Family Control, Institutional Investors, and Financial Distress: Evidence from China

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Abstract

The effect of family control on corporate governance and risk-taking behaviors remains disputed worldwide. We examine how family control affects the financial distress of firms listed on the Chinese stock market. Our empirical findings suggest that family firms, particularly those with descendant CEOs, face significantly higher financial distress risk. Higher debt levels and more diversified acquisitions of family firms can partially explain their higher financial risk. Further analysis indicates that institutional investors help reduce the financial distress risk of Chinese family firms. We contend that institutional investors play vital roles in enhancing the corporate governance of family firms in China. Taken together, our study urges attention to the financial distress risk of family firms in a transient economy.

1. Introduction

Non-financial firms worldwide experienced financial distress following the 2008 global financial crisis. This distress negatively affected the entire economy, including emerging countries. In China, the market crash in 2015, trade disputes with the U.S., and COVID-19 further exacerbated the challenges faced by private firms in recent years. Despite macro shocks, numerous financial distresses are often linked with ineffective corporate governance, various agency problems, dominant CEOs, and poor strategic decisions, similar to the financial scandals discussed in Hamilton and Micklethwait (2016). Family control is prevalent in private firms, and strong family control might result in severe corporate governance problems. However, the relation between family control and financial distress risk has received limited empirical attention, partially because family firms are widely considered to be risk averse.

Indeed, family firm founders stake their entire human and financial capital in their firms. They pursue the growth of family wealth as well as the perpetuation of family ownership or management (Morck and Yeung, 2003). Family firm owners are often recognized as having a long-term view (Breton-Miller and Miller, 2006), leading to the adoption of low-risk firm policies. Consequently, family firms are less likely to invest in innovation activities (Morck et al., 2000) and carry less debt to prevent a default (McConaughy et al., 2001). Nevertheless, some scholars provide some evidence of risk-taking in local family firms. Gomez-Mejia et al. (2007) argue that many families may take more risks simply to maintain their "socioemotional wealth" and retain that control. Anderson and Reeb (2003b) note that some family firms place value-enhancing policies ahead of risk-avoiding policies.

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We examine the relationship between the family control and the financial distress risk of family firms in China. The growth of private enterprises, mainly in the form of family firms, is one of the primary contributors to the rapid development of the Chinese economy. At the end of 2020, listed family companies accounted for 44.8 percent of A-share listed companies in the Shanghai and Shenzhen Stock Exchanges. As mentioned by Bennedsen et al. (2015), family firms are shaped by culture, social opportunities, and constraints, so it is interesting to investigate how the unique characteristics and strategic decisions of family firms impact the financial risk of these firms in China.

The context of Chinese family firms is unique for at least three reasons. First, the short history of listed family firms in China minimizes the survivor bias in developed markets, where families tend to exit their firms if they face or foresee poor performance. The survivor bias makes it easier to observe a positive relationship between family control and firm performance. The instrumental-variable methods used by Anderson and Reeb (2003a) can alleviate but not eliminate the problem. Most Chinese family firms are still controlled and managed by family founders (Chemmanur et al., 2021), with an average age of only 20.6 years in 2020. We have a large sample of family firms and rarely observe family ownership exit in such a short life.

Second, family firms behave very differently in transitioning economies like China. Our study can provide very interesting out-of-sample evidence. Corporate debt default never occurred in China before 2014. Among the 31 listed firms with debt defaults after 2014, 25 are private firms, and 15 are family firms. 8 of these 15 family firms operate in traditional industries. The financial distress risk of family firms, especially those in traditional industries, in China deserves further examination.

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Third, institutional investors in China emerged at the beginning of this century. Unlike those in developed markets, Chinese institutional investors hold minority ownership in listed firms. It is unclear whether Chinese institutional investors play positive roles in the corporate governance of listed firms, particularly family firms, in our study.

Young family firms have some unique features in China. Most family firms still rely on the founder's power in decision-making. The founders' reputation and good relationship with the government and banks help family firms accumulate capital and wealth in traditional industries with which they are familiar (Allen et al., 2005). Once listed, family firms can issue equities and bonds at very low costs[1]. Lower profitability and worse performance of traditional operations compel some family firms to expand their business horizons and diversify their operations to new areas they are unfamiliar with. The concentrated ownership structure and the lack of effective internal governance also lead family firms to make riskier decisions, resulting in higher financial distress risk. Therefore, we propose that the financial distress risk of family firms is significantly higher than that of non-family firms. Higher debt levels and more diversified acquisitions of family firms can partially explain their higher financial risk. We attribute these phenomena of family firms to their poor internal corporate governance, which can be mitigated by effective external governance provided by institutional investors.

Specifically, we first investigate the relationship between the family control and the financial distress risk of family firms using a sample in China's A-share stock market over the period

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[1] In China, listed family firms have distinct advantages in bond issuance. First, bond issuance costs for listed firms are notably lower than equity issuance. According to data from the WIND database, the average cost-to-net proceeds ratio for all seasoned equity offerings from June 2006 to June 2023 is 2.90%, while the cost-to-net proceeds ratio of bond issuance is about 0.1%. Second, bond issuance is characterized by simpler processes and fewer regulatory hurdles. Third, debt financing allows listed family firms to raise capital without diluting ownership or control, mitigating the risk of corporate control dispersion.

between 2007 and 2020. Using both the interest coverage ratio and Z-score to measure financial distress risk, we find that family control leads to a higher risk of financial distress. Then, we hand-collect more detailed information about family members from the annual reports of each listed family firm. The evidence suggests that the financial distress risk of family firms run by descendant CEOs is higher than those with founder CEOs and outside CEOs. We believe that descendant CEOs are more likely to make riskier decisions under a more relaxed decision-making environment. We also study whether the founding family's political connections affect the financial distress risk of family firms and find no significant effect.

We further test whether the increase in risk of family firms is driven by their high debt levels and expansions. The results indicate that family control increases the tendency to bear higher debt and make diversified acquisitions from their main operations. Our two-stage analyses suggest that both higher debt levels and more active diversified acquisitions of family-controlled firms lead to higher financial distress risk for these firms.

For external factors, most researchers contend that institutional investors play an external monitoring mechanism to reduce future risk. Our empirical results show that family firms with higher institutional ownership have lower financial distress risk. The evidence demonstrates that institutional investors' intervention can play a supervisory role in reducing the probability of high debt in family businesses. We also find that independent institutional investors regulate the financial risk of family firms more effectively.

We conduct several robustness tests. First, we select a new sample with a different definition of family firms and employ alternative proxies to measure financial distress risk, such as O-score, which is commonly used in literature. Our results remain robust. In addition, we recognize that an

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entrepreneur's choice to establish a family firm or transform a firm to be family-controlled may be related to the firm's financial distress risk or those factors determining the financial distress risk, therefore causing endogeneity problems. We use the propensity score matching (PSM) method to match family firms and non-family firms in non-state-owned enterprises to alleviate the endogeneity issues. Matched sample regressions support our hypothesis that family firms are exposed to greater financial distress risk than non-family firms.

Our paper adds to the existing literature in several ways. First, our study contributes to the literature on financial distress risk. This topic is of significant importance, particularly for Chinese family firms, as the financial distress risk of these firms has not received sufficient attention in China. Previous studies primarily focus on the risk-taking behavior of family firms and argue that they are risk-averse, largely based on studies of U.S. family firms. Shleifer and Vishny (1986) argue that the highest cost that large and undiversified shareholders can impose on their firms is to encourage risk avoidance. A similar sentiment is echoed by La Porta et al. (1999) and Morck and Yeung (2003), which cite family firms in particular. Interestingly, we find that Chinese family firms behave differently. In China, young family firms aim for higher growth and are more likely to make risky decisions and take on higher levels of debt when they expand from the areas they are familiar with to those they are not, thus increasing the financial risk of family firms.

Second, we enrich the literature concerning the role of family involvement. Prior literature has predominantly focused on the impact of family control on firm performance (e.g., Pérez-Gonz ález, 2006; Bennedsen et al., 2007; Anderson and Reeb, 2003a), productivity (e.g., Barth et al., 2005), innovation (e.g., Ashwin et al., 2015; Jiang et al., 2020b), and tunneling from the controlling family (Xu et al., 2015). We enrich the literature on family involvement in firms by exploring how

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controlling families can influence a company's inclination to engage in diversified acquisitions and take on high levels of debt. Furthermore, we investigate the role of the second generation of the family as CEOs.

Third, our research contributes to the literature on the role of institutional ownership in the corporate governance of family firms. Previous literature analyzes the effectiveness of institutional investors in monitoring management (e.g., Blair, 1995; Daily, 1995). Institutional investors are found to focus on long-term performance rather than short-term or annual term as management does (Donker et al., 2009). Many other literature papers confirm the positive role of institutional investors in enhancing corporate governance (e.g., Hochberg, 2012; Bernstein et al., 2016). Some scholars think that institutional investors in China do not possess a significant enough stake to exert control over companies (Jiang et al., 2020a). Our paper finds that institutional investors, especially independent institutional investors, reduce the detrimental effect of family control on financial distress risk, although the ownership of these external institutions is not large enough. Our results imply that family firms can benefit from diversifying family control by attracting more institutional investors.

The rest of our paper is organized as follows. Section 2 develops hypotheses. Section 3 presents the research design. Section 4 discusses our main results, and Section 5 concludes.

2. Hypothesis development

Globally, the majority of companies are under the control of major shareholders, often the founders or their families (La Porta et al., 1999). Even in the United States, where ownership dispersion is the highest, family firms make up one-third of the S&P 500 companies (Anderson and Reeb, 2003a). In the presence of robust regulations and transparent markets, family ownership

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in public companies appears to mitigate conflicts related to moral hazard and serves as an effective organizational structure for minimizing losses in decision-making efficiency by reducing agency problems (Anderson and Reeb, 2003a; Anderson and Reeb, 2003b).

However, resources are primarily controlled by the government in emerging markets. Despite the crucial role played by private entrepreneurs in market transitions, government resource allocation to state-owned enterprises (SOEs) persists, creating obstacles for private entrepreneurs in transitional economies (Xu et al., 2011). Turning our attention to China, we observe that the Chinese family firms have a relatively brief history, relying heavily on the founding family for business development and investment decisions. Furthermore, the Chinese stock market, established in 1991, remains relatively youthful and less mature. Weaker investor protection and limited information transparency in China amplify conflicts between family controlling shareholders and minority shareholders, such as the tunneling by controlling shareholders, in contrast to developed countries like the United States (Jiang and Kim, 2015; Liu et al., 2015).

As in other East Asian countries, family firms in China are characterized by the deep involvement of family members in both the board of directors and management. They have enormous control power over the listed firms and face little opposition from other directors, which often leads to weaker corporate governance (Liu et al., 2015). Therefore, controlling families usually face less monitoring, and thus the financial risk increases in family firms.

Lastly, it's worth noting that in China, family firms are more sensitive to government policy impacts than non-family firms. For example, China's one-child policy negatively affects the succession of family firms (Cao et al., 2015). Then, the family succession issue has a negative impact on firm performance. This implies that Chinese family firms continually face significant

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challenges during the processes of political and economic transformation of society. Considering these factors, we hypothesize that:

H1: Family firms are more financially distressed compared to non-family firms.

Family businesses uniquely need to evaluate expected gains and losses in both socioemotional and financial wealth (Gomez-Mejia et al., 2014). The preservation of intergenerational wealth represents a crucial decision-making objective (Berrone et al., 2012; Gomez-Mejia et al., 2007), requiring consistent long-term commitment.

As a result, family entrepreneurs may adopt diversification strategies across various industries, regions, and sectors to build a diversified business empire and pursue higher profitability. The declining profitability of their traditional operations often drives some family firms to seek opportunities for expanding their business horizons and diversifying their activities into unfamiliar domains with high barriers. This will help resolve family feuds over succession within inter-generational families, extend the family's influence in social networks, and increase profitability in various markets (Lien and Li, 2013). Consequently, the controlling family often overrides the optimal scope of firms to pursue a wider range of diversification, despite the fact that this decision may harm firm value (Hoskisson et al., 1993; Tallman and Li, 1996). In contrast, non-family firms typically have shorter managerial tenures, making it challenging to assess the value of long-term investments fully during their leadership. Thus, they may prioritize safeguarding immediate economic interests over engaging in risky diversified M&As.

Nonetheless, many companies face challenges in strategic planning and efficient risk management due to a lack of efficient corporate governance. This can result in subsidiaries or business units led by different family members operating and acting independently, prioritizing

local interests over the broader diversification strategy. Consequently, under family control, companies are more likely to pursue diversified M&A activities, but it also carries a higher risk of financial distress.

In China, a significant number of private enterprises face challenges related to insufficient funding (Zhang et al., 2020). Family firms, especially those undergoing generational succession, usually focus on maintaining the family's control over the company. Therefore, in their financing decisions, family firm controllers may avoid financing methods that could diminish family control within the company, preferring internal funds instead. Even when external capital is necessary, they are more likely to choose debt financing. As a result, family firms may rely more on debt funding, potentially increasing their financial risk.

In sum, our second hypothesis has the following two components:

H2a: Compared with non-family firms, family control increases the probability of making a diversified acquisition, leading to higher distress risk.

H2b: Compared with non-family firms, family control increases the probability of family firms' carrying higher debt, leading to higher distress risk.

During a field investigation we conducted in the year 2022, we find that the future of family firms is greatly influenced by the quality of their management. The CEO of a company plays a crucial role in the management as the creator and executor of corporate strategy (Duran et al., 2016). It is noteworthy that an increasing number of family firms appoint non-family members as CEOs (Van Helvert-Beugels et al., 2020). However, the most suitable type of CEO for family firms (e.g., family versus non-family members; first versus second generations) remains unknown. Previous research has found that descendant-CEO firms trade at a discount and have poorer

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accounting performance than founder-run firms and non-family firms (Villalonga and Amit, 2006; Morck et al., 2000).

In China, second-generation CEOs enter the firm with the guidance and support of elder family members. With such emotional resonance and relatively light regulation, they may be more likely to pursue risky strategic investments (Chu, 2002). Furthermore, the second generation is often motivated to establish their authority as the CEO of the company and consolidate family control, potentially leading to an increase in the company's financial risk. This leads us to hypothesize that:

H3: Financial risk is higher when the second generation of the family serves as the CEOs of the family firms.

Compared to non-family firms, family firms are subject to severe conflicts between family owners and minority shareholders. Previous studies (e.g., Lin and Fu, 2017; Chung et al., 2002) have shown that institutional investors play a crucial role in mitigating agency problems for family firms in their portfolio by actively monitoring them. This ensures that managers of the firm do not make risky decisions for their own benefit.

An and Zhang (2013) argue that the likelihood of crashes is inversely related to the proportions of shares held by dedicated institutional investors, indicating that their bargaining power increases with their ownership. Similarly, Jafarinejad et al. (2015) use the sample of US-listed firms and show that the risk of a company is negatively related to the proportions of shares by institutional investors. Given the critical role of professional investors in monitoring their portfolio firms and improving their performance, we formulate the following hypothesis:

H4: Family firms with high institutional ownership concentration have a lower financial distress risk.

3. Data, sample selection, and variables

3.1 Data and sample

Following Villalonga and Amit (2006) and Chemmanur et al. (2021), we define a family firm as a company whose ultimate owner is a natural person or a family linked by blood, marriage, or adoption and holds the largest ownership stake (at least 5% ownership). At least two family members are shareholders of the firm or hold positions as directors, top executives, or supervisors. Our findings are similar if we use a threshold of 10% of ownership to classify family firms. Our sample consists of family firms and non-family firms in China's A-share market between 2007 and 2020. We exclude firms that have been suspended from trading or specifically transferred. We also exclude observations of financial firms and those with incomplete information because these firms use different accounting standards. Doing so yields a sample consisting of 3,001 firms (1,493 family firms) and 23,355 firm-year observations.[2]

We obtain financial information from the CSMAR database (China Stock Market and Accounting Research), M&A data from the WIND database, and data about institutional investors from the Choice database. We manually collect family membership information from prospectuses and annual reports. We double-check the membership information in *Baidu.com*, the most popular search engine in China. All continuous variables are winsorized at 1% and 99% percentiles based on the full sample from 2007 to 2020.[3]

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[2] Our sample includes both state-owned and non-state-owned enterprises. Due to the different objectives, principles, and agency frameworks between state-owned enterprises (SOEs) and non-state-owned enterprises (non-SOEs), we control an indicator variable regarding whether a firm is state-owned in the regression analyses.

[3] The inferences of our results remain unchanged when we apply alternative methods dealing with the outliers in our sample,

3.2 Variable definitions

3.2.1 Financial distress risk

We use two approaches to measure financial risk. The first approach is *interest coverage* (Faulkender and Petersen, 2006), which is defined as Earnings Before Interest and Tax divided by financial expenses. We use interest coverage to measure a company's ability to make regular financial payments. Higher interest coverage is associated with lower financial risk. When the interest coverage is too low and the company profits are insufficient to pay the interest, the company usually faces the risk of debt defaults.

The second measure is the *Z-score*. Specifically, following Altman (1968) and MacKie-Mason (1990), we compute the *Z-score* below:

Z-score = 1.2*WC*/*TA* + 1.4*retEARNINGS*/*TA* + 3.3*EBTI*/*TA* + 0.6*MV*/*TL* + 0.999 *SAL*/*TA,*

where *WC* is the working capital; *TA* is the total assets; *retEARNINGS* is the retained earnings; *EBIT* is the earnings before interest and taxes; *MV* is the market value of equity; *TL* is the total liabilities; *SAL* is the sales. A higher Z-score value indicates a lower financial distress risk.

3.2.2 Diversification-motivated acquisitions

We obtain a comprehensive data set of M&As from the WIND database. The diversified M&As we retain must satisfy three conditions. First, we identify diversified M&A events in which the listed company is the acquirer. Second, we exclude the deals worth less than one million RMB. Third, the deal must be completed. We define a diversified acquisition as the deal for "diversification strategy" in the database. *Diversified* is a binary variable that takes the value one if the sample firm makes at least one diversified acquisition in year *t* and zero otherwise.

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including winsorization on an annual basis, non-winsorization, and exclusion of outliers.

3.2.3 CEOs and political connection of family firms

We differentiate family firms according to their CEOs and political connections. The variable of *Founder CEO* equals one if the founder of the family firm serves as the CEO and zero otherwise. The variable of *Descendant CEO* equals one if a descendant of the controlling family serves as the CEO and zero otherwise. The variable of *Outside CEO* equals one if a professional external CEO holds the CEO position. Founders of Chinese family firms establish political connections to strive for resources governed by governments. The power of political connection might decay as the founders transmit the controlling power to their descendants. We add the variable of *Political connection* to study its role in financial distress, especially when a descendant serves as CEO. *Political connection* equals to one if at least one of the family members who serve as top executives, directors, supervisors, or block-holders is a former government official, military officer, deputy of the NPC (National People's Congress), or a member of the CPPCC (Chinese People's Political Consultative Conference), and zero otherwise.

3.2.4 The shareholdings of institutional investors

We calculate the percentage of shares owned by institutional investors to reflect their roles in dampening financial distress. Institutional investors include securities investment funds, QFIIs (Qualified Foreign Institutional Investors), broker dealers, insurance companies, social security funds, trust companies, financial companies, banks, and non-financial listed companies.

3.2.5 Control variables

To isolate the effect of family ownership and institutional investors' engagement from the effect of other firm features, we include several firm characteristics in our model. Since prior studies suggest that corporate governance influences the likelihood of financial distress

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(Manzaneque et al., 2016), we control for proxies of corporate governance: *LarOwn* is the ratio of shares held by the largest shareholder; *InDirectors* is the proportion of independent directors on the board of directors; Coles et al. (2006) show that managerial incentive affects the risk decision of the firm, so we include the proxy; *MShrRat* is the percentage of shares held by the management team.

We also control for a number of financial characteristics following Anderson and Reeb (2003a) and Liu and Lv (2018). *Size* is the natural logarithm of a firm's total assets at the end of the fiscal year; *Age* is the natural logarithm of the number of years since a firm's IPO; *BM* is the ratio of common equity to its market value; *ROE* is net income divided by net assets; *Growth* is the change in total assets divided by the assets at the end of the previous period; *OPE* is operating profit divided by operating income; *OCF* is the ratio of annual operating cash flow to total assets; To mitigate the impact of corporate ownership on financial distress, we also include a dummy variable, *SOE,* equals to one if the firm is state-owned. Table A1 in the Appendix presents the variable definitions.

4 Empirical Results

4.1 Descriptive statistics and correlation coefficients

Table 1 presents summary statistics for the key variables used in our primary regression analysis. In our sample, the mean *interest coverage* and *Z-score* are 21.23 and 4.97, respectively.[4] The average level of diversified M&As is 0.027, implying that 2.7% of companies in the sample have engaged in diversified M&As. The mean *InstOwn* is 0.084, indicating that the average proportion of institutional investors' holdings is 8.4%. The average age of listing for firms is only

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[4] When the finance expenses are negative, the data for the interest coverage is unavailable, resulting in fewer observations.

10.2 years, suggesting that a significant proportion of Chinese publicly listed companies are in their early stages of development.

In our sample, 37.4% of the companies are identified as family-owned firms, and 38.4% are state-owned enterprises (SOEs). Among all family-firm observations, 50.7% have family CEOs, 41.2% are managed by founder CEOs, and 9.5% have descendant CEOs, while 33.1% of founding families have political connections.

[Insert Table 1 Here]

Table A2 in the Appendix shows the correlation coefficients among the variables, which do not cause severe multicollinearity problems in our regression models.

4.2 Family control and financial distress risk

In this subsection, we test the main hypothesis that family firms face a high level of financial distress risk compared to non-family firms. We construct the following basic regression model:

$$Y_{i,t} = \beta_0 + \beta_1 \textit{Family firm dummy}_{i,t} + \beta_2 X_{i,t} + \textit{Industry dummies}$$

$$+ \textit{Year dummies} + \varepsilon_{i,t} \qquad (1)$$

where $Y_{i,t}$ represents the firm's financial distress risk, measured as *interest coverage* or *Z-score*. *Family firm dummy*$_{i,t}$ takes the value of one for firms i whose largest ownership stake (at least 5%) in year t is held by a family. We also include a set of control variables as well as the industry fixed effects based on CSRC industry classifications and year effects. We cluster standard errors by firm to estimate Equation (1).

Table 2 presents the regression results of Equation (1) on the relation between family control and financial distress risk, using *interest coverage* and *Z-score* as dependent variables. Sample size and adjusted R^2 values are reported in the last two rows. In column (1), we regress *interest*

coverage on a dummy variable that equals one for family firms and zero for non-family firms. Its coefficient is -5.068 and significant at the 1% level. Specifically, the firm's interest coverage is predicted to decrease by 23.9% relative to the sample mean. We add the identity of its controller (*SOE*) in column (2), which results in a change of the coefficient from -5.068 to -3.543. In column (3) and (4), we use another widely used measure of financial risk, *Z-score*. The coefficient on the *Z-score* of -0.415 in column (3) decreases by 8.4% relative to the sample mean. When we add *SOE* in column (4), the coefficient becomes more negative, taking on the value of -0.618. The results support H1 and indicate that family-owned private enterprises are associated with a higher level of potential financial risk compared to non-family private enterprises.

[Insert Table 2 Here]

4.3 Potential causes of financial distress risk

Pursuing diversified acquisitions is one way for Chinese family firms to enter new markets with significant barriers but high potential returns. Listed family firms might issue more debt to finance their expansion activities. More debt and diversified acquisitions are more likely to cause financial distress risk to family firms. We adopt a two-stage approach to test our hypothesis. Endogeneity is not a key issue in this setting because the family dummy can largely be considered an exogenous variable, and survivor bias is minimized, as we discussed in the introduction. We do not expect to use this approach to rigorously test the mediating effect. We use the approach simply to provide more clues about family firms' financing and investing activities, which might cause their financial distress risk. In the first stage, we run the following regression models in Equation (2):

$$\text{Logit } (Diversified_{i,t}/High\ Debt_{i,t}) = \beta_0 + \beta_1 Family\ firm\ dummy_{i,t} + \beta_2 X_{i,t}$$

$$+ \textit{Industry dummies} + \textit{Year dummies} + \varepsilon_{i,t} \tag{2}$$

In Equation (2), *Diversified* is a dummy variable that takes the value of one when the firm makes at least one diversified acquisition in the year *t* and zero otherwise. *High Debt* is a dummy variable that takes the value of one if a firm's *Debt financing ratio* is higher than the sample median and zero otherwise. *Debt financing ratio* is calculated as the sum of bonds payable, and short-term and long-term loans over total assets. A positive β_1 suggests family control drives more diversified M&As and higher debt levels. In the second stage, we use the predicted probability in the first stage, *Diversified_e* and *High debt_e*, as independent variables to examine the relation between diversified M&As or debt level and financial distress risk.

Table 3 presents the results of family firms' diversified acquisitions. As shown in column (1) of Table 3, family firms exhibit a 23.8% increase in the odds of making at least one diversified acquisition. Furthermore, as shown in columns (2) and (3), the estimated probability of the firm making a diversified acquisition also has negative effects on the firm's financial risk (in columns (2) and (3): -14.88 and -2.60, respectively). In summary, family firms are more likely to make diversified acquisitions, increasing the distress risk of family firms, consistent with H2a.

[Insert Table 3 Here]

Table 4 presents the results of family firms' debt financing. Column (1) of Table 4 indicates that the odds of using high debt levels are 18.1% higher for family firms than non-family firms. In columns (2) and (3), we find that a higher probability of debt usage by family firms significantly increases the risk of financial distress (in columns (2) and (3): -19.58 and -3.42, respectively). This finding highlights the potential adverse consequences of over-reliance on debt financing within family firms, which confirms our H2b.

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4.4 CEO, political connection and financial distress risk

The type of CEOs might affect the relation between family control and financial distress risk. To test this, we run the following regression:

$$Y_{i,t} = \beta_0 + \beta_1 Family\ firm\ dummy_{i,t} + \beta_2 Founder\ CEO_{i,t} + \beta_3 Descendant\ CEO_{i,t}$$

$$+ \beta_4 X_{i,t} + Industry\ dummies + Year\ dummies + \varepsilon_{i,t} \qquad (3)$$

where $Y_{i,t}$ is measured as *interest coverage* or *Z-score*. *Founder CEO*, or *Descendant CEO*, equals to one if the founder of the family firm, or a descendant holds the CEO position, and zero otherwise.

Table 5 reports the results about Eq. (3). In columns (1) and (2), we include the family control dummy variable, the dummy of founder CEO, and the dummy of descendant CEO simultaneously, treating the group of family firms with outside CEOs as the reference group. The results in columns (1) and (2) of Table 5 indicate that family firms have significantly higher financial risk, and this risk is amplified by the presence of descendant CEOs compared to founder CEOs, supporting H3.

We test the role of political connections in a similar way. Columns (3) and (4) examine the relationship between family political connections and the risk of financial distress. Our findings reveal no significant relationship between the political connection of family members and corporate financial risk. However, it is perhaps worth noting that the coefficient on family political connections is negative. This may suggest that political connections provide family firms with greater opportunities to engage in high-risk activities.

4.5 The role of institutional investors

Although founding family ownership increases the financial risk, other large shareholders

arguably have different incentive goals. It has been argued that institutional investors are able to effectively improve corporate governance and provide effective oversight of firm management (e.g., Cumming et al., 2016). In this section, we analyze how institutional investors affect the financial risk of family firms using the following regression:

$$Y_{i,t} = \beta_0 + \beta_1 Family\ firm\ dummy_{i,t} + \beta_2 Family\ firm\ dummy \times InstOwn_{i,t}$$

$$+ \beta_4 X_{i,t} + Industry\ dummies + Year\ dummies + \varepsilon_{i,t} \qquad (4)$$

where $Y_{i,t}$ is either *interest coverage* or *Z-score* for firm i in year t. $InstOwn_{i,t}$ is the proportion of shares held by all institutional investors.

In columns (1) and (3) of Table 6, the coefficient for the *Family firm dummy* is negative and significant, indicating that family control increases the financial risk of the firm. To further examine the role of institutional investors, columns (2) and (4) present the results of extended models adding the interaction term between family control and institutional ownership. The coefficient of the interaction term *Family firm dummy*InstOwn* exhibits a significantly positive effect on both *interest coverage* and *Z-score*. Our results suggest that when institutional ownership is higher, the financial risk of family firms tends to be lower, which is in line with the monitoring theory of institutional investors. The results reveal that family firms with higher institutional ownership experience lower financial distress risk, supporting H4.

[Insert Table 6 Here]

We further explore the role of institutional ownership in shaping corporate risk-taking behaviors. Table 7 presents the results of logit regression models. In column (1), the coefficient estimates for the stand-alone *Family firm dummy* remain positive, indicating that the probability of making diversified acquisitions are higher for family firms. The interaction term *Family firm*

dummy*InstOwn is insignificant, though negative. In column (2), the coefficient estimates for the interaction terms *Family firm dummy*InstOwn* is -2.824 at the 1% level. This indicates that a higher proportion of institutional ownership is negatively related to the probability of using more debt in family firms. Institutional investors are concerned about the increased risk associated with companies carrying excessive debt. In summary, institutional investors help reduce a firm's financial risk by lowering the probability of high debt usage in family firms.

[Insert Table 7 Here]

Based on the methods adopted by Brickley et al. (1988) and Ward et al. (2018), we subdivide institutional investors into two groups based on their potential business relationships with the firms they invest in, i.e., independent institutional investors and grey institutional investors. Independent institutional investors consist of securities investment funds, social security funds, and QFIIs. Grey institutional investors include broker dealers, insurance companies, trust companies, financial companies, banks, and non-financial listed companies.

In columns (1) and (2) of Table 8, the coefficient for the interaction term *Family firm dummy*Independent* is significantly positive at 1% significance level, indicating that the involvement of independent institutional investors significantly reduces the financial distress risk of family firms. In columns (3) and (4), the coefficient for the interaction term *Family firm dummy*Grey* is not significant, suggesting that non-independent institutional investors don't contribute to decreasing the financial risk of family firms. In columns (5) and (6), the results reveal that the coefficient for *Family firm dummy*Independent* is positive and significant, while the coefficient estimate for *Family firm dummy*Grey* is not significant. The results indicate that the

financial risk of family firms can be mitigated only when the proportion of independent institutional investors is high.

[Insert Table 8 Here]

4.6 Robustness tests

4.6.1 Alternative definition of family firms

There is an extensive stream of literature on family firms, and it is challenging to establish a single and definitive criterion to define a family business. According to Pan et al. (2018), we define a new family firm dummy (*Family firm dummy_new*) as follows: the shareholdings of the actual controller and their family is more than 10%. The results in columns (1) and (2) of Table 9 indicate that *Family firm dummy_new* is negatively associated with both *interest coverage* and *Z-score* (in columns (1) and (2): -3.284 and -0.587, respectively). These findings are consistent with our main results.

4.6.2 Alternative measures of financial distress risk

We also consider two alternative measures of corporate financial risk: the *O-score* (Griffin and Lemmon, 2002; Ohlson, 1980) and *ZM-score* (Zmijewski, 1984). *O-score* is defined as:

$$O\text{-}score = -1.32 - 0.407SIZE + 6.03TL/TA - 1.43WC/TA + 0.0757CL/CA - 2.37NI/TA$$
$$-1.83FU/TL + 0.285INTWO - 1.72OENEG - 0.521[(NI_t - NI_{t-1})/|NI_t| + |NI_{t-1}|],$$

where, *SIZE* is the logarithm of total assets; *TA* is the total assets; *TL* is the total liabilities; *WC* is the working capital; *CL* is the current liabilities; *CA* is the current assets; *OENEG* equals one if total liabilities are higher than total assets, zero otherwise; *NI* is the net income; *FU* is the funds from operations; *INTWO* equals one if the company realized a net loss in the last two years, zero otherwise. A higher O-score value is associated with a higher financial distress risk.

The *ZM-score* is defined as:

ZM-score $= -4.336 - 4.513NI/TA + 5.679TL/TA + 0.004CA/CL$,

where, *NI* is the net income; *TA* is the total assets; *TL* is the total liabilities; *CA* is the current assets; *CL* is the current liabilities. A higher value for ZM-score indicates a greater risk of financial distress.

Our findings remain consistent across various measures of financial distress risk. As demonstrated in columns (3) and (4) of Table 9, the coefficient for *Family firm dummy* is significantly positive (in columns (3) and (4): 0.208 and 0.089, respectively), suggesting that family ownership is associated with higher financial risk. The results presented in Table 9 further support H1.

[Insert Table 9 Here]

4.6.3 Propensity score matching analysis

Since the decision of entrepreneurs to transform a firm into a family-controlled business may be related to the financial distress risk of the firm or factors determining the financial distress risk, we employ the propensity score matching method (PSM). We match each family firm in our sample with one non-family firm in the non-SOE samples based on observable firm characteristics. We use the one-to-one "nearest neighborhood" propensity score matching method, set the caliper to 0.005 standard deviation units, and perform matching without replacement. The matching variables include the natural logarithm of total assets (*Size*), the natural logarithm of firm age (*Age*), the market-to-book ratio (*BM*), the return on equity (*ROE*), the operating profit ratio (*OPE*), and the stockholding ratio of the largest shareholder (*LarOwn*). The matched sample enables us to compare the financial risk between family firms and non-family firms that are closely matched. Through our matching process, we identify 3502 unique pairs of family and non-family firms when

the outcome variable is *interest coverage*.

Table 10 presents the balance sheet of matching variables in the two groups. After matching, the mean values of all variables are insignificantly different between the two groups, indicating that the PSM method we employ is effective.

[Insert Table 10 Here]

Using the matched samples, we re-estimate the main regressions with the financial risk indicators as the dependent variables on the *Family firm dummy* and control variables described in Equation (1). In columns (1) to (4) of Table 11, where the dependent variable of financial risk is measured by *interest coverage*, *Z-score*, *O-score*, *ZM-score*, respectively, the regression coefficient for the *Family firm dummy* is consistent with H1. Thus, our results remain consistent after we control for differences in observable factors.

[Insert Table 11 Here]

5. Conclusion

In this paper, we carry out an empirical analysis of the impact of family control on the financial distress risk in China during the period from 2007 to 2020. Our findings reveal that Chinese family firms exhibit higher financial distress risk compared to non-family firms. Additionally, we find that the financial distress risk of family firms managed by descendant CEOs is higher than those with founder CEOs or outside CEOs. The results are robust to the different definitions of family firms, alternative measures of financial distress risk, and using the matching method.

Furthermore, our analysis demonstrates that the higher debt levels and more diversified M&As of family firms can partially contribute to their higher financial risk. Specifically, Chinese

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family firms tend to utilize higher levels of debt and engage in more diversified M&As due to their unique environmental opportunities and constraints, which exacerbates the financial distress risk faced by the firms.

In our final set of empirical tests, we further examine the role of institutional investors in alleviating the financial risk of family firms. We find that the negative effects of family control on financial risk are mitigated for firms with higher institutional ownership. The evidence shows that institutional investors help reduce the high-risk decisions of family firms through the debt financing channel. Independent institutions, often considered more active monitors, play a positive role in monitoring family firms and contribute to the reduction of financial risk in these firms.

China has the potential to be the world's largest economy, and family firms are well known to be the important drivers of economic growth in the country. Therefore, it's interesting to explore how family control may affect their decision-making, considering that these decisions may also influence and shape the growth of China's economy. In addition to its implications for entrepreneurial family firms, our empirical study also has implications for understanding the financial risk of family firms in economies other than China, where such firms often suffer from poor management and governance. This research contributes to the broader knowledge of the role of family firms and the importance of effective corporate governance and risk management practices.

Reference

Allen, F., Qian, J., & Qian, M. (2005). Law, finance, and economic growth in China. *Journal of Financial Economics*, *77*(1), 57–116.

Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of Finance*, *23*(4), 589–609.

An, H., & Zhang, T. (2013). Stock price synchronicity, crash risk, and institutional investors. *Journal of Corporate Finance, 21*, 1–15.

Anderson, R., & Reeb, D. M. (2003a). Founding-family ownership and firm performance: Evidence from the S&P 500. *Journal of Finance*, *58*(3), 1301–1328.

Anderson, R., & Reeb, D. M. (2003b). Founding-family ownership, corporate diversification, and firm leverage. *Journal of Law and Economics*, *46*(2), 653–684.

Ashwin, A., Krishnan, R. T., & George, R. (2015). Family Firms in India: family involvement, innovation and agency and stewardship behaviors. *Asia Pacific Journal of Management*, *32*(4), 869–900.

Barth, E., Gulbrandsen, T., & Schønea, P. (2005). Family ownership and productivity: the role of owner-management. *Journal of Corporate Finance*, *11*(1–2), 107–127.

Bennedsen, M., Fan, J. P. H., Jian, M., & Yeh, Y. (2015). The family business map: Framework, selective survey, and evidence from Chinese family firm succession. *Journal of Corporate Finance*, *33*, 212–226.

Bennedsen, M., Nielsen, K. M., Pérez-González, F., & Wolfenzon, D. (2007). Inside the family firm: the role of families in succession decisions and performance. *The Quarterly Journal of Economics*, *122* (2), 647–691.

Bernstein, S., Giroud, X., & Townsend, R. H. D. (2016). The impact of venture capital monitoring. *Journal of Finance*, *71*(4), 1591–1622.

Blair, M. (1995). Ownership and control: Rethinking corporate governance for the twenty-first century. Washington DC: The Brookings Institution.

Berrone, P., Cruz, C., & Gomez-Mejia, L. R. (2012). Socioemotional wealth in family firms: Theoretical dimensions, assessment approaches, and agenda for future research. *Family business review*, *25*(3), 258–279.

Breton-Miller, I. L., & Miller, D. (2006). Why do some family businesses out-compete? Governance, long-term orientations, and sustainable capability. *Entrepreneurship Theory and Practice*, *30*(6), 731–746.

Brickley, J. A., Lease, R. C., & Smith, C. W. (1988). Ownership structure and voting on antitakeover amendments. *Journal of Financial Economics*, *20*, 267–291.

Cao, J., Cumming, D. J., & Wang, L. (2015). One-child policy and family firms in China. *Journal of Corporate Finance*, *33*, 317–329.

Chemmanur, T. J., Hu, G., Wu, C., Wu, S., & Yan, Z. (2021). Transforming the management and governance of private family firms: The role of venture capital. *Journal of Corporate Finance*, *66*, 1–25.

Chu, X. (2002). Career managers with family businesses grow and manage the world *Management World (in Chinese)*, *4*, 100–108+147.

Chung, R., Firth, M., & Kim, J. (2002). Institutional monitoring and opportunistic earnings management. *Journal of Corporate Finance*, *8*(1), 29–48.

Coles, J. L., Daniel, N. D., & Naveen, L. (2006). Managerial incentives and risk-taking. *Journal of Financial Economics*, *79*(2), 431–468.

Cumming, D. J., Knill, A. M., & Syvrud, K. L. (2016). Do international investors enhance private firm value? Evidence from venture capital. *Journal of International Business Studies*, *47*(3), 347–373.

Daily, C. M. (1995). An empirical examination of the relationship between CEOs and directors. *Journal of Business Strategies*, *12*(1), 50–68.

Donker, H., Santen, B., & Zahir, S. (2009). Ownership structure and the likelihood of financial distress in the Netherlands. *Applied Financial Economics*, *19*(21), 1687–1696.

Duran, P., Kammerlander, N., Van Essen, M., & Zellweger, T. (2016). Doing more with less: innovation input and output in family Firms. *Academy of Management Journal*, *59*(4), 1224–1264.

Faulkender, M. W., & Petersen, M. A. (2006). Does the Source of Capital Affect Capital Structure? *Review of Financial Studies*, *19*(1), 45–79.

Gomez-Mejia, L. R., Haynes, K. T., Núñez-Nickel, M., Jacobson, K. J. L., & Moyano-Fuentes, J. (2007). Socioemotional wealth and business risks in family-controlled firms: evidence from Spanish oil mills. *Administrative Science Quarterly*, *52*(1), 106–137.

Gomez-Mejia, L. R., Campbell, J. T., Martin, G., Hoskisson, R. E., Makri, M., & Sirmon, D. G. (2014). Socioemotional wealth as a mixed gamble: Revisiting family firm R&D investments with the behavioral agency model. *Entrepreneurship Theory and Practice*, *38*(6), 1351–1374.

Griffin, J. H., & Lemmon, M. D. (2002). Book-to-market equity, distress risk and stock returns. *The Journal of Finance*, *57*(5), 2317–2336.

Hamilton, S., & Micklethwait, A. (2016). Greed and Corporate Failure: The Lessons from Recent Disasters. Palgrave Macmillan UK.

Hochberg, Y. V. (2012). Venture capital and corporate governance in the newly public firm. *Review of Finance*, *16*(2), 429–480.

Hoskisson, R. E., Hitt, M. A., Johnson, R. A., & Moesel, D. D. (1993). Construct validity of an objective (entropy) categorical measure of diversification strategy. *Strategic Management Journal*, *14*(3), 215–235.

Jafarinejad, M., Jory, S. R., & Ngo, T. (2015). The effects of institutional ownership on the value and risk of diversified firms. *International Review of Financial Analysis*, *40*, 207–219.

Jiang, F., Jiang, Z., & Kim, K. A. (2020a). Capital markets, financial institutions, and corporate finance in China. *Journal of Corporate Finance*, *63*, 101309.

Jiang, F., & Kim, K. A. (2015). Corporate governance in China: A modern perspective. *Journal of Corporate Finance*, *32*, 190–216.

Jiang, F., Shi, W., & Zheng, X. (2020b). Board chairs and R&D investment: Evidence from Chinese family-controlled firms. *Journal of Business Research*, *112*, 109–118.

La Porta, R., López-De-Silanes, F., & Shleifer, A. (1999). Corporate ownership around the world. *The Journal of Finance*, *54*(2), 471–517.

Lien, Y. C., & Li, S. (2013). Does diversification add firm value in emerging economies? Effect of corporate governance. *Journal of business research*, 66(12), 2425–2430.

Lin, Y., & Fu, X. M. (2017). Does institutional ownership influence firm performance? Evidence from China. *International Review of Economics & Finance*, *49*, 17–57.

Liu, B., & Lv, C. (2018). Research on M&A Behavior Based on long-term Value Orientation: evidence from Chinese family firms. *Accounting Research(in Chinese)*, *6*, 284–305.

Liu, Q., Luo, T., & Tian, G. G. (2015). Family control and corporate cash holdings: evidence from China. *Journal of Corporate Finance*, *31*, 220–245.

MacKie-Mason, J. K. (1990). Do Taxes Affect Corporate Financing Decisions? *The Journal of Finance*, *45*(5), 1471–1493.

Manzaneque, M., Priego, A. M., & Merino, E. (2016). Corporate governance effect on financial distress likelihood: Evidence from Spain. *Revista de Contabilidad*, *19*(1), 111–121.

McConaughy, D. L., Matthews, C. H., & Fialko, A. S. (2001). Founding family controlled firms: performance, risk, and value. *Journal of Small Business Management*, *39*(1), 31–49.

Morck, R., Stangeland, D. A., & Yeung, B. (2000). Inherited wealth, corporate control and economic growth: The Canadian disease. University of Chicago Press, pp. 319–372.

Morck, R., & Yeung, B. (2003). Agency problems in large family business groups. *Entrepreneurship Theory and Practice*, *27*(4), 367–382.

Ohlson, J. A. (1980). Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research*, *18*(1), 109–131.

Pan, Y., Weng, R., Xu, N., & Chan, K. C. (2018). The role of corporate philanthropy in family firm succession: A social outreach perspective. *Journal of Banking and Finance*, *88*, 423–441.

Pérez-González, F. (2006). Inherited control and firm performance. *The American Economic Review*, *96*(5), 1559–1588.

Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of Political Economy*, *94*, 461–488.

Tallman, S., & Li, J. T. (1996). The effects of international diversity and product diversity on the performance of multinational firms. *Academy of Management Journal*, *39*(1), 179–196.

Van Helvert-Beugels, J., Nordqvist, M., & Flören, R. H. (2020). Managing tensions as paradox in CEO succession: The case of nonfamily CEO in a family firm, *International Small Business Journal, 38*(3), 211–242.

Villalonga, B., & Amit, R. (2006). How do family ownership, control and management affect firm value? *Journal of Financial Economics*, *80*(2), 385–417.

Ward, C., Yin, C., & Zeng, Y. (2018). Institutional investor monitoring motivation and the marginal value of cash, *Journal of Corporate finance*, *48*, 49–75.

Xu, N., Xu, X., & Yuan, Q. (2011). Political Connections, Financing Friction, and Corporate Investment: Evidence from Chinese Listed Family Firms. *European Financial Management*, *19*(4), 675–702.

Xu, N., Yuan, Q., Jiang, X., & Chan, K.C. (2015). Founder's political connections, second generation involvement, and family firm performance: evidence from China. *Journal of Corporate Finance*, 33, 243–259.

Zhang, Y., Xing, C., & Wang, Y. (2020). Does green innovation mitigate financing constraints? Evidence from China's private enterprises. *Journal of cleaner production*, *264*, 121698.

Zmijewski, M. E. (1984). Methodological issues related to the estimation of financial distress prediction models. *Journal of Accounting Research*, *22*, 59.

Table 1 Descriptive statistics

This table provides summary statistics for the firms in our sample. Our sample consists of family firms and non-family firms in China's A-share market between 2007 and 2020. Financial firms and ST firms (Special Treatment) are excluded from the sample. The data set is made up of 3001 firms (1493 family firms) and 23355 firm-years (8724 family-firm-years). All continuous variables are winsorized based on the full sample from 2007 to 2020. Table A1 provides detailed definitions for all variables.

Variable	mean	max	p50	min	sd	N
Interest coverage	21.229	498.002	5.492	-23.516	63.612	16749
Z-score	4.965	35.655	3.192	0.396	5.550	23355
Diversified	0.027	1	0	0	0.163	23355
High debt	0.500	1	1	0	0.500	23355
InstOwn	0.084	0.569	0.040	0	0.112	23355
Age	2.073	3.434	2.197	0.693	0.748	23355
Size	22.152	26.152	21.956	20.020	1.258	23355
BM	0.342	0.779	0.319	0.079	0.153	23355
ROE	0.072	0.303	0.073	-0.426	0.094	23355
Growth	0.168	1.801	0.100	-0.253	0.286	23355
OPE	0.098	0.572	0.082	-0.511	0.142	23355
OCF	0.052	0.241	0.050	-0.139	0.067	23355
InDirectors	0.373	0.571	0.333	0.308	0.053	23355
MShrRat	0.134	0.678	0.004	0	0.197	23355
LarOwn	0.350	0.741	0.331	0.092	0.146	23355
SOE	0.384	1	0	0	0.486	23355
Family firm	0.374	1	0	0	0.484	23355
Founder CEO	0.412	1	0	0	0.492	8724
Descendant CEO	0.095	1	0	0	0.294	8724
Outside CEO	0.492	1	0	0	0.500	8724
Political connection	0.331	1	0	0	0.471	8724
Independent	0.063	0.494	0.023	0	0.096	23355
Grey	0.018	0.261	0.001	0	0.040	23355

Table 2
Baseline regressions about family control and financial distress risk

This table presents the results for the baseline regression results, where the dependent variables are *Interest Coverage* and *Z-score*. *Family firm dummy* takes the value one if the firm is a family firm and zero otherwise. Table A1 provides detailed definitions for all variables. The t-statistics in parentheses are based on robust standard errors clustered by firm. ***, ** and * denote significance at the 1%, 5% and 10% level respectively. Table A1 provides detailed definitions for all variables.

Dependent Variable	(1) Interest Coverage	(2) Interest Coverage	(3) Z-score	(4) Z-score
Family firm dummy	-5.068***	-3.543**	-0.415***	-0.618***
	(-3.52)	(-2.07)	(-2.59)	(-3.29)
Age	-2.792**	-3.184***	0.116	0.177
	(-2.47)	(-2.74)	(1.04)	(1.54)
Size	-4.716***	-4.834***	-1.509***	-1.492***
	(-7.44)	(-7.73)	(-21.35)	(-20.89)
BM	21.033***	20.999***	-7.123***	-7.108***
	(4.41)	(4.40)	(-13.79)	(-13.79)
ROE	74.637***	74.439***	-5.965***	-5.944***
	(7.44)	(7.41)	(-5.93)	(-5.93)
Growth	4.496**	4.621**	-1.703***	-1.724***
	(2.18)	(2.25)	(-13.97)	(-14.15)
OPE	63.674***	63.968***	16.256***	16.220***
	(7.51)	(7.54)	(15.40)	(15.40)
OCF	73.447***	73.948***	7.621***	7.530***
	(7.40)	(7.47)	(9.47)	(9.37)
InDirectors	-11.392	-11.504	1.516	1.462
	(-1.12)	(-1.13)	(1.45)	(1.41)
MShrRat	8.895*	10.097**	-0.025	-0.195
	(1.95)	(2.19)	(-0.06)	(-0.46)
LarOwn	12.465***	10.801**	0.551	0.802*
	(2.69)	(2.29)	(1.18)	(1.70)
SOE		3.377*		-0.489**
		(1.88)		(-2.26)
cons	108.578***	110.755***	38.976***	38.647***
	(7.06)	(7.26)	(23.98)	(23.63)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
N	16749	16749	23355	23355
Adjusted R²	0.087	0.087	0.340	0.341

Table 3
Family control, diversified acquisition, and financial distress risk

This table reports the results of the influence of diversified acquisitions on the relationship between family control and financial distress risk. *Diversified* takes the value of one when the firm makes at least one diversified acquisition in year *t* and zero otherwise. Column (1) presents the results from our logit regression analysis of the effect of family control on the probability of experiencing diversified acquisitions. Columns (2) and (3) report the effect of the probability of diversified acquisitions estimated in the first stage on financial distress risk. Table A1 provides detailed definitions for all variables. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

First stage	(1) *Diversified*	Second stage	(2) *Interest Coverage*	(3) *Z-score*
Family firm dummy	0.238**	*Diversified_e*	-14.883**	-2.597***
	(2.20)		(-2.07)	(-3.29)
Age	0.096	*Age*	-1.754	0.426***
	(1.27)		(-1.27)	(3.21)
Size	0.266***	*Size*	-0.870	-0.801***
	(7.34)		(-0.44)	(-3.53)
BM	-0.815**	*BM*	8.870	-9.225***
	(-2.57)		(1.18)	(-11.29)
ROE	0.305	*ROE*	78.971***	-5.153***
	(0.49)		(7.64)	(-4.95)
Growth	0.531***	*Growth*	12.520***	-0.345
	(4.63)		(2.91)	(-0.78)
OPE	-0.162	*OPE*	61.555***	15.799***
	(-0.40)		(7.20)	(14.86)
OCF	-0.618	*OCF*	64.744***	5.924***
	(-0.99)		(6.14)	(6.29)
InDirectors	1.017	*InDirectors*	3.628	4.103***
	(1.37)		(0.30)	(3.28)
MShrRat	-0.273	*MShrRat*	6.040	-0.903**
	(-0.91)		(1.26)	(-1.99)
LarOwn	-0.388	*LarOwn*	5.024	-0.206
	(-1.29)		(0.96)	(-0.38)
SOE	-0.442***	*SOE*	-3.199	-1.637***
	(-3.67)		(-0.72)	(-3.29)
cons	-9.704***	cons	-33.664	13.446*
	(-11.57)		(-0.48)	(1.73)
Year Fixed Effects	Yes	Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Industry Fixed Effects	Yes	Yes
N	23355	N	16749	23355
Pseudo R^2	0.060	Adjusted R^2	0.087	0.341

Table 4
Family control, debt level, and financial distress risk

This table reports the results about the role of debt financing in the relationship between family control and financial risk. *High Debt* takes the value of one if the debt financing ratio [calculated as (bonds payable + long-term debt + short-term debt)/total assets] of the firm is higher than the sample median and zero otherwise. Column (1) presents the results from our logit regression analysis of the effect of family control on the probability of having higher debt levels. Columns (2) and (3) report the effect of the probability of high debt usage estimated in the first stage on financial distress risk. Table A1 provides detailed definitions for all variables. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

First stage	(1) High debt	Second stage	(2) Interest Coverage	(3) Z-score
Family firm dummy	0.181***	High debt_e	-19.577**	-3.416***
	(4.35)		(-2.07)	(-3.29)
Age	0.047	Age	-2.263*	0.337***
	(1.58)		(-1.79)	(2.78)
Size	0.747***	Size	9.794	1.060
	(40.95)		(1.39)	(1.35)
BM	-4.700***	BM	-71.008	-23.163***
	(-36.72)		(-1.59)	(-4.74)
ROE	-2.906***	ROE	17.553	-15.870***
	(-9.92)		(0.60)	(-5.07)
Growth	0.297***	Growth	10.441***	-0.708**
	(5.07)		(3.03)	(-2.08)
OPE	-2.428***	OPE	16.426	7.924***
	(-13.75)		(0.67)	(2.88)
OCF	-5.468***	OCF	-33.090	-11.147*
	(-20.58)		(-0.64)	(-1.95)
InDirectors	-0.122	InDirectors	-13.891	1.046
	(-0.41)		(-1.35)	(0.99)
MShrRat	-0.117	MShrRat	7.800*	-0.595
	(-1.11)		(1.69)	(-1.39)
LarOwn	-1.065***	LarOwn	-10.052	-2.837**
	(-8.94)		(-0.94)	(-2.45)
SOE	-0.396***	SOE	-4.381	-1.843***
	(-8.33)		(-0.88)	(-3.32)
cons	-13.615***	cons	-155.789	-7.864
	(-32.96)		(-1.22)	(-0.56)
Year Fixed Effects	Yes	Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Industry Fixed Effects	Yes	Yes
N	23355	N	16749	23355
Pseudo R^2	0.239	Adjusted R^2	0.087	0.341

Table 5
CEO, political connection and financial distress risk

This table reports the results about some characteristics of family firms that may affect their financial distress risk. *Founder CEO*, or *Descendant CEO*, equals to one if the founder of the family firm or a descendant holds the CEO position, and zero otherwise. *Political connection*, equals to one if at least one of the family members who serve as top executives, directors, supervisors, or block-holders is a former government official, military officer, deputy of the NPC, or a member of the CPPCC, and zero otherwise. Table A1 provides detailed definitions for all variables. The t-statistics in parentheses are based on robust standard errors clustered by firm. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

	(1)	(2)	(3)	(4)
Dependent Variable	*Interest Coverage*	*Z-score*	*Interest Coverage*	*Z-score*
Family firm dummy	-3.582**	-0.609***	-3.245*	-0.613***
	(-2.36)	(-6.11)	(-1.76)	(-3.11)
Founder CEO	1.633	0.045		
	(0.86)	(0.40)		
Descendant CEO	-5.373**	-0.275*		
	(-2.34)	(-1.89)		
Political connection			-0.831	-0.014
			(-0.37)	(-0.06)
Age	-3.083***	0.180***	-3.166***	0.177
	(-3.22)	(3.21)	(-2.73)	(1.54)
Size	-4.829***	-1.492***	-4.820***	-1.492***
	(-10.36)	(-48.27)	(-7.69)	(-20.89)
BM	21.391***	-7.095***	21.023***	-7.109***
	(5.15)	(-27.28)	(4.41)	(-13.79)
ROE	74.628***	-5.932***	74.473***	-5.943***
	(9.59)	(-10.27)	(7.41)	(-5.92)
Growth	4.499**	-1.727***	4.614**	-1.724***
	(2.23)	(-15.62)	(2.24)	(-14.15)
OPE	63.925***	16.219***	63.944***	16.219***
	(9.50)	(30.02)	(7.53)	(15.38)
OCF	73.898***	7.534***	73.943***	7.530***
	(8.47)	(15.03)	(7.47)	(9.37)
InDirectors	-12.288	1.435***	-11.596	1.461
	(-1.48)	(2.60)	(-1.14)	(1.40)
MShrRat	9.560**	-0.212	10.057**	-0.195
	(2.46)	(-0.95)	(2.18)	(-0.46)
LarOwn	10.614***	0.792***	10.863**	0.802*
	(3.01)	(3.70)	(2.29)	(1.70)
SOE	3.250**	-0.494***	3.344*	-0.490**
	(2.27)	(-5.30)	(1.86)	(-2.25)
cons	110.995***	38.661***	110.404***	38.641***
	(9.72)	(51.39)	(7.22)	(23.64)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
N	16749	23355	16749	23355
Adjusted R^2	0.088	0.341	0.087	0.341

Table 6
The effect of professional institutional investors on financial distress risk of family firms

This table reports the results about the role of institutional investors in reducing family firms' financial distress risk. *Family firm dummy* takes the value one if the firm is a family firm and zero otherwise. *InstOwn* is the sum of the shares owned by all institutional investors for each firm in year *t*. Table A1 provides detailed definitions for all variables. The t-statistics in parentheses are based on robust standard errors clustered by firm. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

	(1)	(2)	(3)	(4)
Dependent Variable	*Interest Coverage*	*Interest Coverage*	*Z-score*	*Z-score*
Family firm dummy	-3.543**	-5.818***	-0.618***	-0.827***
	(-2.07)	(-3.25)	(-3.29)	(-4.41)
Family firm dummy×InstOwn		32.445***		2.716***
		(2.97)		(3.50)
Age	-3.184***	-3.105***	0.177	0.189*
	(-2.74)	(-2.67)	(1.54)	(1.65)
Size	-4.834***	-5.007***	-1.492***	-1.507***
	(-7.73)	(-7.94)	(-20.89)	(-20.98)
BM	20.999***	22.438***	-7.108***	-7.003***
	(4.40)	(4.67)	(-13.79)	(-13.61)
ROE	74.439***	72.627***	-5.944***	-6.091***
	(7.41)	(7.23)	(-5.93)	(-6.05)
Growth	4.621**	4.138**	-1.724***	-1.761***
	(2.25)	(2.02)	(-14.15)	(-14.44)
OPE	63.968***	63.759***	16.220***	16.171***
	(7.54)	(7.52)	(15.40)	(15.41)
OCF	73.948***	72.807***	7.530***	7.425***
	(7.47)	(7.36)	(9.37)	(9.28)
InDirectors	-11.504	-11.661	1.462	1.421
	(-1.13)	(-1.15)	(1.41)	(1.37)
MShrRat	10.097**	10.252**	-0.195	-0.194
	(2.19)	(2.23)	(-0.46)	(-0.46)
LarOwn	10.801**	11.013**	0.802*	0.819*
	(2.29)	(2.33)	(1.70)	(1.74)
SOE	3.377*	3.543**	-0.489**	-0.481**
	(1.88)	(1.97)	(-2.26)	(-2.21)
cons	110.755***	114.306***	38.647***	38.973***
	(7.26)	(7.46)	(23.63)	(23.71)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
N	16749	16749	23355	23355
Adjusted R^2	0.087	0.088	0.341	0.342

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Table 7
The impact of professional institutional investors on risk-taking activities of family firms

This table reports the results about the role of institutional investors in family firms' risk-taking activities. *InstOwn* is the sum of the shares owned by all institutional investors for each firm in year *t*. *Diversified* takes the value of one when the firm makes at least one diversified acquisition in year *t*, and zero otherwise. *High Debt* takes the value of one if the debt financing ratio [calculated as (bonds payable + long-term debt + short-term debt)/total assets] of the firm is higher than the sample median, and zero otherwise in year t, and zero otherwise.. Table A1 provides detailed definitions for all variables. The t-statistics in parentheses are based on robust standard errors clustered by firm. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

	(1)	(2)
Dependent Variable	*Diversified*	*High debt*
Family firm dummy	0.287**	0.458***
	(2.35)	(10.49)
Family firm dummy×InstOwn	-0.556	-2.824***
	(-0.86)	(-10.97)
Age	0.094	0.082***
	(1.23)	(2.92)
Size	0.269***	0.802***
	(7.28)	(41.97)
BM	-0.841***	-4.279***
	(-2.61)	(-35.32)
ROE	0.344	-3.864***
	(0.58)	(-11.87)
Growth	0.538***	0.266***
	(5.37)	(4.44)
OPE	-0.157	-1.115***
	(-0.41)	(-6.75)
OCF	-0.592	-4.812***
	(-0.94)	(-18.67)
InDirectors	1.023	-0.407
	(1.44)	(-1.38)
MShrRat	-0.276	-0.286***
	(-0.95)	(-2.85)
LarOwn	-0.389	-0.638***
	(-1.29)	(-5.56)
SOE	-0.446***	-0.214***
	(-3.65)	(-4.79)
cons	-9.765***	-15.902***
	(-11.52)	(-38.77)
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
N	23355	23355
Pseudo R^2	0.060	0.202

Table 8

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The role of different institutional investors on financial distress risk of family firms

This table reports the results of the roles of different types of institutional investors in family firms' risk-taking activities. *Independent* is the percentage of shares owned by securities investment funds, social security funds, and QFIIs. *Grey* is the percentage of shares owned by broker dealers, insurance companies, trust companies, financial companies, banks, and non-financial listed companies. Table A1 provides detailed definitions for all variables. The t-statistics in parentheses are based on robust standard errors clustered by firm. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

Dependent Variable	(1) Interest Coverage	(2) Z-score	(3) Interest Coverage	(4) Z-score	(5) Interest Coverage	(6) Z-score
Family firm dummy	-5.625***	-0.821***	-3.673**	-0.626***	-5.626***	-0.815***
	(-3.21)	(-4.44)	(-2.06)	(-3.24)	(-3.10)	(-4.30)
Family firm dummy×Independent	37.883***	3.307***			37.879***	3.326***
	(3.02)	(3.75)			(3.00)	(3.72)
Family firm dummy×Grey			8.736	0.543	0.121	-0.507
			(0.29)	(0.20)	(0.00)	(-0.19)
Age	-3.097***	0.191*	-3.183***	0.177	-3.097***	0.191*
	(-2.67)	(1.67)	(-2.74)	(1.54)	(-2.67)	(1.67)
Size	-5.017***	-1.508***	-4.838***	-1.493***	-5.017***	-1.508***
	(-7.96)	(-21.00)	(-7.73)	(-20.88)	(-7.96)	(-20.99)
BM	22.709***	-6.976***	20.993***	-7.109***	22.709***	-6.975***
	(4.72)	(-13.58)	(4.40)	(-13.79)	(4.72)	(-13.58)
ROE	72.429***	-6.124***	74.421***	-5.943***	72.429***	-6.125***
	(7.21)	(-6.07)	(7.41)	(-5.93)	(7.21)	(-6.07)
Growth	4.098**	-1.768***	4.613**	-1.724***	4.098**	-1.768***
	(2.00)	(-14.50)	(2.24)	(-14.15)	(2.00)	(-14.50)
OPE	63.763***	16.181***	63.959***	16.217***	63.763***	16.183***
	(7.52)	(15.42)	(7.54)	(15.39)	(7.52)	(15.41)
OCF	72.574***	7.393***	73.962***	7.532***	72.574***	7.391***
	(7.34)	(9.25)	(7.47)	(9.37)	(7.35)	(9.25)
InDirectors	-11.927	1.401	-11.444	1.464	-11.926	1.398
	(-1.18)	(1.35)	(-1.13)	(1.41)	(-1.17)	(1.34)
MShrRat	10.082**	-0.207	10.137**	-0.193	10.083**	-0.209
	(2.19)	(-0.49)	(2.20)	(-0.45)	(2.19)	(-0.49)
LarOwn	11.034**	0.821*	10.805**	0.802*	11.034**	0.821*
	(2.34)	(1.75)	(2.29)	(1.70)	(2.34)	(1.75)
SOE	3.522*	-0.484**	3.387*	-0.489**	3.522*	-0.484**
	(1.96)	(-2.23)	(1.89)	(-2.25)	(1.96)	(-2.23)
cons	114.428***	38.991***	110.858***	38.654***	114.429***	38.986***
	(7.47)	(23.73)	(7.27)	(23.61)	(7.47)	(23.71)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	16749	23355	16749	23355	16749	23355
Adjusted R²	0.088	0.342	0.087	0.341	0.088	0.342

Table 9

Alternative measures of family firms and financial distress risk

This table reports the results of robustness tests. *Family firm dummy_new* equal to one if the shares held by the ultimate owner are at least 10%, and zero otherwise. Columns (1) and (2) report the results of regressions of firms' financial distress risk on *Family firm dummy_new.* In columns (3) and (4), we adopt two alternative measures indicators of corporate financial risk. These are the *O-score* (Griffin and Lemmon, 2002; Ohlson, 1980) and *ZM-score* (Zmijewski, 1984). A higher *O-score* value and *ZM-score* value indicate higher financial distress risk. Table A1 provides detailed definitions for all variables. The t-statistics in parentheses are based on robust standard errors clustered by firm. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

Dependent Variable	(1) Interest coverage	(2) Z-score	(3) O-score	(4) ZM-score
Family firm dummy_new	-3.284**	-0.587***		
	(-2.36)	(-3.13)		
Family firm dummy			0.208***	0.089***
			(4.04)	(3.59)
Age	-3.197***	0.173	0.114***	0.010
	(-3.34)	(1.51)	(2.94)	(0.57)
Size	-4.839***	-1.492***	0.252***	0.440***
	(-10.38)	(-20.88)	(12.47)	(39.92)
BM	20.983***	-7.117***	-4.356***	-3.318***
	(5.08)	(-13.81)	(-32.81)	(-49.83)
ROE	74.431***	-5.945***	-1.083***	-1.296***
	(9.57)	(-5.93)	(-3.55)	(-9.60)
Growth	4.623**	-1.724***	0.284***	0.201***
	(2.29)	(-14.14)	(7.94)	(10.86)
OPE	63.975***	16.226***	-7.357***	-3.044***
	(9.52)	(15.40)	(-24.41)	(-26.13)
OCF	73.868***	7.522***	-8.687***	-1.769***
	(8.47)	(9.36)	(-32.69)	(-15.23)
InDirectors	-11.507	1.462	-0.479	-0.517***
	(-1.38)	(1.41)	(-1.47)	(-3.13)
MShrRat	10.132***	-0.185	-0.227*	0.024
	(2.63)	(-0.44)	(-1.75)	(0.42)
LarOwn	10.818***	0.802*	-0.254*	-0.134*
	(3.06)	(1.70)	(-1.70)	(-1.76)
SOE	3.589**	-0.460**	0.154**	0.109***
	(2.56)	(-2.15)	(2.43)	(3.35)
cons	110.713***	38.638***	-12.163***	-10.479***
	(9.71)	(23.62)	(-25.58)	(-40.22)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
N	16749	23355	21598	23355
Adjusted R^2	0.087	0.341	0.619	0.692

Table 10
Balance test of the propensity score matching model

This table presents the results of the balance test of the propensity score matching model. The matching variables include the natural logarithm of total assets (*Size*), the natural logarithm of firm listing time (*Age*), the market-to-book ratio (*BM*)**,** the return on equity (*ROE*), operating profit ratio (*OPE*), and the stock keeping ratio of the largest shareholder (LarOwn). Each family firm is matched with one non-family firm in non-SOE firms using the propensity-score method. Propensity score matching is implemented using the one-to-one "nearest neighbors" methodology with common support. Matching is conducted without replacement. Using our matching process, we find 3502 unique pairs of family and non-family firms in non-SOE firms when the outcome variable is *interest coverage*.

		Mean Treated	Control	%bias	T-test t Value	p Value
Size	Unmatched	22.042	21.984	5.5	2.65	0.008
	Matched	22.009	22.008	0.0	0.01	0.992
Age	Unmatched	1.855	2.062	-30.8	-14.91	0.000
	Matched	2.031	2.011	3.1	1.28	0.200
BM	Unmatched	0.334	0.320	10.4	5.00	0.000
	Matched	0.322	0.324	-1.0	-0.40	0.688
ROE	Unmatched	0.066	0.058	6.8	3.32	0.001
	Matched	0.059	0.059	-0.6	-0.27	0.787
OPE	Unmatched	0.078	0.069	6.5	3.16	0.002
	Matched	0.069	0.071	-1.1	-0.46	0.645
LarOwn	Unmatched	0.334	0.287	35.2	16.88	0.000
	Matched	0.293	0.295	-2.0	-0.82	0.414

Table 11
Propensity score matching analysis on the relation between family control and financial distress risk.

This table reports the results of regressions of baseline models using matched samples. In columns (1) to (4), the dependent variable financial risk is measured by *interest coverage*, *Z-score*, *O-score*, *ZM-score,* respectively. Table A1 provides detailed definitions for all variables. The t-statistics in parentheses are based on robust standard errors clustered by firm. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

	(1)	(2)	(3)	(4)
Dependent Variable	*Interest coverage*	*Z-score*	*O-score*	*ZM-score*
Family firm dummy	-3.116**	-0.382***	0.168***	0.059***
	(-2.00)	(-3.72)	(5.95)	(4.41)
Age	-2.036	0.350***	0.000	-0.032**
	(-1.27)	(3.51)	(0.01)	(-2.50)
Size	-7.230***	-1.962***	0.378***	0.490***
	(-7.95)	(-29.34)	(21.05)	(56.34)
BM	22.268***	-9.157***	-4.088***	-3.135***
	(3.54)	(-20.66)	(-36.43)	(-59.76)
ROE	47.968***	-11.199***	0.483	-0.976***
	(3.94)	(-10.00)	(1.61)	(-6.99)
Growth	7.925**	-1.996***	0.267***	0.189***
	(2.34)	(-10.99)	(5.19)	(7.11)
OPE	82.944***	20.885***	-8.488***	-3.199***
	(7.55)	(22.26)	(-35.63)	(-31.52)
OCF	103.498***	11.110***	-10.563***	-2.173***
	(7.29)	(12.66)	(-40.65)	(-18.58)
InDirectors	-20.433	-0.302	-0.473*	-0.352***
	(-1.43)	(-0.31)	(-1.77)	(-2.77)
MShrRat	4.331	-0.772**	-0.143	0.002
	(0.94)	(-2.56)	(-1.64)	(0.05)
LarOwn	2.768	0.630	-0.146	-0.151***
	(0.43)	(1.56)	(-1.27)	(-2.84)
cons	160.991***	49.279***	-14.526***	-11.529***
	(7.61)	(32.02)	(-35.88)	(-58.03)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
N	7004	10430	9388	10430
Adjusted R^2	0.101	0.357	0.635	0.669

Variables	Definition
Interest coverage	EBIT (Earnings Before Interest and Tax) divided by financial expenses
Z-score	See section 3.2.1
O-score	See section 4.6.2
ZM-score	See section 4.6.2
Family firm dummy	If a firm's ultimate owner is a natural person or a family and holds the largest ownership stake (at least 5% ownership) with at least two family members are shareholders or hold positions as board of directors, top executives and supervisors, the value takes 1; otherwise, the value is 0
Family firm dummy_new	If a firm's ultimate owner is a natural person or a family and holds the largest ownership stake (at least 10% ownership) with at least two family members are shareholders or hold positions as board of directors, top executives and supervisors, the value takes 1; otherwise, the value is 0
Diversified	A binary variable that takes the value one if the sample firm makes at least one diversified acquisition in year *t*, and zero
InstOwn	The percentage of shares held by securities investment funds, QFIIs, broker dealers, insurance companies, social security funds, trust companies, financial companies, banks and non-financial listed companies
Independent	The percentage of shares held by securities investment funds, QFIIs, social security funds
Grey	The percentage of shares held by broker dealers, insurance companies, trust companies, financial companies, banks and non-financial listed companies
High Debt	If debt financing ratio (The sum of bonds payable, long-term debt and short-term debt over total assets) of the firm is higher than sample median, the value takes 1; otherwise, the value is 0
Age	The natural logarithm of years after IPO
Size	The natural logarithm of total assets
Growth	The growth rate in total assets
MShrRat	Percentage of shares held by the management team
BM	The ratio of common equity to its market value
InDirectors	The proportion of independent outside directors on the board of directors
ROE	Net income divided by net assets
OPE	Operating profit divided by total sales
LarOwn	The proportion of shares held by the largest shareholder
OCF	The ratio of annual operating cash flow to total assets
SOE	If a firm is a state-owned, the value takes 1; otherwise, the value is 0
Founder CEO	If the founder of the family firm, a descendant, or a professional outside CEO holds the CEO position, and zero otherwise
Descendant CEO	If a descendant of the controlling family, holds the CEO position, and zero otherwise
Outside CEO	If a professional outside CEO holds the CEO position, and zero otherwise
Political connection	If at least one of the family members who serve as top executives, directors, supervisors or block-holders, is a former government official, military officer, deputy of the NPC (National People's Congress), or a member of the CPPCC (Chinese People's Political Consultative Conference), the value takes 1; otherwise, the value is 0

This table reports the correlation coefficient matrix of key variables used in the regressions. Table A1 provides detailed definitions for all variables. The financial variables are winsorized based on the full sample from 2007 to 2020.

	Interest Coverage	Z-score	Family firm dummy	InstOwn	Age	Size	BM	ROE	Growth	OPE	OCF	InDirectors	MShrRat	LarOwn	SOE
Interest Coverage	1.000														
Z-score	0.239	1.000													
Family firm dummy	0.033	0.053	1.000												
InstOwn	0.080	0.084	-0.062	1.000											
Age	-0.088	-0.150	-0.352	-0.038	1.000										
Size	-0.063	-0.355	-0.194	0.121	0.434	1.000									
BM	0.048	-0.178	0.086	-0.159	-0.141	-0.002	1.000								
ROE	0.219	0.158	0.004	0.297	-0.071	0.112	-0.085	1.000							
Growth	0.073	-0.037	0.058	0.187	-0.114	0.088	-0.113	0.254	1.000						
OPE	0.221	0.291	0.017	0.185	-0.102	0.039	0.082	0.397	0.204	1.000					
OCF	0.118	0.164	-0.002	0.145	0.008	0.038	-0.023	0.328	-0.049	0.249	1.000				
InDirectors	-0.005	0.025	0.070	-0.026	-0.048	0.012	-0.005	-0.023	-0.007	-0.002	-0.020	1.000			
MShrRat	0.086	0.141	0.394	-0.034	-0.349	-0.339	0.142	0.036	0.073	0.080	-0.017	0.099	1.000		
LarOwn	0.023	-0.054	-0.026	0.025	-0.067	0.189	0.056	0.133	0.012	0.109	0.082	0.039	-0.120	1.000	
SOE	-0.049	-0.164	-0.609	0.050	0.461	0.341	-0.063	0.003	-0.070	-0.027	0.005	-0.077	-0.510	0.217	1.000