaev and Yang (2013), family firms are also more likely to be even zero leveraged, meaning that these firms do not use any debt at all to finance their operations. Ampenberger et al. (2013), Baek, Cho, and Fazio (2016), and González, Guzmán, Pombo, and Trujillo (2013) observed that lower leverage ratios resulting from higher risk aversion are especially pronounced

in family firms in which family members serve as managers or directors. These two lines of arguments lead to the following hypothesis:

Hypothesis 1a. Family firm status has a negative effect on firms' leverage ratios.

Capital structure decisions are also influenced by the agency conflict between majority and minority shareholders. Family owners—being dominant owners—have the power to determine the strategic direction of the firm because they hold a significant amount of shares and often appoint family members as chief executive officers (CEOs). Such concentrated power allows the excessive consumption of private benefits of control at the cost of minority shareholders (Shleifer & Vishny, 1997). These expropriation activities are especially severe in the absence of other blockholders with the power to monitor families' expropriation behaviors (Jara-Bertin, López-Iturriaga, & López-de-Foronda, 2008; Sacristán-Navarro, Cabeza-García, & Gómez-Ansón, 2015; Santos, Moreira, & Vieira, 2014). Owner families typically have a long investment horizon with strong transgenerational intentions and are unwilling to give up control of the firm. From this perspective, using debt as a financing instrument can be a strategic means to maintain control over the firm. Whereas issuing new equity shares dilutes the control of existing shareholders, debt is a non-diluting financing strategy and strengthens the position of owner–managers, as they have a higher disposition towards financial resources (Stulz, 1988). Likewise, a higher leverage ratio decreases the risk of hostile takeovers (Harris & Raviv, 1988; Stulz, 1988). In this sense, Croci et al. (2011), Ellul (2009), and King and Santor (2008) observed higher leverage ratios and a strong aversion of family firms to equity financing in their studies. Moreover, they find that family firms implement higher leverage ratios if their voting power is not sufficient on its own and that they use leverage as a substitute for other control-enhancing mechanisms such as cross-shareholdings or pyramids (Ellul, 2009). Having control-enhancing mechanisms in place, equity financing may furthermore become less attractive to family firms, as new shareholders are aware of potential expropriation activities and require a higher return on their investments, making equity financing more expensive (Attig, Guedhami, & Mishra, 2008; Boubakri, Guedhami, & Mishra, 2010). The control consideration view predicts a pecking order (Myers, 1984; Myers & Majluf, 1984) of family firms in the sense that they prefer debt over equity if retained earnings are not sufficient to finance new investments (Keasey et al., 2015; Poutziouris, 2001). The following hypothesis applies:

Hypothesis 1b. Family firm status has a positive effect on firms' leverage ratios.

2.2 | Country-level shareholder and creditor rights as moderating factors

Previous studies highlight the importance of the institutional environment as a moderating factor for firms' capital structure decisions

(Antoniou et al., 2008; Beck, Demirgüç-Kunt, & Maksimovic, 2008; De Jong, Kabir, & Nguyen, 2008; Fan, Titman, & Twite, 2012; Öztekin, 2015). Changing the capital structure reallocates the power between controlling and minority shareholders and influences the firm's investment policy (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000). In particular, shareholder and creditor rights and their enforcement by legal authorities determine the scope of possible strategic actions for firms' controlling shareholders such as owner families. Thus, from a control consideration perspective, the strength of shareholder and creditor rights extends or limits the power of dominant family shareholders relative to other shareholders and creditors. Hence, our two moderating hypotheses are an extension of the control consideration view described in Hypothesis 1b.

2.2.1 | The strength of shareholder rights as a moderating factor

Strong shareholder rights increase the power of minority shareholders in return for their capital provision and are intended to limit the expropriation activities of dominant shareholders. Shareholder rights include elements such as disclosure and accounting rules, the rights to vote and to participate in shareholder meetings, or the rights to call extraordinary shareholder meetings and make legal claims against directors in case of expropriation (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997; La Porta et al, 2000). Furthermore, they inhibit corporate self-dealing by directors and managers (Djankov, La Porta, Lopez-de-Silanes, & Shleifer, 2008). Countries with strong shareholder protection typically have larger and more active equity markets, as outside investors are more willing to provide capital to firms (La Porta et al., 1997). If countries lack such rules, dominant shareholders have the opportunity to install corporate governance structures that secure their interests (Shleifer & Vishny, 1997). Examples are control-enhancing strategies such as pyramids, dual-class shares, or cross-holdings, which often result in a strong separation of voting and cash flow rights and in the extraction of private benefits of control at the expense of minority shareholders (Masulis, Wang, & Xie, 2009). Family-controlled firms have been shown to use these mechanisms intensively, especially in countries with weak legal protection (Claessens, Djankov, & Lang, 2000). The availability of such control-enhancing strategies influences the capital structure decisions of family firms and increases the attractiveness of equity over debt financing, because family firms are able to raise equity without diluting the owner families' control. This argument is in line with firm level evidence from Hagelin, Holmén, and Pramborg (2006) and King and Santor (2008), who show that family firms use leverage and dual-class shares as substitutes. If country laws prohibit such control-enhancing mechanisms, family firms are more likely to rely on debt financing as their family owners do not want to dilute their control. Moreover, strong shareholder rights increase the potential for conflicts with minority shareholders and the contestability of the family owners' controlling position. Accordingly, family firms will adapt to higher leverage ratios in these countries. Nonfamily firms, on the other hand, typically have a dispersed ownership structure or have blockholders with fewer control considerations. Hence, their capital structure is less affected by the strength of shareholder rights. We formulate the following moderation hypothesis:

Hypothesis 2. Strong country-level shareholder rights positively moderate the relationship between family firm status and leverage ratios.

2.2.2 | The strength of creditor rights as a moderating factor

Strong creditor rights, on the other hand, increase the power of lenders—banks as well as bondholders. Creditor rights include regulations on debt enforcement, collateral, and the role and rights of lenders in the case of debtors' liquidation or reorganization (Djankov, McLiesh, & Shleifer, 2007; La Porta et al., 1997). In countries with weak creditor rights, firm owners could invest debt money in overly risky projects and capture the gains in case of success, while not bearing the costs in the case of failure (Jensen & Meckling, 1976). Fearing the risk of being expropriated, creditors require consequently higher collaterals or premiums (Boubakri & Ghouma, 2010; Gao, He, Li, & Qu, 2020). In countries with strong creditor rights, creditors have more influence on the usage of provided credits, more monitoring possibilities, and stronger rights in the case of default. Stronger creditor rights increase lenders' willingness to provide capital and incentivize managers to refrain from investments that increase bankruptcy risk (Qian & Strahan, 2007; Rajan & Zingales, 1995). Moreover, the information available to creditors before financing is an important determinant in lending contracts because it mitigates credit risks and enhances credit to the private sector on a country level (Jappelli & Pagano, 2002). Two studies suggest that the strength of creditor rights influences the capital structure of family firms. Ampenberger et al. (2013) observed lower leverage ratios for family firms in Germany and argue that tight creditor monitoring in the German bank-based market prevents family firms from using high proportions of debt. Likewise, Schmid (2013) showed in a multicountry study that family firms increase leverage ratios when creditor monitoring is weak but avoid debt in countries where creditors' possibilities to exert influence are high. We posit that the use of debt as a substitute for the above-described equity-related control-enhancing mechanisms becomes less attractive for family firms in countries with strong creditor rights, as they would replace control-threatening minority shareholders with strong creditors. By taking up high levels of debt, they would have to deal with powerful and well-informed creditors and give up control over their firm, which threatens their SEW. Nonfamily firms, whose owners do not have these control and SEW considerations, are to a lower degree affected by this logic and the strength of creditor rights. Accordingly, we formulate the following moderation hypothesis:

Hypothesis 3. Strong country-level creditor rights negatively moderate the relationship between family firm status and leverage ratios.

3 | METHODOLOGY

3.1 | Effect size measure and sample

The focus of this study is to examine the capital structure of public family firms compared with other types of firms in a meta-analysis. Meta-analysis allows us to summarize the empirical findings of previous studies and to identify underlying moderators of the relationship investigated (Gonzalez-Mulé & Aguinis, 2018). We thus searched for empirical studies that investigate public firms and report a relationship between family firms and leverage. Our effect size measure is the Pearson correlation coefficient (r), which is commonly used in management and social sciences meta-analyses (Geyskens, Krishnan, Steenkamp, & Cunha, 2009). Accordingly, studies had to report either correlation matrices or statistics that can be converted to r, such as standardized mean differences or t test statistics. We converted these statistics following Lipsey and Wilson (2001). We then transformed all effect sizes by Fisher's z transformation (Fisher, 1921) to account for the skewness of the raw correlations (Hedges & Olkin, 1985). Moreover, the transformation has the favorable characteristic that the inverse variance weight needed for the analysis depends only on the effect size and is thus easy to derive (Lipsey & Wilson, 2001).

We identified suitable primary studies for our sample by following different search strategies. First, we explored the electronic databases Google Scholar, EBSCOhost, JSTOR, SSRN, and China National Knowledge Infrastructure (CNKI) using different search term combinations concerning family firms and leverage.[1] Second, we tracked published meta-analyses on other family firm topics such as performance (Van Essen et al., 2015; Wang & Shailer, 2017), corporate social performance (Canavati, 2018), innovation (Duran et al., 2016), or internationalization (Arregle et al., 2017). Finally, if we identified suitable studies that missed the effect sizes needed, we contacted the author teams and asked them to send us the missing effect sizes. We made no restrictions on the type of study and included published articles as well as working papers, doctoral theses, and student theses. Moreover, we included not only studies written in English but also studies written in Chinese, French, German, Italian, Polish, and Spanish.[2] Both strategies, including unpublished and non-English studies, address the potential risk of publication bias (Rosenthal, 1979; Stanley, 2005; Sutton, 2009). In the case of multiple effect sizes in a study, for example, different leverage measures or different family firm variables, we included all of them. Including all effect sizes leads to better results and prevents a serious loss of information compared with selecting only one effect size or calculating average values (Bijmolt & Pieters, 2001). However, we controlled for dependent effect sizes from the same study by adopting hierarchical models as described later. The search procedure resulted in a sample of 665 studies with 949 effect sizes.

We then controlled for multiple studies in our sample based on the same dataset. We followed the recommendations of Wood (2008) to identify duplicates and excluded 29 studies (47 effect sizes) from further analysis. We furthermore conducted an outlier analysis to prevent biased results due to influential outlier observations by calculating DFBETA values. DFBETA values reflect the influence of each observation on the overall mean effect size (Viechtbauer & Cheung, 2010). We applied the size-adjusted cutoff value, which is calculated by $2/\sqrt{n}$ (Kutner, Nachtsheim, Neter, & Li, 2005), and we excluded 33 effect size observations that exceeded this critical value. The final sample contains 869 effect sizes from 613 studies.[3]

3.2 | Methods used

We apply two types of meta-analytic techniques: univariate Hedges and Olkin-type meta-analysis (HOMA: Hedges & Olkin, 1985) and multivariate meta-regression analysis (MRA: Lipsey & Wilson, 2001).

We use HOMA to identify the overall relation between family firms and leverage for the whole sample and for different subgroups. When conducting a meta-analysis, one must choose between two different models: fixed and random effects (Borenstein, Hedges, Higgins, & Rothstein, 2010; Field, 2001). We opt for a random-effects model because it allows for variation in the true effect size from study to study, which is more plausible in our case compared with a fixed-effects model, which assumes a common true effect size across the included studies (Borenstein, Hedges, Higgins, & Rothstein, 2010). We use the inverse variance (w) to weight the effect sizes (Hedges & Olkin, 1985) and use the sum of these weights to calculate the standard error, the z statistic, and the confidence interval of the mean effect size (Lipsey & Wilson, 2001). We use the restricted maximum-likelihood (REML) estimator for the estimation of the between-study variance owing to its efficiency and unbiasedness (Viechtbauer, 2005). We further account for the dependency of effect sizes from the same study by a multilevel structure (Konstantopoulos, 2011; Raudenbush & Bryk, 2002). Although Bijmolt and Pieters (2001) recommended using the complete set of observations from each study, they caution that ignoring the dependency of these observations may inflate the results. Multiple observations in our case could result from the use of various family firm or leverage variables. We thus control for these dependencies by introducing additional study-level random effects.

Second, we use MRA to explore the moderating effects of the study- and country-level variables on the relationship between family firms and capital structure. MRA allows us to test our moderator hypotheses in a multivariate weighted least squares (WLS) regression. The dependent variable in the regression is the z transformed focal effect between family firms and leverage and is regressed on a set of independent and control variables. Again, we weight all observations by their inverse variance (Lipsey & Wilson, 2001). We follow Gonzalez-Mulé and Aguinis's (2018) best practice recommendations for meta-regressions in management research. In MRA, one has again to choose between two types of models: fixed and mixed effects. Mixed-effects models have the same assumptions as random-effects models in HOMA but also incorporate fixed factors in the form of the moderator variables (Gonzalez-Mulé & Aguinis, 2018). We choose the mixed-effects model and the REML estimator for the estimation of residual heterogeneity. Again, we apply a multilevel model and add study-level random effects, resulting in a three-level meta-regression

(Van den Noortgate, López-López, Marín-Martínez, & Sánchez-Meca, 2013). We conducted our meta-analyses in R and used the metafor package (Viechtbauer, 2010).

3.3 | Moderator variables

We include several variables in the analyses to investigate moderating effects of the relationship between family firms and leverage. Most importantly, we include variables that reflect a country's level of shareholder and creditor rights to test our hypotheses. In addition, we control for further country-specific characteristics. We also control for methodological aspects in terms of variable constructions and study characteristics. Appendix A lists all variables and data sources.

3.3.1 | Country-level shareholder and creditor rights

We obtained the level of shareholder and creditor rights from the World Bank's Doing Business database. To measure *Shareholder rights*, we use the "Protecting Minority Investors" index, which is based on the methodology of Djankov et al. (2008). The index is calculated for each country as the mean of six different indicators on disclosure requirements, director liability, the ease of shareholder suits, the extent of shareholder rights, protection mechanisms from entrenchment, and corporate transparency. It ranges from 0 to 10, with 10 as the highest level. Second, we use the "Getting Credit" score to measure *Creditor rights*. This index, based on Djankov et al. (2007), incorporates a country's strength of the legal rights of borrowers and lenders in terms of collateral and bankruptcy laws as well as the scope and accessibility of credit information. It also ranges from 0 to 10, with 10 being the highest value.

3.3.2 | Country-level control variables

We include further country-level variables to control for each country's law system, financial system, and economic development. First, we include the "Enforcing Contracts" index from the World Bank's Doing Business database (*Enforcing contracts index*). The index incorporates the efficiency of resolving commercial disputes and the quality of judicial processes. Therefore, it does not reflect the written law of a country itself but rather its actual enforcement by the law system.

Next, we control for the financial system of a country, which can be either bank based or market based. The type of financial system does not per se affect a firm's access to external financing (Demirgüc-Kunt & Maksimovic, 2002) but rather the choice between public financing via stocks and bonds or private financing via bank loans than the level of leverage (Rajan & Zingales, 1995). However, in the case of family firms, the type of financial system might well explain differences compared with nonfamily firms across countries. Family firms often build up relational capital with debt providers, which provides

them better access to debt and prevents credit restrictions, especially when credit markets are constrained (Crespí & Martín-Oliver, 2015; Cucculelli, Peruzzi, & Zazzaro, 2019; D'Aurizio, Oliviero, & Romano, 2015). To operationalize the financial system, we adopt the financial structure index (*Financial structure index*) by Demirgüç-Kunt and Levine (1999). The index takes into consideration the size, activity, and efficiency of a country's capital market relative to its banking sector. We gathered all necessary ratios from the World Bank's World Development Indicator database and calculated the financial structure index for each country with the mean ratios from 1996 to 2016. Positive values indicate a more market-based financial system, whereas negative values indicate a more bank-based financial system.

Finally, we control for the overall economic development of a country in terms of gross domestic product (GDP) per capita. Again, we use the mean values from 1996 to 2016 and transform them by taking their natural logarithm (*Ln GDP/capita*).

3.3.3 | Family firm variables

In the academic literature, there is a wide array of family firm definitions (for an overview, see Diaz-Moriana, Hogan, Clinton, & Brophy, 2019; Mazzi, 2011). Typically, these definitions use ownership, management, and governance attributes alone or in combination. We use six different dummy variables to reflect the different definition types used in the primary studies. We set *Family ownership percent* equal to 1 if studies use family ownership as a continuous variable and *Family ownership dummy* equal to 1 if studies use an ownership dummy to measure family influence. Likewise, we set *Family management* and *Family supervisory board* equal to 1 if studies examine the effect of family members' participation in the management or supervisory boards. For combined definitions, we distinguish between two possible variants. *Strong family influence* is equal to 1 if studies require at least two attributes to be prevalent (e.g., ownership and management), whereas *Undefined family influence* requires only one of the three various influence types (e.g., ownership or management).

In addition to the family firm definition used, we also control for generational stage. *Founder generation* is a dummy variable equal to 1 if the family firm variable in the primary study controls for an active founder. *Later generation* is a dummy variable equal to 1 if the family influence is realized through a later generation. If both variables are 0, the study does not control for the generational stage (*No generational control*).

3.3.4 | Leverage ratio variables

We identified four alternatives that are commonly used by empirical studies to calculate the leverage ratio and that differ in the numerators and denominators used. Regarding the denominator, researchers divide the level of debt either by firms' total assets or by firms' equity. Regarding the numerator, most studies use total debt, but some also use only long-term debt to calculate the leverage ratio. Hence, *Total*

debt/assets, Total debt/equity, Long-term debt/assets, or *Long-term debt/equity* are equal to 1 if a study uses the respective measure to operationalize leverage.

3.3.5 | Sample and study control variables

We include several variables that characterize the primary studies' samples and the studies themselves. First, we control for firm size. In most countries, the number of firms listed on the stock market is rather small. As a consequence, most studies use the complete sample of firms with available data (*All listed firms*). Some studies, however, concentrate only on the largest firms listed or on comparably small firms. Thus, we include the dummy variables *Large cap* and *Small cap*, which are equal to 1 if a study concentrates only on large-cap or small-cap firms, respectively.

Further variables are used to control for study characteristics. With regard to the type of article, we distinguish between *Journal article*, *Working paper*, *PhD thesis*, and *Student thesis*. Furthermore, we coded the median year of the sample period (*Median year*) and the data structure of the study (*Panel dataset*, equal to 1 for a panel data set and 0 for a cross-sectional data set).

4 | RESULTS

4.1 | HOMA results

Table 1 reports the results of the HOMA for the complete sample and the methodological moderators. The findings show that, on average, listed family firms have a lower leverage ratio than listed nonfamily firms ($r = -0.017$, $p \leq 0.001$). The result is based on 869 effect sizes

TABLE 1 HOMA results (H1)

	k	n	firms	r	SE	95% CI		Q		I²	z-test
Overall effect (H1)	869	613	436,886	−0.017 ***	0.003	−0.023; −0.011		1,911.01	(0.00)	56.67%	
Family variables											
Family ownership percent	210	186	86,568	−0.029 ***	0.006	−0.040; −0.018		369.90	(0.00)	44.55%	*Ref. cat.*
Family ownership dummy	232	207	149,824	0.002	0.004	−0.007; 0.010		454.52	(0.00)	45.25%	z = 4.33***
Family management	121	96	52,985	−0.024 ***	0.007	−0.038; −0.009		229.81	(0.00)	48.03%	z = 0.53
Family supervisory board	74	64	21,932	0.006	0.010	−0.013; 0.025		118.76	(0.00)	37.48%	z = 3.01***
Strong family influence	121	102	60,865	−0.017 **	0.007	−0.031; −0.003		253.80	(0.00)	54.15%	z = 1.29
Undefined family influence	111	105	64,712	−0.047 ***	0.008	−0.062; −0.031		300.27	(0.00)	65.83%	z = 1.88*
Family firm generation											
No generational control	810	599	407,195	−0.017 ***	0.003	−0.023; −0.011		1,779.57	(0.00)	56.32%	*Ref. cat.*
Founder generation	36	32	16,207	−0.036 ***	0.011	−0.058; −0.014		51.70	(0.03)	34.61%	z = 1.61
Later generation	23	17	13,484	−0.018	0.021	−0.058; 0.022		70.75	(0.00)	69.97%	z = 0.04
Financial leverage											
Total debt/assets	523	381	262,403	−0.012 ***	0.004	−0.020; −0.005		1,246.76	(0.00)	59.57%	*Ref. cat.*
Total debt/equity	161	102	73,914	−0.016**	0.007	−0.029; −0.003		273.32	(0.00)	46.16%	z = 0.43
Long-term debt/assets	163	129	94,565	−0.034***	0.006	−0.046; −0.022		313.39	(0.00)	54.67%	z = 2.89***
Long-term debt/equity	22	17	6,004	−0.003	0.018	−0.038; 0.031		28.69	(0.12)	30.85%	z = 0.50
Firm size											
All listed firms	733	508	405,729	−0.013***	0.003	−0.019; −0.007		1,647.69	(0.00)	56.35%	*Ref. cat.*
Small cap	10	7	2,160	−0.060*	0.035	−0.129; 0.009		13.12	(0.16)	43.35%	z = 1.33
Large cap	126	98	28,997	−0.044***	0.009	−0.062; −0.026		203.26	(0.00)	45.82%	z = 3.22***
Article type											
Journal article	643	471	284,810	−0.014***	0.004	−0.021; −0.007		1,267.14	(0.00)	89.38%	*Ref. cat.*
Working paper	109	74	90,824	−0.030***	0.007	−0.044; −0.016		306.65	(0.00)	72.53%	z = 2.01**
Ph.D. thesis	64	32	44,312	−0.018	0.012	−0.041; 0.005		207.80	(0.00)	54.98%	z = 0.32
Student thesis	53	36	16,940	−0.031**	0.012	−0.056; −0.007		74.06	(0.02)	39.73%	z = 1.34

Note: This table reports the results of the univariate Hedges and Olkin type meta-analysis (HOMA) on family firm leverage. All variables are described in Appendix A. *k* denotes the number of effect sizes. *n* denotes the number of studies. *r* denotes the mean effect size. *SE* denotes the standard error. *95% CI* denotes the 95% confidence interval. *Q* denotes the amount of residual heterogeneity and its significance (p-value in parentheses). *I²* denotes the proportion of between-study variance to total variance. *z-test* denotes the significance test for mean effect size differences between two groups. Mean effect sizes are calculated with additional random effects corresponding to the study level.
*p < .10. **p < .05. ***p < .01.

and 436,886 included firms from 613 unique primary studies. Furthermore, we identify a high amount of effect size heterogeneity in terms of residual heterogeneity (Q), indicating the likely presence of moderator effects (Gonzalez-Mulé and Aguinis, 2018). For the proportion of between-study to total variation (I^2), Higgins and Thompson (2002) suggested a threshold of 50% as an indicator of substantial heterogeneity. According to our results, more than 56% of the total heterogeneity can be attributed to between-study variation. The heterogeneity in terms of test statistics is graphically supported by the funnel plot in Figure 1, which shows that there is also a substantial amount of positive effect sizes in our sample. In total, about 57% of all effect sizes show negative values, whereas about 41% are positive and 1.6% are equal to zero.

Concerning the family firm definition used, we find strong negative effects for *Family ownership percent* ($r = -0.029$, $p \leq 0.001$), *Family management* ($r = -0.024$, $p \leq 0.01$), and *Undefined family influence* ($r = -0.047$, $p \leq 0.001$). Furthermore, we find only a slightly negative effect for *Strong family influence* ($r = -0.017$, $p = 0.02$) and no effects for *Family ownership dummy* ($r = 0.002$, $p = 0.69$) and *Family supervisory board* ($r = 0.006$, $p = 0.54$). The mean effect size differences between the reference group *Family ownership percent* and the variables *Family ownership dummy*, *Family supervisory board*, and *Strong family influence* are statistically significant. Founder firms have a smaller mean effect size than later-generation family firms, but this difference is insignificant. Dividing the sample based on the leverage definitions used in the primary studies, we find negative mean effect sizes for all subsamples. The mean effect size is the lowest for *Long-term debt/assets* ($r = -0.034$, $p \leq 0.001$) and the highest for *Long-term debt/equity* ($r = -0.003$, $p = 0.84$). Moreover, we divided our sample

by firm size. Samples that investigate only the largest ($r = -0.044$, $p \leq 0.001$) or smallest public firms ($r = -0.060$, $p = 0.09$) show smaller effect sizes than mixed samples ($r = -0.013$, $p \leq 0.001$). However, only the difference between *All listed firms* and *Large cap* is statistically significant. Finally, we split up the sample according to the publication type of the primary studies. In total, around 75% of effect sizes and primary studies stem from journal articles. The mean effect size of the category *Journal article* ($r = -0.014$, $p \leq 0.001$) is higher than for all other publication types, but only the difference to the mean effect size of the category *Working paper* ($r = -0.030$, $p \leq 0.001$) is statistically significant ($p = 0.04$).

In Table 2, we perform an analysis for each country separately to explore the differences between the included countries. We were able to analyze 48 different countries from all continents. Furthermore, 64 primary studies observe multiple countries in their study samples. We find significant negative mean effect sizes for Bangladesh, France, Germany, Hong Kong, Japan, Jordan, Malaysia, Norway, Peru, South Korea, Sweden, the United Kingdom, the United States, and Vietnam. On the other hand, the mean effect sizes are positive and significant for Brazil, Kuwait, Pakistan, Poland, Sri Lanka, Taiwan, and Turkey. In these countries, family firms have on average higher leverage ratios than nonfamily firms. For all other countries and for samples based on multiple countries, we do not find statistically significant effects.

4.2 | Meta-regression results

In the MRA, we test our hypotheses on the impact of shareholder and creditor rights on the leverage ratio of family firms. In this analysis, we
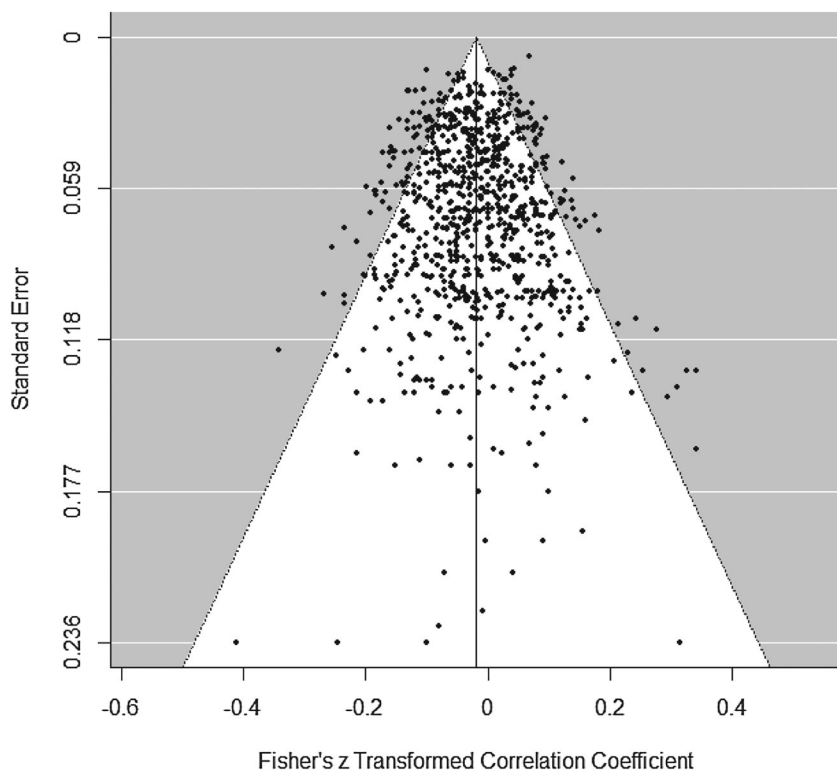

FIGURE 1 Funnel plot
Note: This figure shows the funnel plot of z-transformed effect sizes. The white area represents the 95% pseudo confidence interval

TABLE 2 HOMA Country-Specific Results

	k	n	firms	r	SE	95% CI	Q		I²
Australia	7	5	3,609	0.017	0.029	−0.040; 0.073	9.08	(0.17)	52.55%
Bangladesh	11	9	1,025	−0.105***	0.032	−0.167; −0.042	5.31	(0.87)	0.00%
Belgium	3	2	401	−0.098	0.063	−0.221; 0.025	2.73	(0.25)	28.85%
Brazil	19	12	5,442	0.030**	0.014	0.003; 0.057	13.30	(0.77)	0.00%
Canada	12	11	4,120	0.023	0.017	−0.010; 0.055	11.03	(0.44)	5.98%
Chile	7	6	1,046	−0.026	0.037	−0.098; 0.046	8.01	(0.24)	26.92%
China	16	11	12,115	−0.019	0.027	−0.072; 0.034	73.80	(0.00)	82.44%
Colombia	3	2	214	−0.011	0.070	−0.148; 0.126	0.24	(0.89)	0.00%
Cyprus	1	1	101	0.080	0.101	−0.118; 0.278			
Egypt	1	1	154	0.026	0.081	−0.133; 0.186			
France	21	18	3,923	−0.045***	0.018	−0.077; −0.014	18.95	(0.53)	1.14%
Germany	23	16	6,304	−0.053***	0.016	−0.084; −0.021	30.39	(0.11)	23.80%
Ghana	1	1	23	−0.008	0.224	−0.447; 0.430			
Greece	6	6	1,394	0.003	0.027	−0.051; 0.056	4.36	(0.50)	0.56%
Hong Kong	23	20	7,537	−0.024*	0.014	−0.052; 0.003	30.62	(0.10)	28.03%
India	30	25	12,849	0.004	0.017	−0.030; 0.038	64.05	(0.00)	61.79%
Indonesia	24	20	5,622	−0.009	0.017	−0.042; 0.024	25.73	(0.31)	24.15%
Iran	5	5	593	−0.017	0.045	−0.106; 0.071	3.36	(0.50)	12.24%
Italy	52	29	7,941	−0.018	0.016	−0.048; 0.013	55.77	(0.30)	28.04%
Japan	27	9	26,155	−0.068***	0.014	−0.095; −0.041	52.97	(0.00)	53.41%
Jordan	18	14	2,010	−0.051**	0.023	−0.095; −0.006	20.95	(0.23)	0.00%
Kuwait	10	6	1,130	0.050*	0.030	−0.009; 0.109	4.90	(0.84)	0.00%
Malaysia	49	42	15,994	−0.023**	0.010	−0.043; −0.002	58.32	(0.15)	28.83%
Mexico	12	9	1,059	−0.047	0.031	−0.109; 0.014	7.46	(0.76)	0.00%
Morocco	3	3	128	0.086	0.092	−0.094; 0.266	0.30	(0.86)	0.00%
Netherlands	5	3	489	−0.075	0.046	−0.165; 0.015	1.39	(0.85)	0.00%
Norway	3	3	214	−0.190***	0.070	−0.327; −0.053	1.47	(0.48)	0.00%
Oman	1	1	68	0.091	0.124	−0.152; 0.334			
Pakistan	28	20	4,151	0.047**	0.020	0.008; 0.086	29.89	(0.32)	21.39%
Peru	5	1	295	−0.108*	0.060	−0.226; 0.009	0.04	(1.00)	0.00%
Philippines	1	1	54	0.079	0.140	−0.196; 0.353			
Poland	16	7	3,287	0.045*	0.024	−0.001; 0.091	11.46	(0.72)	21.09%
Portugal	5	4	309	0.068	0.058	−0.046; 0.183	0.06	(1.00)	0.00%
Saudi Arabia	14	9	1,290	−0.025	0.028	−0.080; 0.031	13.02	(0.45)	0.00%
Singapore	3	2	443	−0.059	0.048	−0.153; 0.035	0.02	(0.99)	0.00%
South Korea	17	15	12,905	−0.095***	0.016	−0.126; −0.064	26.16	(0.05)	49.63%
Spain	32	18	3,176	0.014	0.022	−0.029; 0.056	29.12	(0.56)	13.54%
Sri Lanka	1	1	210	0.177**	0.070	0.041; 0.313			
Sweden	16	10	2,992	−0.052*	0.030	−0.111; 0.006	21.16	(0.13)	44.43%
Switzerland	3	3	481	−0.069	0.046	−0.159; 0.021	1.97	(0.37)	0.00%
Taiwan	87	59	65,850	0.019***	0.006	0.007; 0.030	127.03	(0.00)	35.39%
Thailand	12	9	4,292	−0.019	0.017	−0.051; 0.014	9.17	(0.61)	6.83%
Tunisia	5	5	174	0.011	0.079	−0.145; 0.166	3.50	(0.48)	0.00%
Turkey	25	16	4,076	0.038**	0.016	0.007; 0.070	10.60	(0.99)	0.00%
UAE	1	1	40	−0.110	0.164	−0.433; 0.212			
UK	9	6	1,851	−0.052*	0.028	−0.107; 0.003	9.09	(0.33)	19.62%

(Continues)

TABLE 2 (Continued)

	k	n	firms	r	SE	95% CI	Q		I²
United States	112	78	85,495	−0.058***	0.007	−0.072; −0.045	287.02	(0.00)	63.43%
Vietnam	1	1	655	−0.090**	0.039	−0.167; −0.013			
Multiple	83	64	123,200	−0.003	0.007	−0.016; 0.010	310.52	(0.00)	70.57%

Note: This table reports the HOMA results on family firm leverage for each of the included countries. *k* denotes the number of effect sizes. *n* denotes the number of studies. *r* denotes the mean effect size. *SE* denotes the standard error. *95% CI* denotes the 95% confidence interval. *Q* denotes the amount of residual heterogeneity and its significance (p-value in parentheses). *I²* denotes the proportion of between-study variance to total variance. Mean effect sizes are calculated with additional random effects corresponding to the study level.
*p < .10. **p < .05. ***p < .01.

exclude the observations from multicountry samples because we are not able to merge country-level variables with these observations. Table 3 reports the values of the country-level variables used in the regression for each country, and Table 4 reports the correlation coefficients between these variables and the effect sizes. The effect size measure, which reports the relationship between family firms and leverage, is positively correlated with shareholder protection and negatively correlated with creditor rights and the three country-level control variables. With one exception, all country-level variables are positively correlated with each other. The variance inflation factor (VIF) values indicate that we do not face multicollinearity issues in our model.

Table 5 reports the results of the hierarchical MRA. In Model 1, we test the regression model without *Shareholder rights* and *Creditor rights* and include only country-level and methodological control variables. Within the group of country-level control variables, *Financial structure index* has a negative and slightly significant effect on family firm leverage (β = −0.004, p = 0.08), whereas the level of *Contract enforcement* (β = −0.001, p = 0.75) and *Ln GDP/capita* (β = −0.006, p = 0.12) do not show significant effects. With regard to the family firm definition used, *Family ownership dummy* (β = 0.028, p ≤ 0.001) and *Family supervisory board* (β = 0.025, p = 0.02) show positive and significant effects as compared with the reference category *Family ownership percent*. Furthermore, *Later generation* has a positive and significant effect on family firm leverage (β = 0.026, p = 0.04). We do not find any significant effects regarding the measurement of leverage in the primary studies. Both firm size variables, *Small cap* and *Large cap*, show negative effects (only slightly significant for *Large cap*). For the type of study, working papers report on average lower effect sizes than journal articles. We do not find any significant effects for the variables describing sample characteristics.

In Model 2 and Model 3, we add *Shareholder rights* and *Creditor rights* to test our moderation hypotheses. As predicted in Hypothesis 2, the level of *Shareholder rights* has a positive and significant effect on family firm leverage (β = 0.012, p = 0.002). The effect of *Creditor rights* on family firm leverage, on the other hand, is negative as predicted in Hypothesis 3 (β = −0.006, p = 0.02). Both effects remain significant in the full model when testing the effect of both variables simultaneously (Model 4). Therefore, we find support for both Hypotheses 2 and 3. However, the effect of shareholder rights on family firm leverage appears to be predominant owing to its larger

regression coefficient. Concerning the other country variables, we do not find any consistent moderating effects for the relationship between family firms and financial leverage. The control variables related to family firm definitions, measurement of leverage ratio, and study characteristics remain largely unchanged compared to the base model.

4.3 | Robustness checks and post hoc analyses

As a first robustness check, we replace our two continuous variables on creditor and shareholder rights by two dummy variables. Both variables are equal to 1 for countries with strong creditor or shareholder rights. In order to define strong creditor and shareholder rights, we divided the sample along the median values. The results of Model 1 in Table 6 confirm our main analysis. Whereas strong shareholder rights have a positive effect on family firms' leverage ratio relative to nonfamily firms (β = 0.022, p = 0.001), strong creditor rights have a negative effect (β = −0.024, p ≤ 0.001).

To further investigate the effect of shareholder protection on family firm leverage, we divide the shareholder rights index into its subindices "Extent of conflict of interest regulation index" and "Extent of shareholder governance index." The results of Model 2 reveal that the positive effect of shareholder rights on family firm leverage mainly stems from shareholders' rights in corporate governance, which includes shareholders' rights in major corporate decisions, mechanisms to protect shareholders from undue board control entrenchment, and the transparency on ownership stakes, compensation, audits, and financial prospects. This finding supports the view that family firms rely on higher leverage ratios when shareholder rights guarantee minority shareholders greater influence.

In Model 3, we test the possible impact of the countries' legal origin as an alternative to shareholder and creditor rights. We distinguish between common law, French civil law, German civil law, and Scandinavian civil law countries (Djankov, McLiesh, & Shleifer, 2007; La Porta, Lopez-de-Silvanes, Shleifer, & Vishny, 1998). Countries with a common law origin are typically associated with stronger shareholder and creditor rights than civil law countries (La Porta et al., 1998). However, we do not find significant effects for civil law countries compared to common law countries, except for Scandinavian

TABLE 3 Country-level variables

	Shareholder rights	Creditor rights	Enforcing contracts index	Financial structure index	Ln GDP/capita
Australia	6.00	9.00	7.90	0.18	10.79
Bangladesh	5.50	2.50	2.22	−1.16	6.51
Belgium	6.17	6.50	6.43	−0.43	10.65
Brazil	6.50	5.00	6.60	−0.30	9.21
Canada	7.83	8.50	5.71	0.36	10.74
Chile	6.00	5.50	6.58	0.20	9.38
China	6.00	6.00	7.90	−0.40	8.16
Colombia	7.50	9.50	3.43	−0.42	8.67
Cyprus	6.67	6.00	4.86	−1.02	10.26
Egypt	5.83	6.50	4.28	−0.54	7.73
France	6.67	5.00	7.49	−0.11	10.59
Germany	5.83	7.00	7.04	−0.57	10.61
Ghana	5.17	6.00	5.40	−0.89	7.11
Greece	6.33	5.00	5.02	−0.67	10.12
Hong Kong	7.83	7.50	6.91	2.53	10.26
India	8.00	8.00	4.12	0.62	7.02
Indonesia	6.33	7.00	4.72	−0.18	7.94
Iran	3.33	5.00	5.82	−0.93	8.58
Italy	5.83	4.50	5.48	−0.45	10.48
Japan	6.00	5.50	6.53	−0.44	10.69
Jordan	4.67	3.50	5.56	0.18	8.13
Kuwait	5.83	3.50	5.96	0.42	10.61
Malaysia	8.17	7.50	6.82	0.06	9.03
Mexico	5.83	9.00	6.70	−0.10	9.08
Morocco	6.00	4.50	6.09	−0.64	7.83
Netherlands	5.83	4.50	5.99	0.10	10.78
Norway	7.50	5.50	8.13	−0.52	11.36
Oman	4.67	3.50	6.00	−0.44	9.77
Pakistan	7.17	4.50	4.35	0.85	6.88
Peru	6.33	7.50	6.07	−0.11	8.38
Philippines	4.33	0.50	4.60	0.08	7.58
Poland	6.17	7.50	6.44	−0.70	9.29
Portugal	6.00	4.50	6.79	−1.00	9.98
Saudi Arabia	8.00	4.50	6.34	2.29	9.77
Singapore	8.00	7.50	8.45	1.03	10.62
South Korea	7.33	6.50	8.42	0.43	9.86
Spain	7.00	6.00	7.09	−0.17	10.29
Sri Lanka	6.67	4.00	4.12	−0.81	7.81
Sweden	6.83	5.50	6.76	0.58	10.80
Switzerland	5.00	6.00	6.41	0.74	11.17
Taiwan	7.50	5.00	7.51	0.76	9.76
Thailand	7.50	7.00	6.79	−0.53	8.41
Tunisia	5.67	5.00	5.93	−1.20	8.18
Turkey	7.17	7.50	7.18	0.23	9.20
UAE	7.50	7.00	7.59	−0.54	10.83
UK	7.50	7.50	6.87	0.05	10.54

TABLE 3 (Continued)

	Shareholder rights	Creditor rights	Enforcing contracts index	Financial structure index	Ln GDP/capita
United States	6.47	9.50	7.26	4.68	10.76
Vietnam	5.50	7.50	6.21	−1.11	7.02

TABLE 4 Descriptive statistics and correlation matrix

	Mean	SD	(1)	(2)	(3)	(4)	(5)	VIF
(1) Effect size	−0.02	0.09						
(2) Shareholder rights	6.75	0.89	0.11					1.17
(3) Creditor rights	6.47	1.86	−0.11	0.23				2.21
(4) Enforcing contracts index	6.53	1.17	−0.08	0.18	0.29			1.74
(5) Financial structure index	0.81	1.73	−0.12	0.12	0.63	0.30		2.67
(6) Ln GDP/capita	9.61	1.21	−0.16	−0.10	0.24	0.64	0.37	2.18

Note: n = 786. The variance inflation factor (VIF) values are derived from Model 4 in Table 5.

TABLE 5 Meta-regression results (H2 and H3)

	Model 1		Model 2		Model 3		Model 4	
Shareholder and creditor rights								
Shareholder rights (H2)			0.012	(0.004)***			0.014	(0.004)***
Creditor rights (H3)					−0.006	(0.002)**	−0.007	(0.002)***
Country-level control variables								
Contract enforcement index	−0.001	(0.004)	−0.004	(0.004)	−0.001	(0.004)	−0.004	(0.004)
Financial structure index	−0.004	(0.002)*	−0.004	(0.002)**	−0.000	(0.003)	0.001	(0.003)
Ln GDP/capita	−0.006	(0.004)	−0.003	(0.004)	−0.006	(0.004)*	−0.003	(0.004)
Family firm variables								
Family ownership percent	*Ref. cat.*		*Ref. cat.*		*Ref. cat.*		*Ref. cat.*	
Family ownership dummy	0.028	(0.008)***	0.029	(0.007)***	0.029	(0.008)***	0.030	(0.007)***
Family management	−0.003	(0.009)	−0.003	(0.009)	−0.003	(0.009)	−0.004	(0.009)
Family supervisory board	0.025	(0.010)**	0.024	(0.010)**	0.024	(0.010)**	0.024	(0.010)**
Strong family influence	0.006	(0.009)	0.008	(0.009)	0.006	(0.009)	0.008	(0.008)
Undefined family influence	−0.008	(0.008)	−0.006	(0.008)	−0.008	(0.008)	−0.005	(0.008)
Family firm generation								
No generational control	*Ref. cat.*		*Ref. cat.*		*Ref. cat.*		*Ref. cat.*	
Founder generation	0.015	(0.012)	0.016	(0.012)	0.016	(0.012)	0.018	(0.012)
Later generation	0.026	(0.013)**	0.028	(0.013)**	0.027	(0.013)**	0.029	(0.013)**
Leverage ratio variables								
Total debt/assets	*Ref. cat.*		*Ref. cat.*		*Ref. cat.*		*Ref. cat.*	
Total debt/equity	−0.002	(0.009)	−0.002	(0.009)	−0.002	(0.009)	−0.002	(0.009)
Long-term debt/assets	−0.006	(0.008)	−0.007	(0.008)	−0.006	(0.008)	−0.007	(0.008)
Long-term debt/equity	0.015	(0.021)	0.011	(0.021)	0.017	(0.021)	0.012	(0.021)
Firm size								
All listed firms	*Ref. cat.*		*Ref. cat.*		*Ref. cat.*		*Ref. cat.*	
Small cap	−0.041	(0.031)	−0.042	(0.031)	−0.043	(0.031)	−0.043	(0.031)
Large cap	−0.018	(0.010)*	−0.018	(0.010)*	−0.015	(0.010)	−0.014	(0.010)
Article type								
Journal article	*Ref. cat.*		*Ref. cat.*		*Ref. cat.*		*Ref. cat.*	
Working paper	−0.020	(0.010)**	−0.019	(0.009)**	−0.019	(0.009)**	−0.017	(0.010)*
PhD thesis	−0.012	(0.014)	−0.011	(0.014)	−0.008	(0.014)	−0.006	(0.014)

(Continues)

TABLE 5 (Continued)

	Model 1		Model 2		Model 3		Model 4	
Student thesis	−0.015	(0.014)	−0.011	(0.014)	−0.014	(0.014)	−0.009	(0.014)
Sample characteristics								
Median year	0.000	(0.001)	0.000	(0.001)	0.000	(0.001)	0.000	(0.001)
Panel dataset	0.001	(0.009)	−0.001	(0.009)	−0.000	(0.009)	−0.003	(0.009)
Constant	0.046	(0.032)	−0.053	(0.045)	0.084	(0.036)**	−0.019	(0.046)
k	786		786		786		786	
n	550		550		550		550	
Pseudo R^2	0.16		0.19		0.18		0.22	
ICC	0.92		0.92		0.92		0.92	
$Q_{Residual}$	1,302.03		1,266.01		1,274.50		1,238.16	
Q_{Model}	75.14		86.53		81.80		96.46	
I^2 (%)	45.63		44.72		44.78		43.69	

Note: This table reports the results of the hierarchical meta-regression analysis on family firm leverage. The dependent variable is the *z* transformed effect size. The variable *Shareholder rights* denotes the extent of minority investor protection in a country. The variable *Creditor rights* denotes the extent of creditor rights in a country. All variables are described in Appendix A. Coefficients are reported with corresponding standard errors in parentheses. *k* denotes the number of effect sizes. *n* denotes the number of studies. Pseudo R^2 denotes the proportion of heterogeneity explained by the included moderators. ICC denotes the intraclass correlation coefficient. $Q_{Residual}$ denotes the amount of residual heterogeneity. Q_{Model} denotes the amount of the test statistic for the omnibus test of coefficients. I^2 denotes the proportion of between-study variance to total variance.
*$p < 0.10$. **$p < 0.05$. ***$p < 0.01$.

TABLE 6 Robustness checks and post hoc tests

	Model 1		Model 2		Model 3	
Alternative shareholder and creditor rights						
Strong shareholder rights (=1)	0.022	(0.007)***				
Strong creditor rights (=1)	−0.024	(0.007)***				
Shareholder rights subindices						
Extent of conflict of interest regulation index			−0.004	(0.003)		
Extent of shareholder governance index			0.017	(0.003)***		
Legal origin						
Common law					Ref. cat.	
German law					0.017	(0.011)
French law					0.008	(0.010)
Scandinavian law					−0.046	(0.026)*
Country-level control variables						
Contract enforcement index	−0.005	(0.004)	−0.006	(0.004)*	−0.005	(0.004)
Financial structure index	0.001	(0.002)	0.004	(0.003)	−0.001	(0.003)
Ln GDP/capita	−0.004	(0.004)	0.001	(0.004)	−0.005	(0.004)
Family firm variables						
Family ownership percent	*Ref. cat.*		*Ref. cat.*		*Ref. cat.*	
Family ownership dummy	0.029	(0.007)***	0.030	(0.007)***	0.030	(0.008)***
Family management	−0.004	(0.009)	−0.001	(0.009)	−0.002	(0.009)
Family supervisory board	0.023	(0.010)**	0.025	(0.010)**	0.025	(0.010)**
Strong family influence	0.006	(0.008)	0.010	(0.008)	0.007	(0.009)
Undefined family influence	−0.007	(0.008)	−0.005	(0.008)	−0.009	(0.008)
Family firm generation						
No generational control	*Ref. cat.*		*Ref. cat.*		*Ref. cat.*	
Founder generation	0.017	(0.012)	0.017	(0.012)	0.017	(0.012)
Later generation	0.028	(0.013)**	0.027	(0.013)**	0.026	(0.013)**

(Continues)

TABLE 6 (Continued)

	Model 1		Model 2		Model 3	
Leverage ratio variables						
Total debt/assets	*Ref. cat.*		*Ref. cat.*		*Ref. cat.*	
Total debt/equity	−0.002	(0.009)	−0.002	(0.009)	−0.002	(0.009)
Long-term debt/assets	−0.006	(0.008)	−0.006	(0.008)	−0.006	(0.008)
Long-term debt/equity	0.016	(0.020)	0.009	(0.020)	0.015	(0.021)
Firm size						
All listed firms	*Ref. cat.*		*Ref. cat.*		*Ref. cat.*	
Small cap	−0.048	(0.031)	−0.045	(0.031)	−0.041	(0.031)
Large cap	−0.015	(0.010)	−0.019	(0.010)**	−0.017	(0.010)*
Article type						
Journal article	*Ref. cat.*		*Ref. cat.*		*Ref. cat.*	
Working paper	−0.017	(0.009)*	−0.016	(0.009)*	−0.021	(0.009)**
PhD thesis	−0.004	(0.014)	−0.005	(0.014)	−0.008	(0.015)
Student thesis	−0.009	(0.014)	−0.011	(0.013)	−0.010	(0.014)
Sample characteristics						
Median year	−0.000	(0.001)	−0.000	(0.001)	0.000	(0.001)
Panel dataset	−0.004	(0.009)	−0.004	(0.009)	0.001	(0.009)
Constant	−0.054	(0.033)*	−0.082	(0.044)*	0.051	(0.033)
k	786		786		786	
n	550		550		550	
Pseudo R^2	0.23		0.25		0.18	
ICC	0.92		0.91		0.91	
$Q_{Residual}$	1,227.77		1,205.75		1,285.64	
Q_{Model}	100.59		108.50		83.85	
I^2 (%)	43.14		42.54		44.87	

Note: This table reports the results of the hierarchical meta-regression analysis on family firm leverage. The dependent variable is the *z* transformed effect size. *Strong shareholder rights* is a dummy variable equal to 1 if the extent of shareholder rights is above the sample median. *Strong creditor rights* is a dummy variable equal to 1 if the extent of creditor rights is above the sample median. *Extent of conflict of interest regulation index* measures the protection of shareholders against directors' misuse of corporate assets for personal gain. *Extent of shareholder governance index* measures shareholders' rights in corporate governance. *Common law*, *German law*, *French law*, and *Scandinavian law* are dummy variables that characterize a country's legal system. All variables are described in Appendix A. Coefficients are reported with corresponding standard errors in parentheses. *k* denotes the number of effect sizes. *n* denotes the number of studies. Pseudo R^2 denotes the proportion of heterogeneity explained by the included moderators. ICC denotes the intraclass correlation coefficient. $Q_{Residual}$ denotes the amount of residual heterogeneity. Q_{Model} denotes the amount of the test statistic for the omnibus test of coefficients. I^2 denotes the proportion of between-study variance to total variance.
*$p < 0.10$. **$p < 0.05$. ***$p < 0.01$.

countries, which include Norway and Sweden (β = −0.046, p = 0.08). This result is likely driven by the Norwegian observations, which show the lowest mean effect size across all countries (Table 2).

Our main analysis shows that there exist differences in the effect sizes reported in working papers as compared with effect sizes reported in published studies. As a robustness check, we therefore re-estimated our model only for the sample of published articles.[4] We found that the main effects regarding shareholder and creditor rights are very similar as in the main analysis. As another robustness check, we ran a model on the full sample of studies where we excluded the article type control variables from the regression to ensure that our main results are not driven by multicollinearity effects. Again, the results were similar to the results of our main analysis.

5 | DISCUSSION AND CONCLUSION

In this study, we examine the relationship between the family firm status of public firms and capital structure and the moderating role of countries' shareholder and creditor rights. The results of our HOMA reveal an overall slightly negative but statistically significant relationship between family firms and leverage ratio. This finding is opposed to many well-published empirical studies investigating family firm leverage that find higher leverage ratios for family firms (e.g., Croci et al., 2011; King & Santor, 2008; Setia-Atmaja et al., 2009). Rather, it supports the view of the risk-averse family firm that eschews debt, as proposed by Mishra and McConaughy (1999). However, our results also reveal a large amount of heterogeneity among the effect sizes. Some of this heterogeneity can be attributed to the methodological

choices of the primary studies, such as variable choices, definitions used, or sample characteristics. For example, we find a significant difference between family ownership measured as a continuous variable and family ownership measured as a dummy variable. Previous studies on family firm performance (e.g., Miller, Le Breton-Miller, Lester, & Cannella, 2007) have already highlighted the importance of family firm definitions on performance outcomes. In the same manner, we note the importance of family firm definitions used in studies on capital structure and its potential influence on study outcomes. A large portion of the observed effect size heterogeneity can also be attributed to country-specific characteristics. Conducting univariate analyses for each of the 48 countries included in the sample, we observe considerable mean effect size differences. For many countries, especially those with only one or a few observations, we do not find significant differences in leverage ratios to nonfamily firms. Among those countries with negative and significant mean effect sizes, we find large economies such as France, Germany, Japan, South Korea, and the United States. The negative relationship between US family firms and leverage contradicts the findings of Anderson and Reeb (2003), who do not find different leverage ratios between family and nonfamily firms. For France and Germany, our results confirm previous empirical studies (Ampenberger et al., 2013; Benkraiem et al., 2018; Latrous & Trabelsi, 2012; Margaritis & Psillaki, 2010; Schmid, 2013) that observe lower leverage ratios for family firms in these two countries. On the other hand, we find positive and significant relationships between family firm status and leverage only for seven emerging or transition economies: Brazil, Kuwait, Pakistan, Poland, Sri Lanka, Taiwan, and Turkey.

In the next step, we tested the moderating impact of country-level corporate governance variables, especially the impact of creditor and shareholder rights. The results of our hierarchical MRAs report a significant impact of both variables. Whereas stronger shareholder rights lead to higher leverage ratios in family firms, stronger creditor rights have the opposite effect. These findings support both moderation hypotheses and show the importance of country-level corporate governance variables in family firms' capital structure decisions. In countries with strong creditor rights, firms are generally more reluctant to use debt and undertake less risky investments, as they fear being forced into bankruptcy by their creditors in times of financial distress (Acharya, Amihud, & Litov, 2011; De Jong et al., 2008). We show that this effect might be even more pronounced in family firms because their owner families are weakly diversified and have strong control considerations. The plausible loss of control in the case of payment default threatens the owner family's SEW and keeps it away from dispensable debt money. In the same manner, Ampenberger et al. (2013) and Schmid (2013) argued that strong creditor rights and the accompanying tight creditor monitoring impede debt financing among family firms, even during normal business operations. On the other hand, strong shareholder rights increase the power and potential influence of minority shareholders. As a result, family owners rely more strongly on debt and avoid raising equity due to a dilution of control and potential contestability of voting rights (Boubakri & Ghouma, 2010; King & Santor, 2008). Our results suggest that this effect is even stronger than the negative effect of strong creditor

rights on family firms' use of debt. Post hoc analyses show that especially minority shareholders' rights in corporate governance are the driving factor for higher leverage ratios in family firms across countries. These results indicate that family firms use the capital structure as a means to ensure and optimize control over the firm. In this way, we show that family firms follow different decision-making processes and strategic considerations in capital structure decisions than nonfamily firms. Previous studies have also shown these divergences for R&D investments (Block, 2012; Chrisman & Patel, 2012), diversification decisions (Gómez-Mejía et al., 2010), or acquisitions (Caprio, Croci, & Del Giudice, 2011). Our results further indicate that the risk-aversion and control-enhancing views on family firm leverage are not necessarily conflicting theories but that the predominance of one or the other depends on environmental conditions in terms of laws and institutions.

Our study, like every empirical study, also has some limitations that offer opportunities for further research. First, owing to the comparably small number of studies investigating the capital structure of family firms as a dependent variable, we used only Pearson correlation coefficients. Partial correlations from regression coefficients could control for a potential omitted variable bias stemming from other firm-specific leverage determinants (Frank & Goyal, 2009; Myers, 2001). However, current articles on meta-analytic best practices (e.g., Combs, Crook, & Rauch, 2019; Roth, Le, Oh, Iddekinge, & Bobko, 2018) discourage a joint analysis of both data types. For this reason, we rely solely on Pearson correlation effect sizes.

Second, our study can reflect the influence of family firm heterogeneity on capital structure only to a limited degree by using different family firm variables. Thus, family firm heterogeneity is also a promising direction for further future research on capital structure decisions, as family firms appear in various forms around the globe (Steier, 2009). This variety includes single-sector family firms in Anglo-American or Continental European countries as well as large multisector business groups in East Asian countries, reflecting different corporate governance structures. Previous studies suggest that particularly the separation of ownership and control is an important factor in capital structure decisions in family firms (King & Santor, 2008). Control-enhancing mechanisms such as pyramids or dual-class shares increase agency conflicts with both minority shareholders and creditors (Pindado, Requejo, & de La Torre, 2015). These agency conflicts should also impact financing costs and result in higher required premiums for capital provision (Boubakri & Ghouma, 2010; Gao et al., 2020; Lin, Ma, Malatesta, & Xuan, 2011). However, creditors and shareholders might evaluate the expropriation risk differently and hence require different risk premiums, which in turn impact the financial incentives for family firms to use equity or debt (Paligorova & Xu, 2012). This evaluation might also depend on the countries' institutional settings. Anderson, Mansi, and Reeb (2003) find lower agency costs of debt and thus lower financing costs for family firms in the United States, a country with investor-oriented laws and highly developed capital markets, whereas Boubakri and Ghouma (2010) and Lin et al. (2011) find the opposite for international datasets. Furthermore, not only the legal framework but also the

importance of personal relationships with creditors and political connections might be important determinants of capital structure decisions, access to capital, and terms of contracts in some countries (Boubakri, Guedhami, Mishra, & Saffar, 2012; Claessens, Feijen, & Laeven, 2008; Houston, Jiang, Lin, & Ma, 2014).

We also do not consider private firms in this study. As private family firms often do not have any other nonfamily minority shareholders, the logics in capital structure decisions might be different from public firms (Romano, Tanewski, & Smyrnios, 2001). On the one hand, if family owners are unwilling to raise any equity from nonfamily investors, they are restricted solely to debt financing. These strong control considerations could also result in higher leverage ratios but are detached from the strength of minority shareholder rights like in public firms. On the other hand, risk-aversion motives might be even more present in private family firms, where family members typically occupy management positions, leading to lower leverage ratios as compared with private nonfamily firms (González et al., 2013).

Moreover, characteristics of the owner family itself might have an impact on the capital structure decisions of the firm. Owner families can differ in terms of size, the extent of involvement in the firm, the generational stage, or the respective family values. These owner family characteristics significantly impact the priorities and hence the strategic decisions of family firms (Chua, Chrisman, Steier, & Rau, 2012; Jaskiewicz & Dyer, 2017). Keasey et al. (2015) examined the impact of the life-cycle stage on leverage ratios and find a preference for higher leverage ratios to prevent a dilution of control mainly for young family firms with an active founder. The results of our MRA suggest that leverage ratios are higher in later-generation firms but should not be overestimated because most primary studies in our sample do not control for generational influences. Future research should investigate this generational stage effect and explore if and under which circumstances family firm evolution and professionalization reduces or widens the differences between family and nonfamily firms regarding capital structure. In the same manner, the structure of the family—and especially the number of family owners—might impact capital structure decisions. As family firms undergo successions, the ownership stake is often fragmented by inheritance, which increases the number of involved persons and, hence, the potential for diverging interests and conflicts within the family (Bertrand & Schoar, 2006; Kellermanns & Eddleston, 2004). If the owner family no longer acts as one collective blockholder, family-specific interests such as control considerations or risk aversion might lose their importance, and, as a result, leverage ratios might conform to nonfamily firms. In order to prevent a fragmentation of the family shares and keep the family heritage, some founders or business families in Scandinavia and German-speaking countries transfer their ownership stakes to foundations (Thomsen & Rose, 2004). Foundations as owners have gained increasing interest in the academic literature, but still little is known about if and how this ownership type impacts capital structure decisions. On the one hand, foundation-owned firms might be risk averse and eschew debt to not endanger the long-term survival of the firms (Thomsen, Poulsen, Børsting, & Kuhn, 2018). This view could explain the lower leverage ratios in Scandinavian countries in our results,

because many primary studies do not clearly distinguish between foundation and family ownership. On the other hand, there could also be a necessity for foundation-owned firms to rely more on debt finance because they might be bound by their charter to always retain a majority stake in the firm (Achleitner, Bazhutov, Betzer, Block, & Hosseini, 2020; Block, Jarchow, Kammerlander, Hosseini, & Achleitner, 2020). To conclude, more research on family firm heterogeneity and its impact on capital structure decisions, combined with the impact of the institutional environment, is needed.

Furthermore, specific events and circumstances could be important moderators of family firms' capital structure decisions. Investigating R&D behavior, Chrisman and Patel (2012) showed that family firms have in general lower R&D intensity than nonfamily firms owing to perceived threats to their SEW. However, if their firm performance is below aspiration levels, they increase R&D investments to a greater extent than nonfamily firms. The same logic could also be true for capital structure decisions. Under normal circumstances, family firms might have lower leverage ratios to decrease firm-specific risk, but they could increase leverage in case of severe financing needs that endanger firm survival. An empirical investigation of how leverage ratios depend on financing needs and change when SEW is threatened would be an interesting future research direction.

Another future research direction is the composition of family firm debt. To date, some studies have investigated the debt maturity structure of family firms (e.g., Croci et al., 2011; Jain & Shao, 2015; Shyu & Lee, 2009). However, little is known about the preferences of family firms for public or bank debt. As one of a few studies on this topic, Lin, Ma, Malatesta, and Xuan (2013) identified a preference among family firms with a large control-ownership wedge for public debt compared with bank loans, as banks are more effective monitors in deterring expropriation activities. Lin et al. (2011) and Pan and Tian (2016) further showed that banks increase loan spreads as well as required collateral for these firms. Other studies, on the other hand, find that family firms also rely heavily on relationship lending and benefit from better capital access and favorable conditions (Crespí & Martín-Oliver, 2015; D'Aurizio et al., 2015; Yen, Lin, Chen, & Huang, 2015). Maintaining long-lasting lending relationships with banks would therefore suggest a preference for bank lending instead of anonymous public lending. Furthermore, Harvey, Lins, and Roper (2004) showed that firms with high managerial agency costs in weak institutional environments can benefit in terms of shareholder value from raising capital in stronger monitored international debt markets, as investors interpret this move as a sign of credibility. These findings suggest that the source of debt in family firms is also heavily influenced by firm- and country-level corporate governance attributes.

To summarize, our study tests the two competing views in the literature on the capital structure of family firms and finds a predominance of negative effect sizes in the univariate HOMA model. The result of an overall negative mean effect size thus supports the view of the risk-averse family firm that avoids debt due to a low diversification of their owners' wealth and a fear of loss in their SEW. On the other hand, we also find strong support for the control-consideration view, as family firms adjust their capital structure depending on the

strength of creditor and shareholder rights in their country. Stronger shareholder rights have a positive impact on family firm leverage, whereas stronger creditor rights have a negative impact. These results suggest that family firms use leverage strategically to ensure their owner families' dominant position and prevent potentially harmful conflicts with powerful minority shareholders or creditors.

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NOTES

[1] Search terms for family firms were family firm, family business, family control, family ownership, ownership structure, family management, and family CEO. Search terms for leverage were leverage, capital structure, debt, financing, and gearing.

[2] Members of the author team have language skills in German, French, Italian, and/or Spanish. The studies published in the CNKI and in the Chinese language have been searched and coded by a Chinese PhD student.

[3] We provide a list of all included primary studies in the Supporting Information.

[4] We provide the results in Table B.1 in the Supporting Information.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

APPENDIX A

Variable definitions

Variable name	Description
Shareholder and creditor rights	
Shareholder rights	Extent of minority investor protection; average of the "Extent of conflict of interest regulation index" and "Extent of shareholder governance index" (data source: World Bank's Doing Business).
Creditor rights	Extent of creditor rights; average of the "Sum of strength of legal rights index" and "Depth of credit information index" (data source: World Bank's Doing Business).
Strong shareholder rights	Dummy variable = 1 if the extent of a country's shareholder rights is above the sample median.
Strong creditor rights	Dummy variable = 1 if the extent of a country's creditor rights is above the sample median.
Extent of conflict of interest regulation index	Index that measures the protection of shareholders against directors' misuse of corporate assets for personal gain (data source: World Bank's Doing Business).
Extent of shareholder governance index	Index that measures shareholders' rights in corporate governance (data source: World Bank's Doing Business).
Common law	Dummy variable = 1 if a country has a common law system (data source: Djankov et al., 2007).
German law	Dummy variable = 1 if a country has a German law system (data source: Djankov et al., 2007).
French law	Dummy variable = 1 if a country has a French law system (data source: Djankov et al., 2007).
Scandinavian law	Dummy variable = 1 if a country has a Scandinavian law system (data source: Djankov et al., 2007).
Country control variables	
Enforcing contracts index	Measure of time and cost for resolving a commercial dispute and quality of judicial processes (data source: World Bank's Doing Business).
Financial structure index	Financial structure index developed by Demirgüç-Kunt and Levine (1999); own calculations based on mean values of the years 1996–2016 (data source: World Bank's World Development Indicators, for Taiwan: Statistical Bureau of the Republic of China [Taiwan]). A positive value indicates a more market-based financial system; a negative value indicates a more bank-based financial system.
Ln GDP/capita	Natural logarithm of GDP per capital, measured in constant 2010 USD and calculated as the mean of the years 1996–2016 (data source: World Bank's World Development Indicators, for Taiwan: Statistical Bureau of the Republic of China [Taiwan]).
Family firm variables	
Family ownership percent	Dummy variable = 1 if family influence is measured by the ownership stake.
Family ownership dummy	Dummy variable = 1 if family influence is measured by an ownership dummy.
Family management	Dummy variable = 1 if family influence is measured by management (e.g., family CEO).
Family supervisory board	Dummy variable = 1 if family influence is measured by a control function (e.g., family member on supervisory board).
Strong family influence	Dummy variable = 1 if firms are defined as family firms if at least two of the previous influences are prevalent.
Undefined family influence	Dummy variable = 1 if firms are defined as family firms if either of the previous influences is prevalent.
Family firm generation	
No generational control	Dummy variable = 1 if there is no control on generation.
Founder generation	Dummy variable = 1 if the founder or first generation is active in the firm.
Later generation	Dummy variable = 1 if a firm is in the hands of a later generation.
Leverage ratio variables	
Total debt/assets	Dummy variable = 1 if leverage ratio is measured by total debt/assets.
Total debt/equity	Dummy variable = 1 if leverage ratio is measured by total debt/equity.
Long-term debt/assets	Dummy variable = 1 if leverage ratio is measured by long-term debt/assets.
Long-term debt/equity	Dummy variable = 1 if leverage ratio is measured by long-term debt/equity.
Firm size	
All listed firms	Dummy variable = 1 if the primary study observes all listed firms in a country.
Small cap	Dummy variable = 1 if the primary study observes only small listed firms.
Large cap	Dummy variable = 1 if the primary study observes only the largest listed firms.

(Continues)

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Variable name	Description
Article type	
Journal article	Dummy variable = 1 if the primary study is published in an academic journal.
Working paper	Dummy variable = 1 if the primary study is a working paper.
PhD thesis	Dummy variable = 1 if the primary study is a PhD thesis.
Student thesis	Dummy variable = 1 if the primary study is a student thesis.
Sample characteristics	
Median year	Median year of the study sample (mean centralized).
Panel dataset	Dummy variable = 1 if the primary study is based on panel data.