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Keywords

opacity, corporate, cost, family, firms, debt

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Corporate Opacity and Cost of Debt for Family Firms

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Corporate Opacity and Cost of Debt for Family Firms

Abstract:

This paper uses a sample of Chinese firms to examine the impact of corporate opacity on the relationship between family control and firms' cost of debt. We find that family control is associated with a lower cost of debt on average, and a negative impact exists mainly in firms with relatively low corporate opacity. We further provide evidence that the moderating effect of corporate opacity becomes more pronounced when investors' perception of controlling families' moral hazard of expropriation is higher. Our results are robust to alternative opacity proxies and controlling for endogeneity of family control using the instrumental variable method. Our study highlights that controlling families are heterogeneous in their impact on the shareholder–debtholder relationship in family firms, and debtholders view corporate opacity as an important reference in assessing the extent of potential agency conflicts in China.

JEL classification: G21; G30; G32; G34

Key words: Corporate opacity; Cost of debt; Family firms; Institutions; Ownership structure

Corporate Opacity and Cost of Debt for Family Firms

1. Introduction

In recent years a small but growing body of literature (e.g., Anderson, Mansi, & Reeb, 2003; Boubakri & Ghouma, 2010; Ellul, Guntay, & Lel, 2007; Lin, Ma, Malatesta, & Xuan, 2011) has explored the impact of family ownership on the shareholder–debtholder agency cost of debt. In this paper, we focus on one firm-level factor that is well-known to be associated with agency conflicts and yet largely ignored in the examination of the impact of family ownership on the cost of debt. This particular factor is corporate information opacity, which plays a critical role in determining the extent of agency conflicts between shareholders, managers, and creditors and in designing the mechanisms to mitigate these conflicts (Bushman, Piotroski, & Smith, 2004; Bushman & Smith, 2001; Jensen & Meckling, 1976; Smith & Warner, 1979).

Controlling families' large undiversified equity positions provide the families with greater incentives and capacity for both monitoring and expropriating (e.g., Burkart, Panunzi, & Shleifer, 2003; Demsetz & Lehn, 1985; Shleifer & Vishny, 1997). This situation can lead to family control having either a positive or negative impact on a firm's cost of debt, depending on whether family owners' entrenchment incentive dominates their alignment incentive. However, controlling families' incentive *per se* is not directly observable.

Opaque corporate information leads outside investors to perceive that controlling shareholders are more likely to expropriate outside investors, compared to when information is more transparent (Anderson, Duru, & Reeb, 2009; Fan & Wong, 2002; Francis, Schipper, & Vincent, 2005b; Lang, Lins, & Miller, 2004; Leuz, Nanda, & Wysocki, 2003). Wang (2006) argues that greater information asymmetry between controlling families and other investors is one source of entrenchment for the controlling families. Thus, opaque information deters

outside investors from investing in the firms and increases the cost of external financing (La Porta, Lopez-de-Silanes, & Shleifer, 2000; Myers & Majluf, 1984). In contrast, more transparent information restrains controlling families from opportunistic behavior because their appropriation of private benefits is more likely to be detected by outside investors in this situation. The preceding analysis thus implies that as corporate information opacity increases, either the controlling families' positive (entrenchment) effect on the cost of debt is intensified or the negative (alignment) effect is weakened.

In this paper, we examine how corporate information opacity affects the impact of family control (i.e., the interactive impact of corporate opacity and family control) on the cost of external debt financing, using a sample of 3320 firm-year observations of privately (i.e., nonstate) controlled but publicly listed firms in China between 2004 and 2010. We follow the approach of Anderson et al. (2009) to measure corporate opacity with a comprehensive index that consists of four components based on stock trading information and analyst coverage. Our univariate statistics and multivariate results show that family firms in China on average pay a substantially lower cost of debt relative to nonfamily firms, which we attribute to family firms being overall significantly less opaque than nonfamily firms. Our findings suggest that for controlling families in China as a whole, their alignment incentive seems to dominate their entrenchment incentive. We further find that family control reduces the cost of debt only in firms with relatively less opaque information. In the full sample, the interaction between family ownership/control and corporate opacity is positive and significant, which suggests that the negative impact of family control on the cost of debt becomes weaker as corporate opacity increases. The results confirm our analysis that corporate opacity plays a moderating role in the relationship between family control and the cost of debt.

Our research design allows us to dig deeper into the drivers of the moderating role of corporate opacity. One important feature of the institutional environment in China is the wide

regional disparity in economic development and institutional efficiency.¹ The cross-region disparity in institutional environment allows us to examine whether and how the moderating role of firm-level corporate opacity is further influenced by the institutional environment such as overall marketization and legal protection of property rights at the province level, which affect outside investors' perception of controlling families' incentives and capacity to engage in expropriation activities (Boubakri & Ghouma, 2010; Ellul et al., 2007; La Porta et al., 2000). At the same time, because business laws, culture, and social norms are basically the same across China, in comparison with multi-country studies, our single-country setting enables us to better disentangle the impact of institutional efficiency from that of other country-level factors.

We conjecture that corporate opacity, as an indicator of controlling shareholder's alignment/entrenchment incentives, plays a greater moderating role in the relationship between family control and the cost of debt when institutions such as marketization and property rights protection are relatively weaker. The empirical evidence supports our expectation in that the interaction between family ownership and corporate opacity is significant only for firms located in provinces with relatively weaker institutions. The finding is consistent with the notion that investors' perception of expropriation by controlling families, which is more severe when external institutions are weaker (Claessens, Djankov, Fan, & Lang, 2002; Lins, Volpin, & Wagner, 2013), motivates creditors to demand more

¹ For instance, in a 2006 report the World Bank surveys investment climate of 120 cities (and 12,400 firms) across 30 provinces (i.e., all provinces excluding Tibet) in China and finds wide cross-region variation in investment climate. For example, per capita GDP in Southeast China averages more than 150% above Central and Southwest China. Firms in the 10th percentile of cities (in terms of government intervention and efficiency) spend an average 36 days per year interacting with major bureaucracies, compared to 87 days for firms in the bottom 10th percentile cities. Fan, Wang, and Zhu (2011) largely confirm the inequality in economic and market development as well as government efficiency at the province level.

transparent information to enable better monitoring. Consequently, the impact of family control on the cost of debt is more sensitive to corporate opacity.

In addition to the disparity in institutional environment, we also consider two other factors reportedly related to the controlling shareholders' alignment/entrenchment incentives. Prior studies find that controlling shareholders have greater incentives to expropriate outsider investors when the divergence of controlling shareholders' control rights from cash flow rights (control-ownership wedge) is larger (Claessens et al., 2002; Johnson, La Porta, Shleifer, & Lopez-de-Silanes, 2000; Lin et al., 2011) and for Chinese private firms when they are not politically connected (Ma, Ma, & Tian, 2013). Consistent with these findings, we find that increasing corporate opacity is more likely to weaken the negative impact of family control on debt cost when the controlling families' moral hazard of expropriation is higher; that is, when the control-ownership wedge is higher and a firm is not politically connected.

Our findings are robust to alternative measures of corporate opacity. We use two alternative measures in our robustness check, discretionary accruals and external auditor identity (i.e., whether the external auditor is a large auditor). Both are well documented in the literature as plausible opacity measures (e.g., Armstrong, Guay, & Weber, 2010; Francis, Lafond, Olsson, & Schipper, 2005a) that the management of the firm initiates and has great control over. Our findings are also robust to controlling for the endogeneity concerns about family ownership and the relationship between information disclosure and cost of capital (Nikolaev & van Lent, 2005). We apply the instrumental variable (IV) approach and estimate two-stage least squares regressions. Prior studies (e.g., Adams, Almeida, & Ferreira, 2009; Fahlenbrach, 2009) find that a firm is more likely to remain family controlled if the name of the firm at the time of initial public offering (IPO) contains at least part of the personal name(s) of the founder(s) and if a firm has more than one founder from different families; however, no evidence suggests that these factors have an impact on a firm's cost of debt. We

therefore use dummy variables of *Personal name* and *Multiple founders* as IVs for family ownership. We then employ two additional IVs, *Personal name*Opacity index* and *Multiple founders*Opacity index*, to instrument the interaction between family ownership and corporate opacity (i.e., *Family ownership*Opacity index*), which is also subject to endogenous concern (Kelejian, 1971). The results show that our findings are not driven by the endogeneity of family control.

Our study contributes to the literature in three ways. First, by examining the moderating role of corporate opacity in the relation between family control and debt costs, this study reveals that the cost of debt, and to a broader extent the shareholder–debtholder agency problem, is more sensitive to corporate opacity in family firms than in nonfamily firms. This is particularly relevant for the Chinese market because existing studies focusing on Chinese family firms, particularly in the field of the impact of family control on shareholder–debtholder conflict, are limited (Cheng, 2014) despite the importance of family firms to the overall Chinese economy. The implication from this study that family owners should be viewed as a heterogeneous group of blockholders with firm-level difference in the relative dominance of the alignment or entrenchment incentives also contributes to the small but growing literature about family control on shareholder–debtholder agency problems.

Second, we identify corporate opacity as a channel through which family firms can benefit from a lower cost of debt. More importantly, unlike country-level factors, corporate opacity can be influenced by firm-level corporate governance. Anderson et al. (2003) find that family firms pay lower costs of debt than nonfamily firms, but they treat all family firms universally and do not show the circumstances. Ellul et al. (2007), however, find that family firms originating from countries with a high level of investor protection benefit from a lower cost of debt than nonfamily firms. However, country-level legal institutions are obviously beyond the control of individual firms. We instead focus on firm-level corporate opacity,

which is heavily influenced by internal corporate governance (Anderson et al., 2009; Fan & Wong, 2002; Francis et al., 2005b; Lang et al., 2004; Leuz et al., 2003; Wang, 2006). We provide clear evidence that the cost of debt in family firms is significantly and positively associated with corporate opacity. We further show that the effect of corporate opacity on the cost of debt in family firms is more pronounced in an environment with low marketization and weak legal protection of property rights, which is exactly the situation in which family firms are more likely to experience a higher cost of debt (Ellul et al., 2007). Our study also provides important complementary evidence to prior literature that mainly uses data from either the United States or multiple countries.

Third, we generate direct evidence that corporate opacity appears to be substantially more important than some other factors examined by prior studies (e.g., control-ownership wedge, legal institutions, and a firm's political connection) in explaining the impact of family control on the cost of debt. This finding has important implications for family firms. For example, family firms commonly use various control-enhancing mechanisms to exercise effective control with a relatively small equity ownership, which results in excess control rights over cash flow rights, not only in developing countries but also in developed countries such as the United States (Claessens, Djankov, & Lang, 2000; Faccio & Lang, 2002; Villalonga & Amit, 2009). Prior studies find that high control-ownership wedges would cause family firms to pay higher costs of debt because of perceived high expropriating potential (Boubakri & Ghouma, 2010; Lin et al., 2011). But we find that, even with high control-ownership wedges, family firms can still benefit from lower costs of debt if corporate information is relatively less opaque. In other words, family firms do not have to sacrifice those important control-enhancing structures to benefit from lower costs of debt.

The rest of this paper proceeds as follows. Section 2 reviews related literature and presents our hypotheses. Section 3 describes the sample and data. Section 4 reports our main

empirical results. Section 5 tests the robustness of our results to different opacity measures and to various model specifications. Finally, Section 6 sets forth our conclusion.

2. Literature Review and Hypothesis Development

The presence of a dominant and powerful family blockholder reshapes a firm's agency problems (La Porta et al., 2000; Shleifer & Vishny, 1997). The literature so far has provided only limited direct theoretical analysis on how controlling families' unique positions and incentives affect their firms' cost of debt. Furthermore, empirical evidence has been inconclusive so far. In this section, we first review pertinent existing studies. We then rely on this literature to develop our hypotheses on how corporate information opacity affects the impact of family ownership/control on the cost of debt.

2.1. Empirical Evidence on the Impact of Family Ownership on Cost of Debt

Anderson et al. (2003), using a sample of S&P 500 firms, find that family firms on average pay 32 basis points lower than nonfamily firms on debt financing. The authors attribute this lower debt cost to families' interest in their firms' long-term survival and the families' concern for their reputation, which give them a strong incentive to alleviate agency conflict between large shareholders and debtholders. However, the conclusion in Anderson et al. (2003) may not be automatically generalizable to China for the following reason.

The sample firms in Anderson et al. (2003) are based in the United States, which is widely considered to have strong investor protection and creditor rights, while China has a considerably weaker institutional environment. The literature (e.g., Claessens et al., 2002; Lins et al., 2013) has found that the incentive and capacity of controlling shareholders to extract private benefits of control largely depend on external investor protection in the country in which a firm is located. Controlling families' concentrated ownership and

dominant position may give them both the incentive and capacity to abuse their control and to expropriate minority shareholders and creditors (e.g., Djankov, La Porta, Lopez-de-Silanes, & Shleifer, 2008; Jensen & Meckling, 1976; Johnson et al., 2000); however, families' strong interest in the long-term survival of their firms motivates them to take a long-term and low-risk approach (Achleitner, Gunther, Kaserer, & Siciliano, 2014; Anderson et al., 2003; Fahlenbrach, 2009). The analysis suggests that, compared to nonfamily blockholders, family ownership/control can either exacerbate or alleviate shareholder–debtholder agency conflicts and hence increase or reduce debt cost, depending on external institutions. Consistent with this view, Ellul et al. (2007) find that family firms in countries with high investor protection benefit from lower debt costs, but experience higher debt costs in countries with low investor protection.

In this paper, we first perform an initial test to determine if family firms have a lower cost of debt relative to nonfamily firms in China, a country characterized by overall weak investor protection. We then develop our hypotheses about the moderating role of firm-level corporate information on the relationship between family control and cost of debt. Finally, we hypothesize that the moderating role of corporate opacity is further influenced by controlling families' moral hazard of expropriation, and we then test this hypothesis.

2.2. Hypothesis Development

2.2.1. Corporate opacity and the impact of family control on firms' cost of debt

Economic theory suggests that the relative opacity of a firm's information can affect the impact of family control on a firm's cost of debt. It is well established that accounting and financial information can be used to mitigate the agency conflicts between shareholders, managers, and creditors (Bushman & Smith, 2001; Smith & Warner, 1979; Watts & Zimmerman, 1986). With respect to external debt financing, the literature suggests that

corporate information plays two crucial roles in mitigating agency conflicts between shareholders, managers, and creditors.

First, corporate information plays a formal and explicit role in the negotiation and setting of debt contracts. Creditors often require that debt contracts include certain clauses and covenants that are based on accounting and financial information supplied by the borrowing firms (Smith & Warner, 1979; Watts & Zimmerman, 1986). Transparent corporate information not only allows creditors to assess the borrowing firms' ability to repay the debt, but also enables creditors and borrowing firms to design clauses and covenants of debt contracts that alleviate potential conflicts between debt-contracting parties. In other words, more efficient debt contracts are possible when borrowing firms are committed to a more transparent information environment (Armstrong et al., 2010). Therefore, relatively transparent corporate information reduces lenders' demand for monitoring and the extent of the bonding mechanism (e.g., clauses and covenants of debt contracts), which in turn lowers the costs of debt.

With respect to the cost of debt for our sample of Chinese family firms, a second and possibly more important role of corporate opacity is in informal debt contracting, especially in establishing the reputation of the controlling families and the working relationship between borrowing firms and creditors. Although debt contracts between firms and creditors are formal and explicit, informal contracts, which often comprise implicit multi-period relationships, also play an important role in mitigating agency problems (Armstrong et al., 2010; Watts & Zimmerman, 1986). The importance of informal debt contracts is even more significant in countries with weak formal institutions, where legal enforcement of formal contracts is less effective and efficient (Armstrong et al., 2010). Armstrong et al. (2010) suggest that informal debt contracts generally rely more on borrowing firms' commitment to transparent information and less on the effectiveness of the regulatory and legal system.

Therefore, when family firms have less commitment to transparent information (i.e., when corporate information is relatively more opaque), the costs of informal debt contracting (e.g., negotiation, design, monitoring, and enforcement) are higher compared to when corporate information is less opaque. Consequently, the costs of debt also increase as corporate opacity increases.

Taken together, the preceding analysis suggests that relatively opaque corporate information increases not only the costs of formal debt contracting, but also the costs of informal debt contracting. This implies that the relative opacity of corporate information affects the impact of family control on the cost of debt. As corporate opacity increases, creditors demand higher returns from their investment to at least partially cover higher costs of both formal and informal debt contracting. Thus, relatively opaque corporate information will weaken the negative impact of family control on the cost of debt. Therefore, we state our first hypothesis as follows:

H1: The impact of family control on the cost of debt becomes weaker as corporate opacity increases.

2.2.2. Dominant shareholder moral hazard and the impact of corporate opacity on the relationship between family control and firms' cost of debt

We have theoretically inferred that family firms' alignment incentive dominates their entrenchment incentive when corporate information is relatively less opaque. However, it is reasonable to assume that various important factors have an impact on the relative dominance of these two types of incentive, and outside investors will adjust their perception accordingly. For example, a large wedge of control rights and cash flow rights may signal that controlling shareholders are more likely to expropriate outside investors (Claessens et al., 2002; Johnson et al., 2000; Lin et al., 2011; Shleifer and Vishny, 1997). A weak institutional environment

is also likely to foster firms' expropriation behavior (Dyck & Zingales, 2004; La Porta et al., 2000).

If creditors perceive a higher probability of opportunistic and expropriating behavior by controlling families, they have a greater incentive to monitor the controlling families more closely in order to protect their investments in the firms. In this process, creditors may demand more transparent information and accordingly set debt-contracting terms that are more sensitive to the transparency of corporate information. Because corporate information is perceived to be more opaque and less credible when controlling families are more likely to expropriate outside investors (Leuz et al., 2003), creditors may require higher returns on their lending to compensate for the higher risk. However, when controlling families' perceived probability of expropriation is low, creditors are less concerned about being expropriated. Therefore, creditors have a lower demand for transparent information, and consequently their lending terms, including the required returns, are likely to be less tied to the transparency of corporate information. In other words, corporate information opacity matters more when the potential agency conflicts between controlling families and creditors are more severe. Formally, we state our second hypothesis as

H2: The impact of corporate opacity on the relationship between family control and the cost of debt is stronger when the perceived expropriation potential by controlling shareholders is greater.

3. Sample, Data, and Statistics

3.1. Sample Selection and Data Sources

Our initial sample consists of all privately controlled (i.e., the ultimate largest shareholder is neither a state-owned enterprise nor a government agency) nonfinancial A-share issuing firms listed on either the Shanghai Stock Exchange or the Shenzhen Stock

Exchange between 2004 and 2010. Substantial changes in accounting standards occurred in 2003, and therefore we choose 2004 as our sample beginning year to have consistency in the treatment of accounting items used in our analysis. We first exclude firms in which the ultimate largest shareholder is a foreign entity and firms that are cross-listed overseas because foreign accounting rules may affect the treatment of some accounting items used in this study. We then delete observations for the first year of public listing because an IPO may affect at least three of the four components of the corporate opacity index used in this study: analyst coverage, trading volume, and stock return volatility (Cliff & Denis, 2004; Ellis, 2006; Rajan & Servaes, 1997). After we delete observations with missing data, our final sample consists of 705 firms and 3320 firm-year observations.

We obtain our accounting and financial data from the China Securities Market and Accounting Research (CSMAR) database. Compiled by Shenzhen GTA Information Technology Company Ltd., CSMAR is one of the most widely used databases for research on the Chinese stock market. Data used to construct the corporate opacity index is also from CSMAR. We winsorize all continuous variables used in the multivariate tests at the 1% and 99% level to minimize the impact of outliers.

3.2. Measurement of Variables

3.2.1. Cost of debt

Some prior studies (e.g., Anderson et al., 2003; Boubakri & Ghouma, 2010; Ellul et al., 2007) measure the cost of debt as the spread between corporate bond yield and a benchmark (e.g., U.S. treasury yield or LIBOR). The corporate bond market, however, is underdeveloped in China and many other emerging economies. Therefore, we follow Kim, Simunic, Stein, and Yi (2011), Pittman and Fortin (2004), and Sanchez-Ballesta and Garcia-Meca (2011) to measure a firm's cost of debt as its interest expense for the year divided by the average short-term and long-term debt during the year. Chinese public firms do not

always explicitly disclose interest expense in their income statements; rather they integrate interest expense into an accounting item called ‘financial expense’, which includes interest expense, interest income, profit and loss on foreign exchanges, and various fees and charges by financial institutions. Most firms disclose the breakdown of financial expense in the notes to income statements. We therefore manually collect the data of interest expense by checking the notes and drop those firm-year observations that do not disclose interest expense either in the income statements or in the notes to the income statements.

A concern exists, however, that our sample firms may on average be less opaque than the overall listed firms, because opaque firms are less likely to disclose detailed information about interest expenses and therefore dropped from our sample. We address this concern with alternative opaque measures in the robustness tests.

3.2.2. Key independent variables

3.2.2.1. Family firms

Despite the extensive literature on family firms, no universally accepted definition of family firms exists (see Prencipe, Bar-Yosef, & Dekker (2014) for an extensive review). Because of concentrated ownership in many European and East Asian countries, researchers commonly apply a minimum threshold for the largest shareholders’ ownership to ensure effective control (Dyck & Zingales, 2004; Fan & Wong, 2002). In this study, we use a dummy variable (*Family dummy*) to denote a family firm if (1) the founder and members of the founding family (either by blood or through marriage) hold at least 20% of the firm’s control rights; *and* (2) the founding family (all family members combined) is the ultimate largest shareholder.²

² Of our 3320 firm-year observations, 1092 satisfy our definition of family firms. If we relax the definition by removing the 20% threshold for control rights, the number of family firms increases to 1210. As an additional test, we run all regressions using this alternative definition. Our main results remain qualitatively unchanged. If

In addition to the criteria above, we apply three other rules in defining a family firm, given the unique characteristics of the Chinese markets. First, unlike in the United States, where almost all family firms are in the hands of second or later generations (Ellul et al., 2007), founders still control the vast majority of publicly listed family firms in China. While Fan, Wong, and Zhang (2012) define such firms as entrepreneurial firms, we regard these firms as family firms to maintain consistency with most other studies. Second, if a firm is established by more than one family, we regard the family with the largest control rights as the controlling family. Third, natural persons were not allowed to own or control a business until some years after the start of the economic reform in 1979; until then many businesses were registered as village and town enterprises (VTEs) even if they were founded and controlled by natural persons. These firms were later re-registered as private enterprises when new laws permitted the private ownership of business. These firms are regarded as family firms if they meet the two criteria of our family firm definition (i.e., ultimate largest shareholder with at least 20% control rights). In some other cases, managers of VTEs later became the controlling shareholders through management buyouts. We view these firms as nonfamily firms even if the controlling shareholders have more than 20% of control rights, to be consistent with prior literature (e.g., Ellul et al., 2007; Fahlenbrach, 2009).

As in prior literature, we also use a continuous variable (*Family ownership*) to measure family ownership, which is the fractional equity ownership of the founding family if a firm is classified as a family firm and zero for all nonfamily firms.

3.2.2.2. *Corporate opacity*

we remove the second criterion, the number of family firms remains the same. In other words, when the founding family holds at least 20% of control rights, no other blockholders hold more than 20% control right. This also implies that concentration of equity ownership is even higher in family-controlled firms.

Following Anderson et al. (2009), we develop a corporate opacity index that ranks the relative opacity of each firm-year observation. Our corporate opacity index consists of four components; namely, trading volume, analyst coverage, proportion of zero-return trading days, and stock return volatilities. The intuitions drawn from these corporate information opacity proxies are well known. We elaborate on them briefly.

Investors are more willing to buy or to sell a company's shares when less information asymmetry is present. Thus, trading volume is an inverse proxy for information opacity (Leuz & Verrecchia, 2000). We measure trading volume as the average daily number of shares traded divided by the average total number of shares outstanding during the year. Financial analysts play an important role as informational intermediaries between the firm and the market (Lang et al., 2004). The larger the number of financial analysts following a firm, the more intensive is the market scrutiny of the firm's financial information. We measure analyst coverage as the natural logarithm of the number of financial analysts following the firm. Our third proxy for corporate opacity is the proportion of zero-return trading days over the year. Lesmond, Ogden, and Trzcinka (1999) argue that the incidence of zero daily return is a liquidity measure that captures the relative value of information signals to the trading costs. They find that the proportion of zero-return trading days for NYSE/AMEX stocks is highly correlated to the bid-ask spread, a well-known proxy for information asymmetry. More recently Bekaert, Harvey, and Lundblad (2007) suggest that this measure is particularly useful for emerging markets where detailed transaction data are often not available and are of relatively poor quality. Our final proxy for information opacity is the volatility of daily stock returns. Lang and Lundholm (1993) suggest that the level of stock price volatility is negatively related to information asymmetries between the firm and investors. We measure volatility as the standard deviation of daily stock returns (dividend adjusted) during the year.

To construct the corporate opacity index, we first calculate the four individual components of opacity. We next rank each of these four components into deciles, with a value of 9 representing the most opaque firms and a value of 0 representing the least opaque firms. As a result, we obtain a new set of variables, *Rankvolume*, *Rankanalyst*, *Rankzeroreturn*, and *Rankvolatility*. We then sum these four components and divide the result by a factor of 36, which is the maximum possible value. This process yields a corporate opacity index that ranges from 0 to 0.9, with higher values indicating greater information opacity.

3.2.3. Control variables

Firm characteristics other than ownership structure and corporate opacity may also affect a firm's cost of debt. Consistent with the literature (e.g., Anderson et al., 2003; Lin et al., 2011; Petersen & Rajan, 1994; Pittman & Fortin, 2004), we include a set of firm characteristics as control variables in our regressions. These control variables are firm size, the ratio of fixed assets to total assets, the ratio of debt to total assets, a dummy variable indicating negative equity, the ratio of current assets to current liabilities, the ratio of operating cash flows to total assets, sales growth, board size, and the ratio of outside directors to the total number of directors. Theoretical and empirical evidence on the impact of these variables on the cost of debt is relatively well known. Detailed descriptions of all variables used in this study are provided in Table 1.

We also include year and industry dummy variables in our multivariate OLS analyses. Industry dummy variables are based on the classification system published by the China Securities Regulatory Commission, which classifies all listed firms into 13 broad industries (12 industries if the financial service industry is excluded).

< Insert Table 1 about here >

3.3. Descriptive Statistics

Panel A and Panel B of Table 2 report the distribution of family firms and nonfamily firms by year and industry, respectively. Panel A shows that the number and percentage of family firms rose steadily, except for a small drop in percentage terms between 2005 and 2006. In 2004, the Chinese government established the Small and Medium Enterprise Board (SMEB) under the Shenzhen Stock Exchange. A large proportion of all IPOs on the SMEB were family firms. Family firms represent about 32.9% of all firm-year observations in our sample. The percentage of family firms increased to 42.7% as of the end of 2010, from about 22.5% in 2004. This highlights the importance of studying the impact of family firms on the cost of debt.

<Insert Tables 2 about here>

Panel B shows that the number and the percentage of family firms varied significantly across industries. The manufacturing industry had by far the largest number of family firms, reflecting the fact that it also represented the largest industry by the total number of listed firms. Also notable was the absence of family firms in the power, gas, and water supply industry. This absence is not surprising, given that this highly regulated industry is monopolized by newly privatized former state-owned enterprises.

Table 3 provides descriptive statistics, broken down by family firms and nonfamily firms. Family firms on average pay a significantly lower cost of debt (0.577 percentage points or about 10% lower) than nonfamily firms. The difference is significant at the 1% level. The opacity index is 0.427 for family firms and 0.446 for nonfamily firms, with a difference of 0.019 or about 4.5%, which is also significant at the 1% level.

<Insert Table 3 about here>

Family firms are, on average, significantly larger than nonfamily firms (2.74 billion versus 2.14 billion of total assets). Compared with nonfamily firms, family firms have a

significantly lower PPE ratio (0.240 versus 0.261), which may imply that family firms invest more in R&D. Family firms have a significantly lower debt ratio (0.451 versus 0.665) but a higher current ratio (2.105 versus 1.647) relative to nonfamily firms, indicating that family firms may prefer a low-risk capital structure. Family firms also have a higher ratio of outside directors than nonfamily firms (0.366 versus 0.361). We do not find a significant difference in cash flow performance, sales growth, and board size between family and nonfamily firms.

To summarize, family firms and nonfamily firms differ significantly in their cost of debt and corporate opacity. They also differ in firm size, capital structure, investment, and internal corporate governance. We next formally assess how these factors affect the difference in the cost of debt between these two groups of firms.

4. Multivariate Results

4.1. Impact of Family Control on the Cost of Debt

In Section 2.1, we propose that the negative impact of family ownership on the cost of debt documented in Anderson et al. (2003) may not hold for the Chinese market. To test this conjecture, we estimate the following ordinary least square regression model, which makes our results directly comparable with prior empirical evidence:

$$\begin{aligned}
 \text{Cost of debt}_{i,t} &= \alpha + \beta_1 \text{Family ownership}_{i,t} \text{ (or Family dummy}_{i,t}) \\
 &+ \sum \beta_j \text{Control variable}_j + \sum \beta_t \text{Year dummy}_t \\
 &+ \sum \beta_k \text{Industry dummy}_k + \varepsilon_{i,t}
 \end{aligned}$$

Equation (1)

The detailed descriptions of all variables are reported in Table 1.

Standard errors of the OLS regression results reported in columns 1 and 3 of Table 4 are corrected for firm-level clustering. The coefficients of *Family ownership* and *Family*

dummy are -1.480 and -0.377, respectively, and both are statistically different from zero at the 1% level. The results confirm the univariate differences reported in Table 3 that family control is associated with a lower cost of debt. The findings here and in Anderson et al. (2003) suggest that family firms have lower costs of debt both in China and the United States, despite the immense difference in investor protection and other institutions. However, our findings are not consistent with the findings documented in Ellul et al. (2007), which suggests that family firms in countries with weak institutions (such as China) experience higher debt cost than nonfamily firms-. This inconsistency motivates us to examine other factors (rather than country-level institutions) that may affect the impact of family control on the cost of debt.

<Insert Table 4 about here>

Except for the estimate of the ratio of outside directors, the OLS coefficients of control variables (columns 1 and 3) have the predicted signs. Specifically, firms that pay a lower cost of debt are larger in size and have lower risk and better performance, compared to firms that pay a higher cost of debt. The OLS results, however, do not suggest a significant association between the cost of debt and a firm's growth, board size, and board independence. The OLS results for the control variables reported in Table 4 are similar to those in prior studies (e.g., Anderson et al., 2003; Petersen & Rajan, 1994; Pittman & Fortin, 2004).

There is, however, a concern that some firm-specific variables may be omitted, causing the OLS results to be biased. Nikolaev and van Lent (2005) suggest that fixed effects estimations reduce endogeneity bias. We therefore use a fixed effects model to correct for unspecified heteroskedasticity, which takes into account heterogeneity among individual firms. The results are reported in columns 2 and 4 of Table 4. The coefficients of *Family ownership* and *Family dummy* remain negative and statistically different from zero (albeit with lower significances), confirming the OLS results reported in columns 1 and 3. Overall,

the results in Table 4 provide evidence that family control on average is associated with lower costs of debt in China.

In all subsequent analyses, for brevity we present only the results using family ownership as the key independent variable. Results are similar when we replace family ownership with the family control dummy. The constant term and control variables are also included in all regressions, but their coefficients are not reported.³

4.2. Impact of Corporate Opacity on the Relationship between Family Control and the Cost of Debt

4.2.1. Primary test of Hypothesis H1

The literature finds that entrenched controlling shareholders tend to supply relatively more opaque information to outside investors (Anderson et al., 2009; Fan & Wong, 2002; Lang et al., 2004; Leuz et al., 2003). We argue that the negative effect of family control on the firm's cost of debt is consequently expected to be weaker when corporate opacity is relatively higher. To examine the moderating role of corporate opacity, we carry out two sets of tests.

We first divide our full sample into two subsamples based on the level of corporate opacity. Low-opacity firms are defined as those for which the opacity index is below the sample median. High-opacity firms are defined as those for which the opacity index is above the sample median. For each of these two subsamples, we then rerun our baseline regression model described in Equation 1. The results are reported in Table 5. Second, to explicitly examine the joint effect of corporate opacity and family control on the cost of debt, we estimate the following OLS model as well as the corresponding firm-fixed effects model:

³ However, those results are available on request.

$$\begin{aligned}
\text{Cost of debt}_{i,t} &= \alpha + \beta_1 \text{Family ownership}_{i,t} \text{ (or Family dummy}_{i,t}) \\
&+ \beta_2 \text{Family ownership}_{i,t} * \text{Opacity index}_{i,t} \\
&\text{(or Family dummy}_{i,t} * \text{Opacity index}_{i,t}) \\
&+ \beta_3 \text{Opacity index}_{i,t} + \sum \beta_j \text{Control variable}_j \\
&+ \sum \beta_t \text{Year dummy}_t + \sum \beta_k \text{Industry dummy}_k + \varepsilon_{i,t}
\end{aligned}$$

Equation (2)

The results for regressions based on Equation 2 are reported in Table 6.

<Insert Table 5 and Table 6 about here>

Columns 1 and 2 of Table 5 report the Equation 1 regression results for the subsample with relatively low opacity. The coefficient of *Family ownership* is negative and significant at either the 1% level (coef. = -2.061 in column 1) or the 5% level (coef. = -1.037 in column 2). The result is similar to that in Table 4 but with larger coefficients. However, the coefficient of *Family ownership* in columns 3 and 4, which represent the relatively more opaque subsample, is not only insignificant (albeit with a negative sign), but also smaller than that in columns 1 and 2. To formally test whether the coefficients of *Family ownership* in these two subsamples differ significantly, we apply the cross-equation restriction tests. The results show that the coefficients are significantly different (p -value = 0.003 for columns 1 and 3; p -value = 0.018 for columns 2 and 4). To appreciate the economic significance of our findings, consider the coefficients reported in columns 1 and 3 of Table 5. When corporate opacity is below the median (column 1) a one-standard-deviation increase in family ownership (an increase of about 18%) reduces debt cost by 0.373 percentage points. However, when corporate opacity is above the median (column 3) a one-standard-deviation increase in family ownership (about 17%) lowers debt cost by only about 0.077 percentage points.

The results in Table 5 provide evidence that the negative impact of family ownership on the cost of debt is stronger when corporate opacity is relatively low.

In Equation 2 we extend our baseline model from Equation 1 by adding an interaction term between family firm and corporate opacity. Both models in Table 6 show that, as expected, the coefficient of the stand-alone *Family ownership* remains negative and statistically significant, while the coefficient of the interaction term *Family ownership*Opacity index* is positive and significant. The opposite signs of these two coefficients imply that as corporate opacity increases, the negative impact of family ownership on the cost of debt becomes weaker. In other words, the negative impact of family ownership on the cost of debt is strongest when corporate opacity equals zero.⁴

Taken together, the results in Table 5 and Table 6 indicate that when corporate opacity is in the lowest decile (i.e., Opacity index = 0), family firms have significantly lower costs of debt than nonfamily firms. However, as corporate opacity increases, the difference in the cost of debt becomes insignificant. These results provide strong support for hypothesis **H1** that the impact of family control on the cost of debt is affected by corporate opacity. Specifically, the negative impact of family control on the cost of debt becomes weaker as corporate opacity increases.

4.2.2. *Endogeneity of family control*

One potential endogeneity concern exists regarding our results about the impact of family firms on the cost of debt and the moderating role of corporate opacity on such an impact. In particular, we explicitly assume the causality running from family control (or family ownership) to a lower cost of debt. However, it is also possible that an inverse

⁴ Recall that in constructing the corporate opacity index, we rank each of the four components into deciles (from 0 to 9) and divide the sum by 36. Thus, a zero opacity index value does not indicate zero information asymmetry; rather, it means each of the four components is in the lowest decile of opacity.

causality is present. Specifically, a lower cost of debt indicates better firm performance, *ceteris paribus*. It is intuitive to argue that founding families are more likely to retain control when their firms perform well. We address this potential endogeneity issue in this section with the IV approach.

An appropriate IV needs to satisfy two conditions. First, the IV needs to be exogenous in the main regressions. Second, the IV must be correlated to the endogenous variable, conditional on other covariates. Fahlenbrach (2009) finds that family-controlled firms are significantly more likely to be bearing the name(s) of the founder(s) at the time of IPO. However, we find no reason to believe that the name of a firm at the time of IPO is related to its current cost of debt. We follow Fahlenbrach (2009) to define *Personal name* as a dummy variable that equals 1 if the name of the firm at the time of IPO contains at least part of the personal name(s) of the founder(s) and zero otherwise. We use *Personal name* as an IV for family control.

We use a dummy variable concerning multiple founders as another IV for family control. Adams et al. (2009) argue that a firm is more likely to remain controlled by one of the founders if it was founded by more than one founder. But we find no systematic evidence that a firm having more than one founder has a direct effect on its cost of debt. Therefore, *Multiple founders*, which is a dummy variable that equals 1 if the firm has more than one founder (from different families), also serves the purpose of a good IV.

In estimating IV regressions, we employ the full sample with interaction terms of family ownership and corporate opacity. If family ownership is subject to endogeneity concerns, then the interaction of family ownership and opacity index may also be endogenous as suggested by Kelejian (1971). Therefore, we follow the practice in Angrist and Pischke (2009) and Kim and Lu (2011) to model *Family ownership* and *Family ownership*Opacity index* as endogenous variables and estimate a two-stage least squares regression model. We

use *Personal name*, *Multiple founders*, and their interactions with the exogenous variable (i.e., *Personal name*Opacity index* and *Multiple founders*Opacity index*) as our IVs. In the first stage, each endogenous variable is regressed on IVs and control variables. The *F*-statistics in the first stage (unreported but available on request) indicate that the coefficients of the IVs are significantly different from zero at the 1% level, providing further support for the validity of our IVs.

In the second stage, the predicted values from the first-stage regressions are used as key independent variables. Table 7 reports the second-stage regression results with the cost of debt as the dependent variable. As can be seen, the coefficients of *Family ownership* and *Family ownership*Opacity index* have the same sign as the corresponding coefficients in Table 6, but with even larger magnitudes. For example, the coefficients of *Family ownership* and *Family ownership*Opacity index* in column 1 of Table 7 are -6.091 and 8.070, respectively, compared to -3.182 and 4.527 in column 1 of Table 6. Thus, the results from the IV regressions are consistent with our earlier analyses and support hypothesis **H1** that corporate opacity weakens the negative impact of family control on the cost of debt. This finding is robust to controlling for potential endogeneity concerns.

<Insert Table 7 about here>

4.3. Controlling Shareholders' Moral Hazard of Expropriation and the Role of Corporate Opacity on the Impact of Family Control on the Cost of Debt

In this section, we aim to explore some factors that influence the mechanism through which corporate opacity affects the relationship between family control and the cost of debt. In particular, we focus on factors that are related to the potential incentives of dominant controlling families to expropriate outside investors because such incentives directly impact creditors' demand for transparent corporate information and consequently the sensitivity of

the impact of family control on the cost of debt to corporate opacity (refer to our discussion in Section 2.2.2). Specifically, we examine how the moderating effect of corporate opacity is affected by the following factors: the divergence between controlling families' control rights and cash flow rights (i.e., control-ownership wedge), external institutions (market development and property rights protection), and firms' political connections.

4.3.1. Control-ownership wedge

Previous studies show that for many firms around the world the ultimate largest shareholders exercise effective control over the firms with a relatively small equity ownership (Claessens et al., 2000; Faccio & Lang, 2002), resulting in a divergence between the ultimate largest shareholders' control rights and cash flow rights. In the presence of the control-ownership wedge, controlling shareholders have a greater incentive and ability to expropriate outside investors, which often causes a firm's value to be discounted (Claessens et al., 2002; Johnson et al., 2000; Shleifer & Vishny, 1997; Villalonga & Amit, 2006). Consistent with this view, Boubakri and Ghouma (2010) and Lin et al. (2011) find that the cost of debt financing is significantly higher for firms with higher control-ownership wedges, especially when the ultimate largest shareholders are families. As a result, creditors have a greater incentive to monitor firms with higher wedges to ensure their investments are not expropriated by the controlling shareholders. Consequently, the impact of family firms on the cost of debt is expected to be more sensitive to corporate opacity when the control-ownership wedge is high. In other words, the joint effect between family firms and corporate opacity is expected to be stronger for firms with a higher wedge. To test this proposition, we divide our full sample into low-wedge and high-wedge subsamples. The low-wedge subsample contains those firms that have a control-ownership wedge below the sample median; the high-wedge subsample contains those firms with a control-ownership wedge above the sample median. We repeat the testing in Equation 2 for each subsample. The results are reported in Table 8.

<Insert Table 8 about here>

In all four model specifications, the coefficient of the stand-alone *Family ownership* is negative and significantly different from zero, indicating that when corporate opacity is in the lowest decile (i.e., Opacity index = 0), family firms have a lower cost of debt than nonfamily firms, regardless of the size of control-ownership wedge. This finding seems to differ from that of Boubakri and Ghouma (2010) and Lin et al. (2011), who find that the positive impact of family ownership on the cost of debt becomes significantly stronger as the control-ownership wedge increases. Our explanation is that for Chinese family firms as a whole, controlling families' alignment effect is so dominant over their entrenchment effect that even a high control-ownership wedge does not significantly change the overall negative impact of family control on the firms' cost of debt.

However, the interactive impact of family ownership and corporate opacity on the cost of debt differs significantly between high-wedge firms and low-wedge firms. In firms with high control-ownership wedges (columns 1 and 2), the coefficient of *Family ownership*Opacity index* is positive and significant at the 1% level. By contrast, neither of the coefficients of the interaction terms is significant for firms with low control-ownership wedges (columns 3 and 4). Cross-equation restriction tests show that the coefficient of *Family ownership*Opacity index* in the high-wedge subsample is significantly larger than that in the low-wedge subsample (p -value = 0.008 for columns 1 and 3; p -value = 0.000 for columns 2 and 4). The results in Table 8 therefore support our expectation that the negative impact of family ownership on the cost of debt is reduced by corporate opacity. More importantly, the reduction is more significant when the controlling shareholders' control-ownership wedge is relatively high.

We also note that the coefficient of *Opacity index* is positive and significantly different from zero at the 1% or 5% level when controlling shareholders' control-ownership

wedge is relatively high (columns 1 and 2); but when the control-ownership wedge is relatively low, the coefficient is only marginally significant at the 10% level (column 3) or insignificant (columns 4). Cross-equation restriction tests show that the coefficient of *Opacity index* in the high-wedge subsample is significantly larger than that in the low-wedge subsample (p -value = 0.024 for columns 1 and 3; p -value = 0.071 for columns 2 and 4). These results are consistent with the notion that creditors have a greater demand for transparent information when controlling shareholders' expropriation potential is higher. These results also confirm the empirical evidence in some previous studies such as Lin et al. (2011).

4.3.2. Market development and legal protection of property rights

The literature argues that institutional development is important in mitigating agency conflicts and in curbing private benefits of control (Dyck & Zingales, 2004; La Porta et al., 2000; Shleifer & Vishny, 1997). Recent studies also show that external institutions (legal protection of investors in particular) are negatively associated with the cost of debt (Boubakri & Ghouma, 2010; Qi, Roth, & Wald, 2010). The analysis in Section 2 of this paper indicates that when controlling families are entrenched, corporate information becomes more opaque and the negative impact of family control on the cost of debt becomes substantially weaker. In this section, we take advantage of the significant variation in economic and legal development among China's diverse regions to test whether the development of institutions affects the moderating role of corporate opacity on the relationship between family control and the cost of debt. When external institutions are stronger, it is more difficult or more costly for controlling families (and more broadly, controlling shareholders) to extract private benefits from their control of the firms (Dyck & Zingales, 2004). Thus, in regions with stronger legal protection and more advanced market development, even controlling families with relatively more opaque information find it difficult or costly to take advantage of

corporate opacity to expropriate outside investors. In other words, the moderating effect of corporate opacity on the relationship between family control and the cost of debt is weaker when external institutions are relatively more developed.

The testing in this section is based on Fan et al. (2011), who evaluate a wide range of economic and institutional factors in China and construct a range of indices to measure these factors at the provincial level. The indices were available up to 2009 at the time we were developing this paper. Therefore, the sample period is 2004–2009 in this section. We focus on two indices obtained from Fan et al. (2011) as proxies for institutional development at the provincial level. Market development is an index that measures the overall level of marketization of the province in which a firm is headquartered. A higher market development index value indicates a higher level of marketization. Property rights protection is an index that measures the level of legal protection of property rights in the province in which a firm is headquartered, with a higher index value indicating a higher level of legal protection. As in Section 4.3.1, we divide our full sample into two subsamples, based on whether the level of market development and property rights protection is below or above the sample median, respectively. We report the results in Table 9, with Panel A using market development as the proxy for external institution and Panel B using property rights as the proxy for external institutions.

<Insert Table 9 about here>

In the weak-institutions subsample (columns 1 and 2), the coefficients of *Family ownership*Opacity index* are all positive and significant at either the 1% or 5% level, indicating that in regions with weak institutions, high corporate opacity significantly weakens the negative impact of family control on the cost of debt. However, the moderating effect of corporate opacity becomes insignificant in regions with relatively strong institutions, which is suggested by the smaller and insignificant coefficient of *Family ownership*Opacity index* in

columns 3 and 4. We compare four pairs of coefficients of the interaction term (columns 1 and 3, and columns 2 and 4 in Panel A and Panel B, respectively) using the cross-equation restriction tests. Among them the coefficients in columns 2 and 4 of Panel B differ at the 5% level (p -value = 0.014); all other pairs of coefficients differ significantly at the 1% level.

Taken together, the results in this section support our proposition that the moderating effect of corporate opacity is stronger when external institutions are weaker. We also note that in all models in Table 9, the stand-alone coefficients of *Family ownership* are negative and significantly different from zero, indicating that when corporate opacity is in the lowest decile (i.e., Opacity index = 0), family firms pay a lower cost of debt than nonfamily firms, regardless of the strength of external institutions. This finding complements that of Ellul et al. (2007), who find that family firms pay a lower (higher) cost of debt than nonfamily firms in countries with strong (weak) legal protection of investors. Our results suggest that, apart from country-level external institutions, firm-level corporate opacity, also plays an important role in explaining the actual impact of family control on the cost of debt.

Similar to the result in Table 8, the coefficient of the stand-alone *Opacity index* is significantly positive when market development or property rights protection is low (columns 1 and 2 in Table 9), while the coefficient is generally less significant in situations with relatively high market development or strong property rights protection (columns 3 and 4). The coefficients of *Opacity index* in these two subsamples are significantly different (columns 1 and 3 in Panel A have the largest p -value = 0.068). The results provide further empirical support to our earlier analysis that corporate opacity matters more for the cost of debt when controlling shareholders are more likely to expropriate outside investors.

4.3.3. *Firms' political connections*

A number of studies examine the implication of political connection for controlling shareholders' incentives to expropriate outside investors. Faccio, Masulis, and McConnell

(2006) find that politically connected firms are more likely to be bailed out by governments, and Leuz and Oberholzer-Gee (2006) find that politically connected firms have preferential access to loans from state-owned banks, which may suggest that controlling shareholders at politically connected firms are less concerned about outside investors' negative reaction to expropriation.

However, Li, Meng, and Zhang (2006) and Ma, Ma, and Tian (2013) argue that in the Chinese context, the primary motivation for private entrepreneurs to establish political connections is to overcome the lack of well-functioning markets and market-supporting institutions. . Despite the important contribution of the private sector to the overall economy, private firms still face differential treatment in many aspects. For example, bank loans disproportionately flow to state-owned enterprises even when they are not performing well. In addition, private firms are often excluded from government procurements and projects, and they are also frequently discriminated against in resource allocation (e.g., land, mines, and certain licenses) and in the enforcement of contracts with governments or state-owned enterprises (Chen, Li, Su, & Sun, 2011; Li, Meng, & Zhang, 2006). Such an imperfect market mechanism highlights the importance of political capital and motivates private entrepreneurs to enter politics or to establish political connections.

One of the most important ways for entrepreneurs to establish political connections is to become members of either the Chinese People's Congress (CPC) or the Chinese People's Political Consultative Conference (CPPCC), the two most important political organizations in the Chinese political system. To show the advanced nature of the CPC and the CPPCC, only elite entrepreneurs can be chosen as members. Therefore, to establish and to maintain the highly valuable and competitive membership of the CPC or the CPPCC, controlling shareholders have strong incentives to see their firms continue to perform well. Consistent with this view, Ma et al. (2013) find that privately controlled firms with political connection

have less tunneling than private firms without political connection. Therefore, following our analysis in Section 2.2.2, we expect the interactive impact of family control and corporate opacity on the cost of debt to be stronger for firms without political connection.

We follow Fan, Wong, and Zhang (2007) and Ma et al. (2013) in defining a firm as politically connected if either the chairman or the CEO of the firm is a current or former government official, military officer, or member of the CPC or the CPPCC. We divide our full sample into politically connected and nonconnected subsamples and separately test Equation 2 for each subsample. The results are reported in Table 10.

<Insert Table 10 about here>

Columns 1 and 2 of Table 10 report the regression results for firms without political connection, while columns 3 and 4 report the results for the connected subsample. Despite the seemingly big differences in the magnitude of the coefficients of the interaction term *Family ownership*Opacity index* in these two subsamples, cross-equation restriction tests reveal that they are not significantly different from each other (p -value = 0.123 for columns 1 and 3; p -value = 0.487 for columns 2 and 4). However, the coefficient of *Family ownership*Opacity index* is significant for firms without political connection, while the coefficient of the interaction terms is insignificant for firms with political connection. Thus, the results in Table 10 provide marginal support for our expectation that the negative impact of family control on the cost of debt is more likely to be reduced by corporate opacity for firms without political connection than for firms with political connection.

In summary, the test results in Section 4.3 show that the moderating effect of corporate opacity on the relationship between family firms and the cost of debt is affected by the probability (incentive and capacity) of controlling shareholders expropriating outside investors. Specifically, the moderating effect of corporate opacity is stronger when the controlling shareholders' control-ownership wedge is higher, when marketization and legal

protection of property rights are weaker, and marginally stronger when firms are not politically connected. Overall, the results provide support for hypothesis **H2** that corporate opacity plays a more important role in the relationship between family control and the cost of debt when the moral hazard of dominant shareholders is greater. The results also indicate that these three factors appear to be less important than corporate opacity in explaining the impact of family control on the cost of debt.

5. Robustness Checks and Additional Tests

5.1. Robustness Checks Using Alternative Opacity Measures

So far in this paper, we have followed Anderson et al. (2009) and used a comprehensive index consisting of four components (trading volume, analyst coverage, zero-return trading days, and stock return volatility) to measure corporate opacity. A concern exists, however, that our corporate opacity index is basically a liquidity measure and/or it can represent only the inherent information opacity of a firm that is less likely subject to the managers' control. In that case, our inference that family firms can benefit from a lower cost of debt by reducing corporate opacity may be questioned. To address this concern, we introduce earnings quality as an alternative proxy for information opacity measure. Earnings quality is often negatively associated with earnings management that is initiated by managers to alter information opacity. Managers have incentives to manage earnings to handle agency problems with outside investors.

We use two earnings quality measures. The first measure is the unsigned (absolute value) discretionary accruals calculated using the modified Jones model (Dechow, Sloan, & Sweeney, 1995). Large discretionary accruals indicate low earnings quality and more opaque information disclosure. We estimate discretionary accruals using the firm-year-specific method (Francis, Lafond, Olsson, & Schipper, 2004) and a five-year rolling window. The

estimates are winsorized at the 1% and 99% level. Due to data availability, we can only obtain discretionary accruals for 2220 of the initial 3320 firm-year observations. Family firms and nonfamily firms account for 485 and 1735 of the reduced sample, respectively.

Univariate testing shows no significant difference in discretionary accruals between family and nonfamily firms (0.068 vs. 0.072, p -value = 0.225), suggesting that family firms as a whole have similar earnings quality as nonfamily firms. However, we argue that family firms are heterogeneous in their agency problems, which can be reflected in different earnings quality among family firms. Thus, we replace opacity index with discretionary accruals and rerun the regressions described in Section 4. The results are presented in Appendix. As in the main results, we only report results for *Family ownership*. Results are similar when we use the *Family dummy*. In Table A1, the negative impact of family ownership on cost of debt exists only in firms with low discretionary accruals. Results in Table A2 show that when discretionary accrual is zero, family controlled firms pay a significantly lower cost of debt than nonfamily firms; however, the significant and positive coefficient of *Family ownership*Discretionary accruals* indicates that discretionary accruals mitigate the negative impact of family ownership on the cost of debt. The results in Tables A3 to A5 suggest that the moderating effect of earnings quality (as a proxy for information opacity) is significantly more profound when the perceived expropriation potential by control shareholders is greater. Overall, the results are largely consistent with those reported in Section 4, thus providing additional support for our hypotheses.

One notable observation from the results presented in the Appendix is that, except for in two models (columns 1 and 5 of Table A4), the coefficient of the stand-alone *Discretionary accruals* is insignificant, suggesting that earnings quality as measured by discretionary accruals has no impact on the cost of debt for nonfamily firms. This finding seems to be inconsistent with earlier evidence (e.g., Francis et al., 2005b; Sengupta, 1998).

One possible explanation is that the overall earnings quality is relatively low for China's listed firms; therefore, creditors discount the information contained in earnings quality when making lending decisions. However, the significant coefficient of the interaction term *Family ownership*Discretionary accruals* indicates that earnings quality matters more for family firms than for nonfamily firms for the reasons given in Section 2 of this paper.

Our second measure of earning quality is a dummy variable (*Small auditor*) denoting high corporate opacity if a firm's annual report is not audited by one of the international Big Four or the largest six domestic auditors by revenue.⁵ Numerous studies find a negative association between the quality of external auditors and the opacity of the audited firms' financial information (see Armstrong et al. (2010) for a comprehensive review of the related literature). Untabulated results, which are available on request, suggest that our findings remain robust to this alternative measure of corporate opacity.

5.2. Uniqueness of Family Blockholders and Different Effects of Founder, Non-Founder Family, and Outside CEOs

We have so far provided evidence that family firms enjoy significantly lower costs of debt than nonfamily firms when corporate opacity is relatively low, because the family blockholders' alignment effects dominate their entrenchment effects. However, it is possible that this finding may also apply to all firms with concentrated blockholders who have a relatively dominant position, rather than being limited to family firms.

To test whether family owners are different from other types of blockholders, we divide all sample firms into three groups, namely firms with family blockholders, firms with nonfamily blockholders, and firms without blockholders. We define blockholders as the ultimate largest shareholders with at least 20% of control rights (we use 30% as an alternative

⁵ The international Big Four include Deloitte, E&Y, KPMG, and PwC. The six largest domestic auditors are Shanghai Lixin, Xinyong Zhonghe, Yuehua, Daxin, Dahua, and Zhongshen.

threshold). Untabulated results indicate that, while a significant difference is present in the cost of debt between opaque and transparent family firms, no significant difference exists between opaque and transparent firms with nonfamily blockholders and between opaque and transparent firms without blockholders. In other words, corporate opacity matters more for family firms than for nonfamily firms, in terms of its association with the cost of debt. This finding provides further support for our choice of corporate opacity as the moderator in examining the relationship between family control and the cost of debt.

We next classify family firms based on CEO type (i.e., founder, non-founder family, or outside CEOs) to investigate the impact of CEO type on the cost debt. Untabulated results show that only family firms with founder CEOs enjoy lower costs of debt than nonfamily firms. Furthermore, the moderating role of corporate opacity becomes insignificant for family firms with founder CEOs. These results indicate that, relative to family firms with family member CEOs and outside CEOs, firms with founder CEOs are perceived to have fewer agency problems between family blockholders and outside investors (Villalonga and Amit, 2006); consequently, the cost of debt of founder CEO firms is less sensitive to corporate opacity.

5.3. Other Additional Tests

In our main analyses, we measure a firm's cost of debt as its interest expense for the year divided by the average short-term and long-term debt during the year. As mentioned in Section 3.3.1, Chinese public firms often integrate interest expense into an accounting item called 'financial expense', which includes interest expense, interest income, profit and loss on foreign exchanges, and various fees and charges by financial institutions. As a robustness check, we use firm-level financial expenses (scaled by total assets), rather than interest expenses, as a proxy for the cost of debt. Financial expense is explicitly disclosed by every

firm in their annual reports and is directly available from the CSMAR database, which minimizes the possibility of mistakes in our manually collecting data from notes to the annual reports. As interest expenses generally represent the largest component of a firm's overall financial expenses, we expect similar results to those reported in Section 4. We repeat all tests in Table 4 to Table 10 using financial expenses (scaled by total assets) as the dependent variable. The results generally confirm our expectation and remain statistically significant.

Finally, the by-industry distribution of sample firm-year observations (Table 2B) shows that family firms are absent from the power, gas, and water production and supply industry (industry code D). To control for potential industry effects, we follow Anderson et al. (2003) and exclude this industry (34 firm-year observations) from our sample. Our main findings remain valid with this new sample, which contains 3286 firm-year observations (with all industries containing both family and nonfamily firms).

6. Summary and Conclusion

The existing literature provides inconclusive empirical evidence on the impact of family control on firms' cost of debt. Moreover, several studies that examine such an impact from a perspective of country-level institutions (e.g., Boubakri & Ghouma, 2010; Ellul et al., 2007) seem to generate inconsistent results. Therefore, we posit that the impact of family control on the cost of debt is affected by certain firm-level factors.

We find that in China, which is characterized by weak external institutions, family-controlled firms on average pay significantly lower costs of debt relative to non-family-controlled firms. We also find that controlling families' negative impact on the firms' cost of debt is affected by corporate information opacity. Specifically, the negative impact mainly exists in relatively less opaque firms; there is no significant difference in the cost of debt between family and nonfamily firms when corporate opacity is relatively high. Thus, our

findings complement previous studies that find that the impact of family ownership on the cost of debt depends on the relative strength of institutions (e.g., Ellul et al., 2007). We further provide evidence that the moderating effect of corporate opacity on the relationship between family control and the cost of debt is affected by certain other factors. Specifically, the cost of debt of family firms is more sensitive to corporate opacity when the controlling shareholders' control-ownership wedge is higher, when marketization and property rights are weaker, and marginally more sensitive when firms are not politically connected.

Our study has important implications for family firms. Like firms in many other emerging markets, listed firms in China overall rely heavily on debt to finance their growth. Therefore, identifying factors that influence the impact of family control on the cost of debt is especially important in helping family firms, not only in China but also in other emerging markets, discover how they can benefit from lower costs of debt. In addition, families in both developed and emerging markets commonly control the firms with a relatively small equity ownership. Our results show that, when corporate information is relatively transparent, family control continues to be negatively associated with the cost of debt, even with a relatively high control-ownership wedge. Our findings that the impact of family control on the cost of debt is more sensitive to corporate opacity when legal protection of property and market development are relatively weaker indicate that transparent information is even more valuable to family firms in countries with weak institutions, where, according to Ellul et al. (2007), family firms are more likely to experience higher costs of debt.

Appendix Robustness checks using unsinged (absolute value) discretionary accruals as a measure of corporate opacity

Table A1. Family firms and the cost of debt (full sample and sub-sample analyses)

	Dependent variable: Cost of debt					
	Full sample		Low-accruals subsample		High-accruals subsample	
	OLS (1)	Firm-fixed effects (2)	OLS (3)	Firm-fixed effects (4)	OLS (5)	Firm-fixed effects (6)
Family ownership	-0.884** [0.426]	-1.326* [0.706]	-1.219*** [0.408]	-0.922** [0.444]	-0.436 [0.615]	-0.370 [1.520]
Constant and control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year and industry dummies	Yes	No	Yes	No	Yes	No
No. of obs.	2220	2220	1110	1110	1110	1110
Adjusted <i>R</i> -squared	0.204	0.414	0.209	0.508	0.221	0.308
<i>F</i> -stat.	12.02***	2.89***	6.68***	2.31***	11.22***	2.27***

Table A2. Family firms and the cost of debt (full sample with interaction term)

	Dependent variable: Cost of debt	
	OLS (1)	Firm-fixed effects (2)
Family ownership	-1.246** [0.601]	-1.549** [0.741]
Family ownership*Discretionary accruals	6.165** [2.563]	4.492** [2.083]
Discretionary accruals	0.509 [0.395]	0.007 [0.985]
Constant and control variables	Yes	Yes
Year and industry dummies	Yes	No
No. of obs.	2220	2220
Adjusted <i>R</i> -squared	0.207	0.415
<i>F</i> -stat.	11.97***	2.57***

Table A3. Control-ownership wedge, family firm, corporate opacity, and the cost of debt

	Dependent variable: Cost of debt			
	High-wedge subsample		Low-wedge subsample	
	OLS (1)	Firm-fixed effects (2)	OLS (3)	Firm-fixed effects (4)
Family ownership	-1.289** [0.636]	-3.256** [1.609]	-1.141** [0.575]	-1.336*** [0.436]
Family ownership * Discretionary accruals	2.664** [1.329]	9.892** [4.984]	7.199 [5.113]	2.429 [12.091]
Discretionary accruals	0.588 [0.481]	-0.430 [0.914]	0.740 [0.585]	1.423 [3.035]
Constant and control variables	Yes	Yes	Yes	Yes
Year and industry dummies	Yes	No	Yes	No
No. of obs.	1196	1196	1024	1024
Adjusted <i>R</i> -squared	0.235	0.540	0.210	0.321
<i>F</i> -stat.	18.44***	2.47***	30.56***	3.46***

Table A4. External institutions, family firms, corporate opacity, and the cost of debt

	Dependent variable: Cost of debt							
	External factor: Market development				External factor: property protection			
	Low-market-development subsample		High-market-development subsample		Low-property-protection subsample		High-property-protection subsample	
	OLS (1)	Firm-fixed effects (2)	OLS (3)	Firm-fixed effects (4)	OLS (5)	Firm-fixed effects (6)	OLS (7)	Firm-fixed effects (8)
Family ownership	-1.469** [0.577]	-2.219* [1.161]	-0.332** [0.147]	-1.445* [0.874]	-1.558** [0.722]	-2.536*** [0.823]	-0.264** [0.126]	-1.763* [0.904]
Family ownership * Discretionary accruals	10.737** [4.887]	7.119** [3.501]	4.668 [6.112]	1.254 [1.726]	13.714*** [5.082]	10.127** [5.002]	7.297 [6.073]	3.630 [6.182]
Discretionary accruals	1.759* [0.906]	0.434 [0.834]	0.312 [0.873]	1.003 [1.262]	1.151* [0.674]	0.160 [0.853]	0.826 [0.583]	0.352 [1.319]
Constant and control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and industry dummies	Yes	No	Yes	No	Yes	No	Yes	No
No. of obs.	925	925	948	948	933	933	940	940
Adjusted <i>R</i> -squared	0.215	0.540	0.345	0.634	0.235	0.542	0.311	0.638
<i>F</i> -stat.	14.44***	39.94***	6.21***	2.90***	14.25***	53.38***	4.88***	2.76***

Table A5. Political connection, family firms, corporate opacity, and the cost of debt

	Dependent variable: Cost of debt			
	Non-politically-connected subsample		Politically-connected subsample	
	OLS (1)	Firm-fixed effects (2)	OLS (3)	Firm-fixed effects (4)
Family ownership	-1.622*** [0.631]	-1.870** [0.766]	-0.970** [0.491]	-0.520 [0.346]
Family ownership * Discretionary accruals	9.277** [4.045]	6.190* [3.403]	1.863 [2.003]	2.740 [2.268]
Discretionary accruals	0.384 [0.443]	0.753 [1.539]	0.913 [0.828]	0.421 [0.720]
Constant and control variables	Yes	Yes	Yes	Yes
Year and industry dummies	Yes	No	Yes	No
No. of obs.	1430	1430	790	790
Adjusted R-squared	0.219	0.356	0.239	0.652
F-stat.	9.80***	2.43***	5.32***	2.60***

Notes: Tables in this appendix present regression results of the impact of family firms on the cost of debt and on the role of discretionary accruals on the relationship between family firms and the cost of debt. The regression model for Table A1 is as follows:

$$Cost\ of\ debt_{i,t} = \alpha + \beta_1 Family\ ownership_{i,t} + \sum \beta_j Control\ variable_j + \sum \beta_t Year\ dummy_t + \sum \beta_k Industry\ dummy_k + \varepsilon_{i,t}$$

And the regression model for Tables A2 to A5 is as follows:

$$Cost\ of\ debt_{i,t} = \alpha + \beta_1 Family\ ownership_{i,t} + \beta_2 Family\ ownership_{i,t} * Discretionary\ accruals_{i,t} + \beta_3 Discretionary\ accruals_{i,t} + \sum \beta_j Control\ variable_j + \sum \beta_t Year\ dummy_t + \sum \beta_k Industry\ dummy_k + \varepsilon_{i,t}$$

Discretionary accruals are calculated using modified Jones model (Dechow et al. 1995). Higher (absolute) values of discretionary accruals indicate greater corporate opacity. All other variables are defined in Table 1. The constant term and control variables are included in all regressions but their coefficients are not reported. Standard errors corrected for firm-level clustering are reported in brackets. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively.

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Table 1. Descriptions of main variables used in the analyses

Variable	Description
Dependent variables:	
Cost of debt	Interest expense for the year divided by the average of short-term and long-term debt during the year
Key independent variables:	
Family ownership	The fractional equity ownership by the family if a firm is classified as a family firm; zero for all nonfamily firms
Family dummy	A dummy variable that equals 1 if both of the conditions are met: (1) the founder and his family members hold at least 20% of the firm's control rights; and (2) the founding family (all family members combined) is the ultimate largest shareholder.
Opacity index	An opacity index constructed to measure corporate information opacity. The opacity index ranks four components, <i>trading volume</i> , <i>analyst coverage</i> , <i>zero-return trading days</i> , and <i>stock return volatility</i> in deciles (from 0 to 9) and divides the sum of the four components by 36, resulting in an opacity index between 0 and 0.9. A higher value of opacity index indicates that a firm's information is more opaque
Trading volume	Average daily number of shares traded during the year divided by the average number of total shares outstanding during the year
Analyst coverage	The number of equity analysts following each firm
Zero-return days	Proportion of zero daily returns over the number of trading days during the year
Stock return volatility	Standard deviation of daily stock returns (dividend-adjusted) during the year
Borrowing firm characteristics:	
Firm size	The natural logarithm of total assets
PPE	Net property, plant, and equipment divided by total assets
Debt ratio	The sum of short-term and long-term debt divided by total assets
Current ratio	Current assets divided by current liabilities
Cash flow	Operating cash flow divided by total assets
ROA	Earnings before interest and taxes (EBIT) divided by total assets
Sales growth	Total sales revenues in the current year minus total sales revenues in last year divided by total sales revenues in the last year
Negative equity	A dummy variable that equals 1 if the firm reports negative equity; zero otherwise
Board size	The natural logarithm of the total number of directors on the board
Outside directors	The number of outside directors divided by total number of board directors
Wedge	The difference between the controlling shareholder's control rights and cash flow rights
Political connection	A dummy variable that equals 1 if either the Chairman or the CEO is politically connected; zero otherwise
Institutional variables:	
Market development	An index that measures the overall level of marketization in the province in which a firm is headquartered. Higher index values indicate higher level of marketization.
Property protection	An index that measures the level of legal protection of property rights in the province in which a firm is headquartered. Higher index values indicate higher level of legal protection.
Instrumental variables	
Personal name	A dummy variable that equals 1 if the name of the firm at the time of IPO contains (part of) personal name(s) related to the founder(s)
Multiple founders	A dummy variable that equals 1 if the firm has more than one founder

Table 2. Distribution of firm-year observations**Panel A. Number and percentage of firm-year observations by year**

Year	All firms	Family firms	Nonfamily firms	Percentage of family firms (%)
2004	334	75	259	22.5
2005	394	103	291	26.1
2006	423	105	318	24.8
2007	456	130	326	28.5
2008	515	186	329	36.1
2009	577	228	349	39.5
2010	621	265	356	42.7
Total	3320	1092	2228	32.9

Panel B. Number and percentage of firm-year observations by industry

Industry code	Industry description	All firms	Family firms	Nonfamily firms	Percentage of family firms (%)
A	Agricultural, forestry, livestock & fishery	89	38	51	42.7
B	Mining	24	6	18	25.0
C	Manufacturing	1963	736	1227	37.5
D	Power, gas & water production & supply	34	0	34	0
E	Construction	64	28	36	43.8
F	Transport & storage	33	9	24	27.3
G	Information technology	276	135	141	48.9
H	Wholesale & retail trade	208	21	187	10.1
J	Real estate	316	69	247	21.8
K	Social services	97	15	82	15.5
L	Communication & cultural industry	9	4	5	44.4
M	Comprehensive	207	31	176	15.0
	Total	3320	1092	2228	32.9

Notes: A firm is defined as a family firm if both of these two conditions are met: (1) the founder and his family members hold at least 20% of the firm's control rights; and (2) the founding family (all family members combined) is the ultimate largest shareholder.

Table 3. Means, medians, standard deviations and univariate tests of differences in means and medians between family firms and nonfamily firms

Variables	All firms		Family firms		Nonfamily firms		Diff. in means (3) – (5)	Diff. in medians (4) – (6)
	(1) Mean	(2) Median	(3) Mean	(4) Median	(5) Mean	(6) Median		
Dependent variables								
Cost of debt (%)	5.705	5.662	5.318	5.202	5.895	5.876	-0.577***	-0.674***
Key independent variables								
Family ownership	0.105	0	0.318	0.293	0	0	0.318***	0.293***
Family dummy	0.329	0	1	1	0	0	1.000***	1.000***
Opacity index	0.440	0.450	0.427	0.425	0.446	0.450	-0.019***	-0.025***
Other control variables								
Total assets (RMB millions)	2342	1302	2744	1482	2144	1204	600***	278***
Firm size	21.012	20.987	21.245	21.115	20.903	20.906	0.342***	0.209***
PPE	0.254	0.232	0.240	0.224	0.261	0.236	-0.021***	-0.012**
Debt ratio	0.595	0.502	0.451	0.447	0.665	0.535	-0.214***	-0.088***
Current ratio	1.798	1.261	2.105	1.498	1.647	1.155	0.458***	0.343***
Cash flow	0.046	0.046	0.048	0.051	0.045	0.044	0.003	0.007
Sales growth	0.285	0.137	0.277	0.195	0.289	0.105	-0.012	0.090
ROA	0.028	0.023	0.024	0.022	0.030	0.023	-0.006*	-0.001
Negative equity	0.048	0	0.007	0	0.068	0	-0.061***	0
Board size	2.147	2.197	2.142	2.197	2.149	2.197	-0.007	0
Outside directors	0.363	0.333	0.366	0.333	0.361	0.333	0.005***	0
wedge	0.091	0.074	0.074	0.040	0.099	0.087	-0.025***	-0.047***
No. of firm-year obs.	3320		1092		2228			

Notes: Variables include cost of debt, corporate information opacity index, and borrowing firm characteristics. All variables are defined in Table 1. Significances are based on *p*-values using the two-tailed t-test for mean (Mann-Whitney-Wilcoxon test for median). *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 4. Family firms and the cost of debt

	Dependent variable: Cost of debt			
	OLS (1)	Firm-fixed effects (2)	OLS (3)	Firm-fixed effects (4)
Constant	0.682 [2.250]	2.392 [2.809]	0.772 [2.265]	2.240 [2.812]
Family ownership	-1.480*** [0.465]	-1.012** [0.507]		
Family dummy			-0.377*** [0.144]	-0.142** [0.071]
Log assets	-0.146* [0.088]	-0.090 [0.113]	-0.144 [0.089]	-0.093 [0.113]
PPE	3.087*** [0.597]	2.686*** [0.654]	3.148*** [0.603]	2.709*** [0.652]
Debt ratio	0.052** [0.024]	0.049*** [0.019]	0.052** [0.024]	0.049** [0.019]
Current ratio	-0.529*** [0.184]	-0.151 [0.107]	-0.530*** [0.183]	-0.151 [0.107]
Cash flow	-2.538*** [0.601]	0.234 [0.506]	-2.546*** [0.603]	0.254 [0.506]
Sales growth	-0.031 [0.056]	-0.022 [0.041]	-0.034 [0.056]	-0.023 [0.041]
Negative equity	0.738* [0.380]	0.225 [0.323]	0.761** [0.383]	0.228 [0.323]
Board size	-0.294 [0.334]	-0.901** [0.423]	-0.294 [0.335]	-0.903** [0.423]
Outside directors	0.342 [1.166]	-1.162 [1.095]	0.033 [1.158]	-1.126 [1.099]
Year dummies	Yes	No	Yes	No
Industry dummies	Yes	No	Yes	No
No. of obs.	3320	3320	3320	3320
Adjusted R-squared	0.333	0.613	0.331	0.612
F-stat.	18.10***	3.70***	17.75***	3.33***

Notes: This table reports regression results of cost of debt on family firms. The regression model is as follows:

$$Cost\ of\ debt_{i,t} = \alpha + \beta_1 Family\ ownership_{i,t} (or\ Family\ dummy_{i,t}) + \sum \beta_j Control\ variable_j + \sum \beta_t Year\ dummy_t + \sum \beta_k Industry\ dummy_k + \varepsilon_{i,t}$$

Columns 1 and 3 use ordinary least squares (OLS) estimation and columns 2 and 4 use firm-fixed estimation. All variables are defined in Table 1. Standard errors corrected for firm-level clustering are reported in brackets. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 5. Family firms and the cost of debt (subsample analyses)

	Dependent variable: Cost of Debt			
	Low-opacity subsample		High-opacity subsample	
	OLS (1)	Firm-fixed effects (2)	OLS (3)	Firm-fixed effects (4)
Family ownership	-2.061*** [0.546]	-1.037** [0.523]	-0.493 [0.531]	-0.745 [1.720]
Constant and control variables	Yes	Yes	Yes	Yes
Year and industry dummies	Yes	No	Yes	No
No. of obs.	1779	1779	1541	1541
Adjusted R-squared	0.343	0.734	0.368	0.546
F-stat.	14.95***	2.95***	14.48***	2.63***

Notes: This table reports regression results of cost of debt on family firms, for the low-opacity subsample (columns 1 and 2) and high-opacity subsample (columns 3 to 4). The regression model is as follows:

$$Cost\ of\ debt_{i,t} = \alpha + \beta_1 Family\ ownership_{i,t} + \sum \beta_j Control\ variable_j + \sum \beta_t Year\ dummy_t + \sum \beta_k Industry\ dummy_k + \varepsilon_{i,t}$$

Columns 1 and 3 use OLS estimation and columns 2 and 4 use firm-fixed estimation. Low-opacity firms are defined as those for which the opacity index is below the sample median. High-opacity firms are defined as those for which the opacity index is above the sample median. All variables are defined in Table 1. Standard errors corrected for firm-level clustering are reported in brackets. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 6. Family firms, corporate opacity, and the cost of debt

	Dependent variable: Cost of Debt	
	OLS (1)	Firm-fixed effects (2)
Family ownership	-3.182*** [1.011]	-1.634*** [0.706]
Family ownership * Opacity index	4.527** [2.012]	0.763** [0.351]
Opacity index	1.091** [0.479]	2.082** [0.929]
Constant and control variables	Yes	Yes
Year and industry dummies	Yes	No
No. of obs.	3320	3320
Adjusted R-squared	0.339	0.615
F-stat.	17.54***	3.79***

Notes: This table presents regression results of cost of debt on family firms and on the interaction between family firms and corporate opacity. The regression model is as follows:

$$\begin{aligned}
 \text{Cost of debt}_{i,t} = & \alpha + \beta_1 \text{Family ownership}_{i,t} + \beta_2 \text{Family ownership}_{i,t} * \text{Opacity index}_{i,t} + \beta_3 \text{Opacity index}_{i,t} \\
 & + \sum \beta_j \text{Control variable}_j + \sum \beta_t \text{Year dummy}_t + \sum \beta_k \text{Industry dummy}_k + \varepsilon_{i,t}
 \end{aligned}$$

Column 1 uses OLS estimation and column 2 uses firm-fixed estimation. Standard errors corrected for firm-level clustering are reported in parentheses. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 7. Family firms, corporate opacity, and the cost of debt (instrumental variables estimations)

	Dependent variable: Cost of Debt	
	OLS (1)	Firm-fixed effects (2)
Family ownership	-6.091*** [2.311]	-9.081*** [1.819]
Family ownership * Opacity index	8.070*** [2.225]	8.542*** [2.841]
Opacity index	1.593*** [0.418]	0.723** [0.302]
Log Assets	-0.208** [0.096]	-0.018 [0.113]
PPE	2.925*** [0.592]	2.686*** [0.656]
Debt ratio	0.053** [0.024]	0.042** [0.020]
Current ratio	-0.514*** [0.186]	-0.150 [0.107]
Cash flow	-2.287*** [0.589]	-0.051 [0.512]
Sales growth	-0.037 [0.057]	-0.010 [0.042]
Negative equity	0.733* [0.395]	0.092 [0.329]
Board size	-0.244 [0.337]	-0.726* [0.418]
Outside directors	1.117 [1.211]	-1.804* [1.006]
Year and industry dummies	Yes	No
No. of obs.	3320	3320
Adjusted R-squared	0.334	0.615
F-stat.	18.21***	6.75***

Notes: This table presents instrumental variable regressions of cost of debt on family firms and on the interaction between family firms and corporate opacity. Column 1 uses OLS estimation and column 3 uses firm-fixed estimation. Both the stand-alone *Family ownership* and the interaction term *Family ownership*Opacity index* are instrumented. The IVs in the first stage are *Personal name*, *Personal name*Opacity index*, *Multiple founders*, and *Multiple founders*Opacity index*. *Personal name* is a dummy variable that equals 1 if the name of the firm at the time of IPO contains a personal name related to the founder(s). *Multiple founders* is a dummy variable that equals 1 if the firm has more than one founder, i.e., founders from different families. All other variables are defined in Table 1. Standard errors corrected for firm-level clustering are reported in brackets. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 8. Control-ownership wedge, family firm, corporate opacity, and the cost of debt

	Dependent variable: Cost of Debt			
	High-wedge subsample		Low-wedge subsample	
	OLS (1)	Firm-fixed effects (2)	OLS (3)	Firm-fixed effects (4)
Family ownership	-3.821*** [1.380]	-3.488** [1.695]	-2.425** [1.134]	-1.488** [0.696]
Family ownership * Opacity index	4.183*** [1.484]	5.964*** [1.773]	3.354 [2.641]	-1.197 [2.305]
Opacity index	1.520*** [0.409]	1.489** [0.660]	0.804* [0.431]	0.466 [0.423]
Constant and control variables	Yes	Yes	Yes	Yes
Year and industry dummies	Yes	No	Yes	No
No. of obs.	1660	1660	1660	1660
Adjusted R-squared	0.297	0.670	0.359	0.577
F-stat.	13.10***	3.92***	10.57***	2.41***

Notes: This table presents regression results of cost of debt on family firms and on the interaction between family firms and corporate opacity, for the high-wedge subsample and low-wedge subsample. The regression model is as follows:

$$\begin{aligned}
 \text{Cost of debt}_{i,t} = & \alpha + \beta_1 \text{Family ownership}_{i,t} + \beta_2 \text{Family ownership}_{i,t} * \text{Opacity index}_{i,t} + \beta_3 \text{Opacity index}_{i,t} \\
 & + \sum \beta_j \text{Control variable}_j + \sum \beta_t \text{Year dummy}_t + \sum \beta_k \text{Industry dummy}_k + \varepsilon_{i,t}
 \end{aligned}$$

Columns 1 and 3 use OLS estimation and columns 2 and 4 use firm-fixed estimation. Wedge is defined as the difference between the ultimate controlling shareholder's control rights and cash flow rights. High-wedge firms are defined as those for which the control-ownership wedge is above the sample median. Low-wedge firms are defined as those for which the wedge is below the sample median. All other variables are defined in Table 1. Standard errors corrected for firm-level clustering are reported in brackets. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 9. External institutions, family firms, corporate opacity, and the cost of debt

Panel A.

	Low-market-development subsample		High-market-development subsample	
	OLS (1)	Firm-fixed effects (2)	OLS (3)	Firm-fixed effects (4)
Family ownership	-3.604*** [1.330]	-4.803*** [1.536]	-1.166** [0.544]	-1.006** [0.463]
Family ownership * Opacity index	8.745** [4.040]	10.084*** [3.653]	-0.418 [1.858]	-1.746 [2.316]
Opacity index	1.190** [0.558]	1.448** [0.660]	0.927* [0.522]	0.411 [0.502]
Constant and control variables	Yes	Yes	Yes	Yes
Year and industry dummies	Yes	No	Yes	No
No. of obs.	1346	1346	1353	1353
Adjusted R-squared	0.238	0.617	0.515	0.751
F-stat.	9.88***	21.65***	14.46***	2.24***

Panel B.

	Low-property-protection subsample		High-property-protection subsample	
	(1)	(2)	(3)	(4)
Family ownership	-3.453** [1.599]	-4.318** [2.141]	-1.265*** [0.454]	-1.651** [0.811]
Family ownership * Opacity index	8.258** [3.703]	9.693*** [2.557]	0.091 [1.016]	-1.333 [1.505]
Opacity index	1.372*** [0.534]	1.441** [0.692]	0.845 [0.545]	0.486* [0.291]
Constant and control variables	Yes	Yes	Yes	Yes
Year and industry dummies	Yes	No	Yes	No
No. of obs.	1342	1342	1357	1357
Adjusted R-squared	0.253	0.614	0.457	0.753
F-stat.	11.34***	21.35***	5.91***	2.55***

Notes: This table presents regression results of cost of debt on family firms and on the interaction between family firms and corporate opacity, subject to market development (Panel A) and property protection (Panel B). The regression model is as follows:

$$\begin{aligned}
 \text{Cost of debt}_{i,t} = & \alpha + \beta_1 \text{Family ownership}_{i,t} + \beta_2 \text{Family ownership}_{i,t} * \text{Opacity index}_{i,t} + \beta_3 \text{Opacity index}_{i,t} \\
 & + \sum \beta_j \text{Control variable}_j + \sum \beta_t \text{Year dummy}_t + \sum \beta_k \text{Industry dummy}_k + \varepsilon_{i,t}
 \end{aligned}$$

Columns 1 and 3 use OLS estimation and columns 2 and 4 use firm-fixed estimation. The sample period in this table is 2004–2009, for which the market development index and property protection index are available. Market development (property protection) is an index that measures the overall level of marketization (property rights protection) of the province in which a

firm is headquartered (Fan et al., 2011). Higher index values indicate higher level of marketization (or property protection). High-market-development (High-property-protection) firms are defined as those headquartered in provinces for which the market development (property protection) index is above the sample median. Low-market-development (Low-property-protection) firms are defined as those headquartered in provinces for which the market development (property protection) index is below the sample median. All other variables are defined in Table 1. Standard errors corrected for firm-level clustering are reported in brackets. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 10. Political connection, family firms, corporate opacity, and the cost of debt

	Dependent variable: Cost of Debt			
	Non-politically-connected subsample		Politically-connected subsample	
	OLS (1)	Firm-fixed effects (2)	OLS (3)	Firm-fixed effects (4)
Family ownership	-4.708*** [1.427]	-1.163** [0.548]	-1.647*** [0.603]	-1.643** [0.819]
Family ownership * Opacity index	7.242*** [2.656]	1.847** [0.918]	1.925 [2.544]	2.498 [2.448]
Opacity index	1.142** [0.470]	0.796** [0.383]	0.554 [0.556]	0.935* [0.530]
Constant and control variables	Yes	Yes	Yes	Yes
Industry dummies	Yes	No	Yes	No
No. of obs.	2099	2099	1221	1221
Adjusted R-squared	0.341	0.583	0.371	0.726
F-stat.	12.01***	2.74***	9.85***	3.63***

Notes: This table presents regression results of cost of debt on family firms and on the interaction between family firms and corporate opacity, for politically-connected subsample and non-politically-connected subsample. The regression model is as follows:

$$\begin{aligned}
 \text{Cost of debt}_{i,t} = & \alpha + \beta_1 \text{Family ownership}_{i,t} + \beta_2 \text{Family ownership}_{i,t} * \text{Opacity index}_{i,t} + \beta_3 \text{Opacity index}_{i,t} \\
 & + \sum \beta_j \text{Control variable}_j + \sum \beta_t \text{Year dummy}_t + \sum \beta_k \text{Industry dummy}_k + \varepsilon_{i,t}
 \end{aligned}$$

Columns 1 and 3 use OLS estimation and columns 2 and 4 use firm-fixed estimation. Political connection is a dummy variable that equals 1 if the CEO of the firm is politically connected. All other variables are defined in Table 1. Standard errors corrected for firm-level clustering are reported in brackets. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively.