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# Family control and the implied cost of equity: Evidence before and after the Asian financial crisis

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**Abstract**
Recent research emphasizes that corporate governance becomes critical during economic crises, when the incentives for expropriation of minority shareholders increase. Using the high-profile Asian financial crisis of 1997–1998 and a sample of 566 firms from eight East Asian countries over 1996–1999, we examine the link between family control and agency costs evident in the cost of equity financing for firms. We find that, before the crisis, family control is unrelated to firms' equity financing costs, whereas, following the crisis, family control is related to a higher cost of equity. This suggests that the crisis made investors aware of the potential entrenchment of controlling families, prompting them to require a higher-equity premium from family firms. Our results are robust to various models of the cost of equity capital, additional firm- and country-level governance traits, and additional alternative explanations, including the presence of other types of large shareholders and potential survivorship bias. Our study contributes to our understanding of the corporate governance of family-controlled firms, especially during economic crises.
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## INTRODUCTION

The current global economic downturn has revived public and academic debate about the role of corporate governance failures during financial crises, including the Asian financial crisis of 1997 and 1998. Prior academic research highlights the importance of corporate governance for financial market development and firm value (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997, 1998, 2002). The high-profile Asian financial crisis provided further evidence of the importance of corporate governance for firm performance and, in turn, a country's economic and financial stability. Several analysts have suggested that the Asian crisis was worsened by prevailing corporate governance mechanisms, which have been shaped by control and ownership concentration in the hands of a small number of major shareholders. Their arguments are based on mounting evidence that large shareholders have strong incentives to exploit their positions as insiders in

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order to divert corporate resources, especially in less-protective environments, during times of crisis.[1] Indeed, during a crisis, controlling shareholders' incentives to expropriate minority shareholder wealth tend to increase as the expected rate of return on investment declines (e.g., Baek, Kang, & Park, 2004; Johnson, Boone, Breach, & Friedman, 2000; Mitton, 2002). However, although the potential expropriation associated with large shareholdings is emphasized in several studies, little has been done to clarify how the identity of large owners shapes these incentives, and how particular types of firms fared during the Asian financial crisis.

In this paper, we focus on the agency properties of family-owned firms in several East Asian economies around the time of the Asian financial crisis (or "the crisis," hereafter). Specifically, we examine the cost of equity of East Asian family-controlled corporations before, during, and immediately after the crisis. Following the literature, we refer to firms in which the largest shareholder is a family as "family firms" (Claessens, Djankov, & Lang, 2000). Two sets of observations motivate our focus on family firms. First, family firms dominate the corporate landscape, and often entire industries, around the world, and exert control over a large network of firms through pyramidal structures and cross-shareholdings (e.g., Bertrand, Johnson, Samphantharak, & Schoar, 2008; Fogel, 2006; La Porta, Lopez-de-Silanes, & Shleifer, 1999; Villalonga & Amit, 2008). Family ownership also tends to be the most prevalent form of ownership in countries with weak institutions in terms of law and order and shareholder rights protection (e.g., Burkart, Panunzi, & Shleifer, 2003; Fogel, 2006), as is the case in East Asia. Claessens et al. (2000) find that family control is prevalent in more than half of their sample of 2980 firms, especially in Indonesia and Thailand (which were both significantly affected by the crisis). Claessens et al. also show that firm management is related to the family of the controlling shareholder in two-thirds of their sample firms, and that corporate wealth is concentrated in very few families.

Second, these families form a particular ownership structure that differs from that of other classes of non-family blockholders (e.g., institutional investors) in several respects. For instance, while the investments of institutional investors tend to be diversified, families hold a highly undiversified investment in the firm and thus are subject to significant idiosyncratic risk (Anderson & Reeb, 2003b). Also, while institutional investors' commitment to the firm is generally for shortterm, families are classical long-term investors, with their commitment to the firm usually spanning generations (Anderson, Reeb, & Mansi, 2003). Accordingly, they prefer long-term investments (Nelson, 2003) and longer-planning horizons (James, 1999). Additionally, as noted by Ellul, Guntay, and Lel (2009), the private benefits of control extracted by families are not diluted or divided, whereas the private benefits extracted by non-family blockholders are heavily diluted among all other owners. Founding families therefore represent "an important class of large shareholders that potentially have unique incentive structures and a strong voice in the firm" (Anderson & Reeb, 2003b: 656). As we discuss in the next section, these unique traits of family owners imply that whether family control mitigates or exacerbates agency conflicts within the firm remains an open question.[2]

The Asian crisis offers an opportune context in which to examine the agency properties of family control, because agency conflicts are likely to be more obvious during times of crisis. Moreover, given that the crisis was an unanticipated event, it can contribute to our understanding of the effect of corporate governance on a firm's cost of capital during economic distress. Mitton (2002) emphasizes that corporate governance may be especially critical in this situation, for two reasons. First, expropriation of minority shareholder wealth can be exacerbated during a crisis, as explained by Johnson et al. (2000). Second, a crisis serves as a wake-up call to investors, who become aware of the quality of corporate governance and the extent to which they lack protection from potential expropriation of their wealth (e.g., Mitton, 2002). We thus expect the cost of equity capital to reflect both increased incentives for tunneling and expropriation by family firms, and the market's enhanced awareness of such possibilities.

To address our research question, we focus on the cost of equity capital rather than firm value. There are four reasons for choosing this approach. First, while most studies in the corporate governance literature implicitly assume that governance enhances firm value through expected cash flows (e.g., Claessens et al., 2002; La Porta et al., 2002), recent theory and empirical evidence suggest that effective corporate governance enhances firm value through a reduction in agency and information problems and hence the cost of capital (e.g., Chen, Chen, & Wei, 2009; Guedhami & Mishra, 2009;

Hail & Leuz, 2006; Lambert, Leuz, & Verrecchia, 2007; Lombardo & Pagano, 2002). In studying the link between firm-level corporate governance and the cost of equity capital, Chen et al. (2009) argue that corporate governance can reduce the non-diversifiable risk of expropriation by insiders, which is related to the investment opportunity and the cost of expropriation. The authors also argue that a firm's investment opportunity depends on macroeconomic conditions, such that expropriation by insiders includes a non-diversifiable component that relates to overall market conditions. Second, the cost of capital represents the return that investors expect, based on the firm's systematic risk, and we expect this risk to increase during financial crises. When corporate governance is weak and major shareholders become entrenched, the firm's overall exposure to market-wide risk increases, driving the cost of capital up (Chen et al., 2009). In the setting of family firms in East Asia, we argue that the expropriation of minority shareholders also affects the firm's non-diversifiable risk, and hence its cost of capital, and that this effect is likely to be especially pronounced following the crisis, because the crisis made investors aware of extensive expropriation in family-controlled firms.[3]

A third potential advantage of using the cost of equity capital rather than firm value, or Tobin's Q, is that the cost of capital allows us to address the fact that Tobin's Q is also a measure of the firm's growth opportunities (Hail & Leuz, 2006). As Suchard, Pham, and Zein (2007: 7) observe:

> The cost of equity … is able to react more accurately to year to year changes in the firm's corporate governance environments without being affected by exogenous factors that affect future growth and profitability.

Finally, the cost of capital is a key input that decision-makers in the firm use to evaluate long-term capital investments. Therefore using the cost of equity capital not only helps us test the relationship between a firm's corporate governance structure and the firm's financing costs, but also has implications for how such costs can be adjusted.

Using a sample of 566 firms from eight East Asian countries over the period 1996–1999, our findings are as follows. A comparison of the cost of equity of family- and non-family-controlled firms by year reveals that, although the difference is insignificant in the pre-crisis period, the post-crisis cost of equity is significantly higher for family firms. This result suggests that investors' perception of family firms changed substantially post-crisis, leading them to require a relatively higher-risk premium for investment in these firms. After controlling for country-level and firm-level determinants of the cost of capital, we find that family control is unrelated to the cost of equity capital before the crisis (i.e., no evidence of entrenchment before the crisis). This finding confirms that, before the crisis, investors were not aware of potential expropriation by families. In contrast, we find strong evidence that family control is associated with a higher cost of equity capital after the crisis. These results are robust to different cost of equity models, additional firm-level and country-level governance traits, and other alternative explanations, including survivorship bias.

Our study contributes to the literature in several ways. First, to our knowledge, this is the first study to focus on the dynamics of the link between the cost of equity and family control/ownership by considering a long period surrounding the crisis. Second, while previous studies examine the firm performance or value implications of family control, our analysis focuses on the implications for the cost of equity capital. Our focus on firms' financing costs therefore builds on the literature that argues that the costs of external financing are driven by the extent of firms' agency and information problems (e.g., Easley & O'Hara, 2004). Third, our study sheds additional light on the impact of family ownership in an institutionally weak environment. Finally, we contribute to the debate on whether family firms contributed to worsening of the crisis by specifically linking family ownership to investor confidence (as measured by the cost of equity) during the period of financial distress.

The remainder of the paper is organized as follows. In the next section, we review the literature on firm ownership and control, and we derive our testable hypotheses. Following this, we discuss our sample and methodology. The subsequent section presents results of our univariate tests and our multivariate regression analysis. Finally, we discuss the main implications of the study and provide concluding remarks.

## THE COSTS AND BENEFITS OF FAMILY CONTROL AND THE ASIAN FINANCIAL CRISIS

The importance of family firms worldwide, and their particular prevalence in East Asian economies, has been documented in several recent studies

(e.g., Burkart et al., 2003; Claessens et al., 2000; La Porta et al., 1999; Morck, Wolfenzon, & Yeung, 2005). A growing body of research focuses on the link between family control and agency costs. However, whether family ownership increases or mitigates these costs remains unclear. In the following, we discuss the costs and benefits of family control.

(1) *Potential benefits of family control*. One argument holds that if family control mitigates the agency problem between minority investors and controlling families, then an *alignment effect* prevails. According to this argument, because the family's welfare is so closely linked to firm performance, families may have strong incentives to forgo corporate diversification, owing to the substantial negative effects on shareholder value. The family's concentrated equity position and relatively distant investment horizon also allow the family to closely monitor managers (who concentrate on short-term earnings) and ensure that firm value is maximized. Recent empirical evidence supports this positive agency view. For instance, Demsetz (2003) suggests that family firms are more valuable than non-family firms. Similarly, Maury (2006) documents that family control is associated with higher firm value and operating performance than any other type of controlling shareholder. Owner–manager conflicts are less likely to arise in family firms, because family members are usually appointed to top management positions. Consistent with this view, Villalonga and Amit (2006) find that family management creates value for the firm's shareholders. Furthermore, Andres (2008) argues that family ownership promotes trust, because it increases the credibility of the firm's commitment to implicit contracts. Long-term family commitment and trust also appear to explain the evidence presented by Anderson et al. (2003) that families enjoy a lower cost of debt financing than non-family firms, which also suggests an alignment of shareholders' and bondholders' interests. Taken together, these findings are consistent with the view that family control can benefit all shareholders.

(2) *Potential costs of family control*. Family ownership may lead to increased potential for expropriation of minority shareholder wealth, that is, *an entrenchment effect*, particularly if the founding family enjoys substantial equity control and dominates the board of directors. Also, as Andres (2008: 433) notes, based on arguments in Fama and Jensen (1985), "the combination of management and control might lead to suboptimal investment decisions since the interests of the family are not necessarily in line with those of other shareholders." Supporting evidence is presented by Claessens et al. (2000), who document that families that combine ownership and the CEO position create severe agency conflicts with the firm's other shareholders. Fan and Wong (2002) find further that family ownership of East Asian firms leads to lower earnings quality, and Yeh, Lee, and Woidtke (2001) conclude that, for Taiwanese firms, expropriation is more likely if families dominate the board of directors. Similarly, Bae, Kang, and Kim (2002) and Bertrand, Mehta, and Mullainathan (2002) report evidence of tunneling in Korean family-controlled pyramids (*chaebols*) and family business groups in India, respectively.

Evidence of entrenchment in family firms is not unique to emerging markets, however. For instance, Cronqvist and Nilsson (2003) find that, among controlling shareholders, families in Sweden are associated with significant firm-value discounts, and Cronqvist and Nilsson (2005) find that family-controlled firms avoid issue methods that dilute control benefits or subject them to more monitoring. Using a sample of S&P 500 US firms, Anderson and Reeb (2003a) find that performance measures deteriorate at high levels of family ownership, consistent with the view that entrenched family control is associated with inferior performance, even in the US. More recently, Maury and Pajuste (2005) document that control contestability of family owners is more important in family firms than in non-family firms in Finland, consistent with family owners enjoying high private benefits.[4] The potential costs of family ownership may ultimately translate into higher financing costs. Indeed, as Shleifer and Wolfenzon (2002) and Dyck and Zingales (2004) contend, firms with a higher likelihood of expropriation should face a higher cost of capital, because "rational" investors will anticipate expropriation and in turn reduce the amount that they are willing to pay for these firms' securities.

In sum, although the empirical literature on the influence of family ownership on firm performance or value is growing, the evidence remains mixed.

Based on the previous discussion on both the costs and the benefits of family ownership, our first hypothesis is as follows:

**Hypothesis 1**: All else equal, if the (alignment) entrenchment effect dominates, family control should be (negatively) positively related to the cost of equity capital.

An external shock such as the Asian financial crisis is an opportune context in which the potential costs and benefits of family control is disentangled. The literature to date shows that the crisis led to tunneling activities by family groups (Johnson et al., 2000) and cronyism (see Johnson & Mitton, 2003, on Malaysia). Joh (2003) shows that, before the crisis, large family-owned pyramidal groups with excess control underperformed compared with other non-affiliated firms. Lemmon and Lins (2003) also provide evidence that, during the crisis, the stock returns of firms whose ultimate owner held control rights in excess of his cash flow rights were lower than those of other comparable firms. Finally, in a study of the *chaebols* pyramidal family groups in Korea during the crisis, Baek et al. (2004) find that group-affiliated firms underperformed independent firms, which, according to Morck et al. (2005), reflects rent-seeking behavior and bailouts of Korean pyramidal groups.

The fact that neither internal governance mechanisms (e.g., the board of directors) nor external governance mechanisms (e.g., regulators or markets for corporate control) function properly in East Asia (Claessens et al., 2000) weakened the corporate sector, especially family firms, in the face of the Asian financial crisis. These factors led to extensive expropriation by business groups through their controlling owners.[5] In their discussion of foreign investment in South-East Asia, Rajan and Zingales (1998) argue that, as long as the region was doing economically well, investors ignored these weaknesses and provided financing to East Asian firms; however, once the crisis began, investors quickly withdrew, because they believed that the region lacked adequate institutional infrastructure to safeguard their investments. For both of these reasons, firms with weaker corporate governance could have lost relatively more value during the crisis. In sum, as Johnson et al. (2000) argue, if "expropriation by managers increases when the expected rate of return on investment falls, then an adverse shock to investor confidence will lead to increased expropriation" (2000: 142). This observation leads us to our second hypothesis:

**Hypothesis 2**: All else equal, we are more likely to observe a positive relation between family control and the cost of equity capital after the crisis.

## DATABASE CONSTRUCTION

### Sample Selection

We use all firms that are represented in three databases:

- Thompson Institutional Brokers Earnings Services (I/B/E/S), which is used to collect analyst earnings forecasts and pricing information;
- Worldscope, which is used to collect financial information; and
- Claessens et al.'s (2000) ultimate ownership structure database, which is used to identify family-controlled corporations from eight East Asian economies (Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand).

We begin by extracting earnings forecast data recorded in the fiscal year-end month plus 10 months for all firms for which the I/B/E/S earnings history file contains the following:[6]

- a positive mean earnings forecast for the first 2 years;
- a 5-year mean growth rate or a 3-year earnings forecast; and
- at least two analysts providing future earnings forecasts for years 1 and 2.

We further require that the I/B/E/S price history file contain the price for the corresponding statistics record period, and that the Worldscope database contain positive book value per share for the period 1996–1999. Where unreported in I/B/E/S, we approximate the growth rate using the change in mean forecasted earnings over the first 3 years, and require that this value be within $\pm 200\%$. Our initial dataset returns 2293 valid firm–years, for which we estimate cost of equity using the models described later in this section. We omit duplicate observations and exclude observations that do not converge within the range of 0–200% for cost of equity estimates. This process returns 1818 firm–years of data with valid cost of equity estimates for all four models. At this stage, we estimate the industry median cost of equity capital based on Campbell's (1996) 12 industries for each year.

We require that at least six firms be represented in an industry–year. Subsequently, we match this sample of firms with the ownership data of Claessens et al. (2000).[7] We obtain a final sample of 1189 firm–year observations representing 566 firms for which we have information on ultimate owner identity (family vs non-family), as well as cost of equity estimates, over the period surrounding the crisis (i.e., 1996–1999).[8,9] Following Claessens et al. (2000), we are able to distinguish between four types of owners: families (the category of interest in this study); the State; widely held financial institutions (e.g., banks and insurance companies); and widely held corporations.

### Cost of Equity Estimates

We focus on the agency properties of family-controlled firms that are evident in the cost of equity capital in the years surrounding the crisis. The asset pricing literature often uses average realized returns as a proxy for an asset's expected returns, but average realized returns serve this purpose poorly (Elton, 1999). Additionally, evidence in Fama and French (1997) suggests that the single-factor capital asset pricing model and the Fama–French three-factor model offer a poor proxy for a firm's cost of equity capital. Not surprisingly, the *ex ante* cost of equity capital based on discounted cash flow valuation methods has recently gained popularity in accounting and finance research; see, for example, Botosan and Plumlee (2005), Dhaliwal, Eheitzman and Li (2006), and Hail and Leuz (2006). We follow these studies and use the discount rate implicit in the current stock price, book value per share, dividend payout, and consensus analyst earnings forecast.

Similar to Dhaliwal et al. (2006) and Hail and Leuz (2006), we use four different models to estimate the cost of equity capital: Ohlson and Juettner-Nauroth (2005; OJ), Easton (2004; ES), Gebhardt, Lee, and Swaminathan (2001; GLS), and Claus and Thomas (2001; CT), which we denote as $K_{OJ}$, $K_{ES}$, $K_{GLS}$, and $K_{CT}$, respectively.[10] All of these models allow one to estimate the cost of equity capital for a firm–year without relying on several years' historical data. Additionally, in empirical tests, these models' cost of equity estimates exhibit loadings on the majority of risk factors, as predicted by theory and shown in Gode and Mohanram (2003), Gebhardt et al. (2001), and Dhaliwal et al. (2006). However, because there is little guidance from the literature on the empirical superiority of any one of these models, we use the average of these four models' cost of equity estimates to measure the firm's cost of equity capital ($K$). This approach reduces the possibility of spurious results arising from the use of a single model (Dhaliwal et al., 2006). To implement these models, we follow Hail and Leuz (2006) and estimate the cost of equity capital for the fiscal year-end plus 10 months. More specifically, the financial statement data used to estimate the cost of equity capital are measured at the end of the fiscal year, whereas stock price, earnings forecast data, and estimated cost of equity capital are calculated for the 10th month after the fiscal year-end.

Table 1 provides descriptive statistics for the implied cost of equity estimates. Panel A reports the statistical properties of our cost of equity estimates by country. In the sample countries, Taiwan exhibits the lowest cost of equity estimates (10%) and Indonesia the highest (18%). Panel B provides descriptive statistics on the cost of equity estimates of the four different models and $K$. The average cost of equity estimate based on the four models is 15.2%, while the model-specific average cost of equity estimates range between 12.1% for $K_{GLS}$ to 17% for $K_{OJ}$. These findings are consistent with the literature, in that $K_{OJ}$ often provides higher bounds for cost of equity estimates, while $K_{GLS}$ provides lower bounds (e.g., Dhaliwal et al., 2006; Gode & Mohanram, 2003; Hail & Leuz, 2006). Panel C reports the pairwise correlation coefficients for the cost of equity estimates of the various models. Consistent with Dhaliwal et al. (2006), we find that $K_{OJ}$ and $K_{ES}$ exhibit a higher correlation with $K$, while $K_{GLS}$ and $K_{CT}$ exhibit a lower correlation with $K$. Overall, the descriptive statistics presented in Table 1 suggest that our cost of equity estimates for this sample reasonably reflect the statistical properties of the cost of equity estimates found in larger samples (e.g., Hail & Leuz, 2006).

## EMPIRICAL EVIDENCE

We conduct our main analysis on the link between family control and the cost of equity in the years surrounding the Asian financial crisis in two steps. First, we perform univariate comparisons after bisecting our sample into family-controlled and non-family-controlled firms. Second, we estimate multivariate regressions to determine whether the *alignment* or *entrenchment* effect dominates in family-controlled firms, and whether the documented effect becomes more evident in the post-crisis period. We then test the robustness of our results.

**Table 1** Descriptive statistics for cost of equity estimates

| *Country* | *N* | *Mean* | *Std dev.* | *Min.* | *Q1* | *Median* | *Q3* | *Max.* |
|---|---|---|---|---|---|---|---|---|
| *Panel A: Cost of equity by country* | | | | | | | | |
| Hong Kong | 289 | 0.165 | 0.089 | 0.071 | 0.113 | 0.143 | 0.185 | 1.031 |
| Indonesia | 77 | 0.180 | 0.112 | 0.079 | 0.121 | 0.154 | 0.192 | 0.890 |
| South Korea | 145 | 0.173 | 0.079 | 0.055 | 0.125 | 0.154 | 0.201 | 0.539 |
| Malaysia | 154 | 0.132 | 0.079 | 0.038 | 0.094 | 0.113 | 0.142 | 0.799 |
| Philippines | 143 | 0.172 | 0.087 | 0.069 | 0.119 | 0.149 | 0.193 | 0.564 |
| Singapore | 177 | 0.139 | 0.066 | 0.054 | 0.100 | 0.119 | 0.158 | 0.438 |
| Taiwan | 112 | 0.100 | 0.028 | 0.040 | 0.086 | 0.097 | 0.112 | 0.256 |
| Thailand | 92 | 0.149 | 0.074 | 0.054 | 0.101 | 0.131 | 0.163 | 0.417 |
| *Panel B: Cost of equity by model* | | | | | | | | |
| $K_{ES}$ | 1189 | 0.159 | 0.088 | 0.005 | 0.107 | 0.141 | 0.187 | 1.081 |
| $K_{OJ}$ | 1189 | 0.170 | 0.087 | 0.030 | 0.120 | 0.152 | 0.196 | 1.103 |
| $K_{CT}$ | 1189 | 0.159 | 0.136 | 0.011 | 0.095 | 0.125 | 0.169 | 1.513 |
| $K_{GLS}$ | 1189 | 0.121 | 0.071 | 0.012 | 0.079 | 0.107 | 0.144 | 0.693 |
| *K* | 1189 | 0.152 | 0.083 | 0.038 | 0.103 | 0.132 | 0.176 | 1.031 |

| *Model* | $K_{ES}$ | $K_{OJ}$ | $K_{CT}$ | $K_{GLS}$ |
|---|---|---|---|---|
| *Panel C: Correlation coefficient by model cost of equity* | | | | |
| $K_{OJ}$ | 0.996 | | | |
| $K_{CT}$ | 0.529 | 0.525 | | |
| $K_{GLS}$ | 0.814 | 0.782 | 0.559 | |
| *K* | 0.919 | 0.91 | 0.808 | 0.865 |

This table reports descriptive statistics for the cost of capital estimates based on four models for a sample of 1189 firm–year observations representing 566 firms from eight East Asian countries over the period 1996–1999. The sample is drawn from Claessens et al. (2000). $K_{ES}$, $K_{OJ}$, $K_{CT}$, and $K_{GLS}$ refer to the implied cost of equity estimates derived from the Easton (2004), Ohlson and Juttener-Narouth (2005), Claus and Thomas (2001), and Gebhardt, Lee, and Swaminathan (2001) models, respectively. *K* is the mean of the $K_{ES}$, $K_{OJ}$, $K_{CT}$, and $K_{GLS}$ estimates.



## Univariate Analysis

Table 2 provides the differences in the cost of equity capital between family and non-family firms for each year from 1996 through 1999. We estimate the average and standard deviation of the raw measure of the cost of equity (*K*), as well as the adjusted cost of equity (*Adjusted K*).[11] In particular, we first compare these estimates for the cost of equity over time, during and after the Asian financial crisis, taking 1996 as the base year.[12] The three right-most columns of Table 2 present the differences and their associated *t*-statistics. A positive value for the difference implies that the average cost of capital in the given year (i.e., 1997, 1998, or 1999) is higher than that in the base year (i.e., 1996). The results show that, for non-family firms, *K* is significantly higher in 1997 and 1998 than in the base year, 1996. However, *Adjusted K* is not significantly different in 1997, 1998, or 1999 compared with 1996. This finding suggests that, after adjusting for the industry cost of capital, the cost of equity capital for non-family firms does not show a significant change during or after the crisis. In contrast, for the sample of family firms, values for both *K* and *Adjusted K* are significantly higher in 1998 and 1999 than in the base year, 1996. Moreover, the magnitude of the change in the average cost of equity for family firms is twice the magnitude of the change in the average cost of equity for non-family firms in 1998 compared with 1996. Family firms also continue to show an increase in the cost of equity in 1999. These initial results suggest that there is a robust and significant increase in the cost of equity capital of family firms during and after the Asian financial crisis. The change in the post-crisis cost of equity capital for non-family firms is insignificant, especially after adjusting for the industry cost of capital. These results suggest that, consistent with Johnson et al. (2000), after the crisis investors perceived family firms as more likely to tunnel resources and extract private benefits, and thus they required a higher rate of return on their investments.

Next, we compare *K* and *Adjusted K* between family and non-family firms for each year. The last four rows of Table 2 present the difference in the

**Table 2** Family control and cost of equity capital around the Asian financial crisis: Univariate analysis

| *Family control* | *Cost of equity capital* | *1996* | *1997* | *1998* | *1999* | *Difference 1997–1996 (t-statistic)* | *Difference 1998–1996 (t-statistic)* | *Difference 1999–1996 (t-statistic)* |
|---|---|---|---|---|---|---|---|---|
| No | *K* | 0.134 | 0.149 | 0.167 | 0.132 | 0.015** | 0.032*** | −0.002 |
| | Variance *K* | 0.002 | 0.004 | 0.011 | 0.003 | (2.01) | (2.68) | (−0.32) |
| | *Adjusted K* | 0.011 | 0.020 | 0.013 | 0.006 | 0.009 | 0.002 | −0.005 |
| | Variance *Adjusted K* | 0.002 | 0.004 | 0.011 | 0.003 | (1.20) | (0.19) | (−0.77) |
| | *N* | 107 | 125 | 90 | 89 | | | |
| Yes | *K* | 0.135 | 0.143 | 0.199 | 0.149 | 0.008 | 0.064*** | 0.014** |
| | Variance *K* | 0.003 | 0.003 | 0.019 | 0.005 | (1.46) | (5.93) | (2.10) |
| | *Adjusted K* | 0.008 | 0.013 | 0.045 | 0.020 | 0.005 | 0.038*** | 0.012* |
| | Variance *Adjusted K* | 0.003 | 0.003 | 0.018 | 0.005 | (0.90) | (3.53) | (1.88) |
| | *N* | 163 | 257 | 187 | 171 | | | |
| (Yes-No) | *K* | 0.000 | −0.006 | 0.032** | 0.017** | | | |
| | (*t*-statistic) | (0.06) | (−0.93) | (2.14) | (2.22) | | | |
| | *Adjusted K* | −0.003 | −0.007 | 0.032** | 0.015* | | | |
| | (*t*-statistic) | (−0.55) | (−1.08) | (2.18) | (1.93) | | | |

This table reports univariate statistics on the cost of equity capital between family-controlled (Yes) and non-family-controlled (No) firms before (1996), during (1997), and after the Asian financial crisis (1998 and 1999). The sample, which is drawn from Claessens et al. (2000), consists of 1189 firm–year observations representing 566 firms from eight East Asian countries. *K* is the mean of cost of equity capital estimates based on the four models described in "Cost of equity estimates," and *Adjusted K* is the cost of equity capital adjusted by subtracting the median industry cost of equity capital by year and industry, where industry is defined according to Campbell's (1996) 12-industry classification. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.



cost of equity capital, estimated as the average value for family firms minus the average value for non-family firms, along with the associated *t*-statistics. A positive value for the difference indicates that the average cost of capital of family firms is higher than that of non-family firms for the particular year. The results show that the pre-crisis average cost of equity capital was generally lower for family firms, although the difference is not statistically significant. In contrast, the post-crisis average cost of equity for family firms is significantly higher than the post-crisis average cost of equity for non-family firms. This result suggests that potential investors became aware of the weaknesses in family firms' governance and, anticipating that such weaknesses would only worsen in an adverse situation, required a higher rate of equity return.[13,14]

Taken together, the univariate results provide initial support for the entrenchment effect of family control, and suggest that this effect is more evident following the crisis. These results suggest that minority investors became more sensitive to potential expropriation by family firms after the crisis.

## Multivariate Analysis

***Empirical model.*** In this section, we test our hypotheses by estimating several specifications of the following model (subscripts are omitted for simplicity):

$$K = \alpha_0 + \alpha_1 Family\_Control + \alpha_2 Controls + \alpha_3 Country\ Fixed\ Effects + \varepsilon \quad (1)$$

where $K$ is the average implied cost of equity capital based on the four different models discussed above in the section "Cost of equity estimates"; *Family_Control* is a dummy variable, equal to 1 when the ultimate owner of the firm is a family, and 0 otherwise; and $\varepsilon$ is an error term.

*Controls* includes other potential determinants of a firm's cost of equity capital, as suggested by the literature. Firm size (*Size*), which we capture using the natural logarithm of total sales (in US dollars), is expected to be negatively related to the cost of equity capital (Francis, LaFond, Olsson, & Schipper, 2005; Gebhardt et al., 2001). The accuracy of analyst forecasts (*Accuracy of Forecasts*), which we measure as the median of the 1-year-ahead analyst earnings per share forecast (Median_FEPS$_1$) and

realized earnings per share for the forecast date divided by Median_FEPS$_1$, is expected to be positively related to the cost of equity capital (Dhaliwal et al., 2006; Hail & Leuz, 2006). The firm's expected growth rate (*Growth*), which we capture using the average I/B/E/S 5-year consensus earnings growth rate, is expected to be positively related to the cost of equity capital (Dhaliwal et al., 2006; Lee, Ng, & Swaminathan, 2004). Firm leverage (*Leverage*), which we proxy with the ratio of total debt to total capital, is expected to be positively associated with the cost of equity capital (Dhaliwal et al., 2006; Gode & Mohanram, 2003). Firm risk (*Risk*), which we measure as the standard deviation of residuals from estimating the market model, is expected to be positively related to the cost of equity (Gode & Mohanram, 2003).[15] Finally, the ratio of the market value of equity to the book value of equity (*Market to Book*) is expected to be negatively related to the cost of equity capital, given evidence that higher book to market (i.e., lower *Market to Book*) firms earn higher *ex post* returns (Fama & French, 1992).

In addition to the above firm-level variables, we control for the impact of a country's legal and institutional environment, given recent evidence that a country's laws and institutions can limit the expropriation of corporate resources by controlling shareholders (e.g., Guedhami & Pittman, 2006; Hail & Leuz, 2006; Johnson et al., 2000; La Porta et al., 1997; Mitton, 2002). We employ two sets of proxies to capture the quality of a country's legal and institutional environment. The first set of proxies consists of time-varying measures that control for potential changes in institutional environment during the time surrounding the financial crisis. *Transparency and Fairness* gives an assessment of the transparency and fairness of the legal system, and is derived from *The Economist* Intelligence Unit. A value of 1 denotes "very low/unfair," and a value of 5 denotes "very high/fair." *Institutional Effectiveness* gives an assessment of a country's institutional effectiveness, and is also derived from *The Economist* Intelligence Unit. Higher scores imply a better ranking. *Law and Order*, which reflects an assessment of the rule and order tradition in a country, is drawn from the International Country Risk Guide database from the Political Risk Services (PRS) Group. Country risk ratings, which are an assessment of a country's credit rating in terms of political, financial, and economic risk, are collected from the *Institutional Investor* semiannual surveys.[16] The second set of proxies includes time-constant, conventional measures. *Common Law* is a dummy variable that identifies English common law countries. *Disclosure* is the disclosure standards index of La Porta et al. (2006), which captures the regulation of information that is available to minority investors. *Criminal* is the criminal sanctions index of La Porta et al. (2006), which measures the criminal sanctions applicable to directors, distributors, and auditors for sponsoring misleading financial information that accompanies the prospectus. *Turnover* captures a country's level of stock market development, which we measure using the stock market turnover ratio – that is, the ratio of the value of total shares traded to market capitalization. Finally, we control for a country's level of economic growth as measured by the percentage change in real GDP, which may capture both the economy's expected future performance and country-fixed effects to account for potential country-specific unobservable or omitted variables. With the exception of the latter, which by construction is expected to be positively correlated with the cost of equity, all other legal and institutional country-level variables are expected to be negatively related to the cost of equity.

Table 3 presents descriptive statistics for the individual explanatory variables. To limit the influence of outliers, all explanatory variables, with the exception of *Family_Control*, are winsorized at the 1st and 99th percentiles. All variables involving currency measurement are expressed in US dollars. Consistent with the prevalence of family control in East Asia (Claessens et al., 2000), we find that over 65% of our sample firms have a family as the ultimate controlling owner. The Pearson's correlation coefficients between the regression variables (unreported) indicate that *Family_Control* correlates positively with the cost of equity capital (at the 5% level) over the total study period (1996–1999). This initial evidence is consistent with an entrenchment effect that accompanies family control in East Asian corporations.

***Main evidence on the effects of family control on equity financing costs around the crisis.*** We start our empirical analysis by first assessing the impact of family control on the cost of equity capital over the 4-year period surrounding the crisis. Tables 4 and 5 report the outcomes of estimating Eq. (1). In these tests, we control for firm-level determinants of the cost of equity capital (as explained above) and for GDP growth (the only country-level control).

The results in Table 4 on the impact of *Family_Control* on the cost of equity capital before, during,

**Table 3** Descriptive statistics

| *Variable* | *N* | *Mean* | *Std dev.* | *Min.* | *Q1* | *Median* | *Q3* | *Max.* |
|---|---|---|---|---|---|---|---|---|
| *Family_Control* | 1189 | 0.654 | 0.476 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 |
| *Group Affiliation* | 1189 | 0.457 | 0.498 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| *Voting1* | 1189 | 29.435 | 12.517 | 0.000 | 22.000 | 26.000 | 36.000 | 62.000 |
| *Political Connection* | 1189 | 0.108 | 0.310 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| *Size* | 1189 | 12.682 | 1.291 | 9.885 | 11.793 | 12.590 | 13.504 | 16.243 |
| *Risk* | 1174 | 0.117 | 0.053 | 0.024 | 0.081 | 0.107 | 0.141 | 0.486 |
| *Leverage* | 1189 | 0.354 | 0.227 | 0.000 | 0.175 | 0.344 | 0.519 | 0.885 |
| *Market to Book* | 1189 | 2.111 | 1.687 | 0.160 | 0.930 | 1.680 | 2.750 | 9.290 |
| *Growth* | 1189 | 0.206 | 0.208 | −0.085 | 0.100 | 0.152 | 0.240 | 1.289 |
| *Accuracy of Forecasts* | 1189 | 0.909 | 2.227 | 0.000 | 0.085 | 0.255 | 0.674 | 17.446 |
| *GDPG* | 1189 | 3.719 | 4.912 | −13.127 | 3.396 | 5.100 | 6.999 | 10.003 |

This table reports descriptive statistics for all explanatory variables. The sample, which is drawn from Claessens et al. (2000), consists of 1189 firm–year observations (1174 with complete information on the proxy for firm risk) representing 566 firms from eight East Asian countries (559 with complete information on the proxy for firm risk) over the period 1996–1999. *Political Connection*, a dummy variable equal to 1 for politically connected firms, and 0 otherwise, is extracted from Faccio (2006). Detailed definitions and data sources for all other variables are reported in the Appendix.

**Table 4** Multivariate regression analysis of the impact of family control on the cost of equity capital around the Asian financial crisis

| *Variable (Prediction)* | *1996* | *1997* | *1998* | *1999* |
|---|---|---|---|---|
| *Constant* (?) | 0.257*** | 0.176*** | −0.797*** | 0.134*** |
| | (16.01) | (7.56) | (−10.05) | (2.99) |
| *Family_Control* (?) | −0.005 | −0.004 | 0.026*** | 0.013** |
| | (−0.76) | (−0.61) | (2.57) | (2.23) |
| *Risk* (+) | 0.406** | 0.139* | 0.578** | 0.160* |
| | (2.08) | (1.64) | (2.30) | (1.44) |
| *Size* (−) | −0.002 | −0.006*** | −0.010** | −0.003 |
| | (−1.01) | (−3.56) | (−2.00) | (−1.23) |
| *Leverage* (+) | 0.026*** | 0.036*** | 0.084** | 0.051*** |
| | (2.85) | (2.88) | (2.15) | (2.63) |
| *Market to Book* (−) | −0.007*** | −0.006*** | −0.013** | −0.011*** |
| | (−3.51) | (−3.07) | (−2.10) | (−2.57) |
| *Accuracy of Forecasts* (+) | −0.002 | 0.004*** | 0.005 | 0.001 |
| | (−0.82) | (2.32) | (1.18) | (0.42) |
| *Growth* (+) | 0.050* | 0.059*** | 0.140*** | 0.022** |
| | (1.63) | (2.41) | (2.49) | (1.74) |
| *GDPG* (−) | −0.019*** | 0.005*** | −0.086*** | 0.003 |
| | (−2.96) | (3.26) | (−7.76) | (1.24) |
| Country Effects | Yes | Yes | Yes | Yes |
| Adj. $R^2$ (%) | 31.2 | 27.6 | 38.9 | 22.6 |
| *N* | 265 | 377 | 276 | 256 |

This table reports our main results on the impact of family control on the cost of equity capital. The sample, which is drawn from Claessens et al. (2000), consists of 1189 firm–year observations (1174 with complete information on the proxy for firm risk) from eight East Asian countries over the period 1996–1999. The dependent variable, *K*, is the mean of cost of equity capital estimates based on the four models described in "Cost of equity estimates." The Appendix reports detailed definitions and data sources for all variables. *t*-statistics based on robust standard errors adjusted for clustering by country are reported in parentheses beneath each coefficient estimate. ***, **, and * denote statistical significance (one-tailed when predictions are made) at the 1%, 5%, and 10% levels, respectively.



and after the Asian financial crisis are generally consistent with the univariate evidence presented above. Specifically, family-controlled firms have a lower cost of equity financing before the crisis (1996). Even during the beginning of the crisis (1997), the coefficient on *Family_Control* is negative, but statistically insignificant at conventional levels. In contrast, the coefficient on *Family_Control* becomes positive and statistically significant (at the 1% level in 1998 and at the 5% level in 1999) in the post-crisis period, suggesting that family control is associated with higher-equity

**Table 5** Multivariate regression analysis of the impact of family control, group affiliation, political connections, and voting rights on the cost of equity capital around the Asian financial crisis

| *Variable (Prediction)* | *1996* | *1997* | *1998* | *1999* | *1996* | *1997* | *1998* | *1999* | *1996* | *1997* | *1998* | *1999* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Constant* (?) | 0.261*** | 0.173*** | −0.805*** | 0.134*** | 0.257*** | 0.176*** | −0.787*** | 0.136*** | 0.260*** | 0.158*** | −0.808*** | 0.097*** |
| | (15.46) | (8.21) | (−10.46) | (2.99) | (16.09) | (7.66) | (−9.06) | (2.82) | (10.99) | (5.49) | (−8.42) | (2.12) |
| *Family_Control* (?) | −0.006 | −0.002 | 0.028*** | 0.013** | −0.005 | −0.004 | 0.024** | 0.014*** | −0.005 | −0.004 | 0.026*** | 0.014** |
| | (−1.21) | (−0.22) | (2.39) | (1.99) | (−0.76) | (−0.62) | (1.97) | (2.36) | (−0.75) | (−0.71) | (2.53) | (2.18) |
| *Group Affiliation* (?) | 0.004 | −0.006 | −0.006 | 0.001 | | | | | | | | |
| | (0.75) | (−1.12) | (−0.35) | (0.10) | | | | | | | | |
| *Political Connection* (?) | | | | | 0.000 | 0.000 | 0.012 | −0.020** | | | | |
| | | | | | (−0.04) | (−0.05) | (0.43) | (−2.06) | | | | |
| *Voting1* (+) | | | | | | | | | 0.000 | 0.000* | 0.000 | 0.001** |
| | | | | | | | | | (−0.25) | (1.57) | (0.41) | (2.20) |
| *Risk* (+) | 0.408** | 0.134* | 0.572*** | 0.160* | 0.406** | 0.139** | 0.575** | 0.150* | 0.407** | 0.136* | 0.571** | 0.144* |
| | (2.08) | (1.57) | (2.34) | (1.42) | (2.08) | (1.66) | (2.30) | (1.29) | (2.06) | (1.64) | (2.23) | (1.41) |
| *Size* (−) | −0.002 | −0.006*** | −0.010** | −0.003 | −0.002 | −0.006*** | −0.011** | −0.003 | −0.002 | −0.006*** | −0.010** | −0.003* |
| | (−1.02) | (−4.10) | (−1.87) | (−1.16) | (−1.01) | (−3.56) | (−1.99) | (−1.04) | (−1.03) | (−3.21) | (−1.97) | (−1.39) |
| *Leverage* (+) | 0.027*** | 0.036*** | 0.085** | 0.051*** | 0.026*** | 0.036*** | 0.081** | 0.053*** | 0.026*** | 0.037*** | 0.085** | 0.060*** |
| | (2.79) | (2.97) | (2.17) | (2.63) | (2.84) | (2.77) | (2.11) | (2.69) | (2.85) | (3.06) | (2.14) | (2.93) |
| *Market to Book* (−) | −0.007*** | −0.006*** | −0.013** | −0.011*** | −0.007*** | −0.006*** | −0.013** | −0.012*** | −0.007*** | −0.006** | −0.013** | −0.012*** |
| | (−3.45) | (−3.20) | (−2.10) | (−2.56) | (−3.52) | (−3.07) | (−2.06) | (−2.63) | (−3.64) | (−3.04) | (−2.03) | (−2.56) |
| *Accuracy of Forecasts* (+) | −0.002 | 0.004*** | 0.005 | 0.001 | −0.002 | 0.004*** | 0.005 | 0.001 | −0.002 | 0.004** | 0.005 | 0.001 |
| | (−0.84) | (2.35) | (1.21) | (0.42) | (−0.83) | (2.32) | (1.18) | (0.47) | (−0.83) | (2.30) | (1.18) | (0.63) |
| *Growth* (+) | 0.050* | 0.059*** | 0.140*** | 0.022** | 0.050** | 0.058*** | 0.140*** | 0.022** | 0.050* | 0.059*** | 0.141*** | 0.025** |
| | (1.57) | (2.51) | (2.48) | (1.73) | (1.65) | (2.42) | (2.50) | (1.67) | (1.62) | (2.42) | (2.45) | (1.93) |
| *GDPG* (−) | −0.020*** | 0.005*** | −0.086*** | 0.003 | −0.019*** | 0.005*** | −0.085*** | 0.002 | −0.019*** | 0.005*** | −0.086*** | 0.002 |
| | (−2.93) | (2.80) | (−8.08) | (1.02) | (−2.95) | (3.20) | (−7.75) | (0.84) | (−2.76) | (3.71) | (−7.77) | (1.02) |
| *Country Effects* | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. $R^2$ (%) | 31.1 | 27.6 | 38.7 | 22.2 | 31.0 | 27.4 | 38.7 | 22.9 | 31.0 | 28.0 | 38.7 | 24.8 |
| *N* | 265 | 377 | 276 | 256 | 265 | 377 | 276 | 256 | 265 | 377 | 276 | 256 |

This table reports our main results on the impact of family control, with controls for group affiliation, political connections, and ownership structure, on the cost of equity capital. The sample, which is drawn from Claessens et al. (2000), consists of 1189 firm–year observations (1174 with complete information on the proxy for firm risk) from eight East Asian countries over the period 1996–1999. The dependent variable, *K*, is the mean of cost of equity capital estimate based on the four models described in "Cost of equity estimates." The Appendix reports detailed definitions and data sources for all variables. *t*-statistics based on robust standard errors adjusted for clustering by country are reported in parentheses beneath each coefficient estimate. ***, **, and * denote statistical significance (one-tailed when predictions are made) at the 1%, 5%, and 10% levels, respectively.

financing costs. This finding can be rationalized by the tendency of the market to value the reputation of family-firm owners, their dominance in the economy, and their business relations with other politically powerful families before the crisis. After the crisis, however, investors required an additional risk premium for investing in family-controlled firms. Evidence of "crony capitalism" in East Asia as presented by Faccio, Lang, and Young (2001) seems to have contributed to increasing investor awareness of the governance weaknesses of family firms, which provides further support for Hypothesis 2.[17]

Next, we extend our analysis on the effects of family control on the cost of equity in Table 4 by controlling for the impact of the ultimate owner's group affiliation, political connections, and voting rights in Table 5.[18] Recent studies document that group affiliation may be detrimental to firm performance in adverse circumstances. For instance, in a study of the *chaebols* or family groups in Korea during the crisis, Baek et al. (2004) find that group-affiliated firms performed worse than independent firms. Similarly, politically connected firms usually benefit from soft budget constraints, are usually more indebted than their unconnected counterparts, and are more likely to receive government bailouts when they face economic distress (Faccio, Masulis, & McConnell, 2006). Arguments from the interest groups theory of financial development (Rajan & Zingales, 2003) suggest that insiders/incumbents are better able to expropriate firms that they control, because they are more adept at using the system (especially through political connections) to further their interests.

The first four models presented in Table 5, which control for whether the firm is affiliated with a business group, indicate that group affiliation does not have a significant impact on the cost of equity over the 4-year period. Interestingly, we document a significantly negative relationship between political connections and the cost of equity in 1999, suggesting that politically connected firms enjoy cheaper equity financing costs. This finding is consistent with recent studies that show that politically connected firms are more insulated in the event of economic downturns or financial difficulties, because they are likely to be bailed out by the government (Faccio et al., 2006).[19,20] In the last four models presented in Table 5, we control for the voting rights held by the firm's largest ultimate owner (*Voting1*) to capture the extent of agency problems embedded in the ultimate ownership structure (e.g., Claessens et al., 2000; Faccio & Lang, 2002). We find that the coefficient on *Voting1* is positive and significant at the 5% level in 1999, consistent with the entrenchment effect associated with high control rights. More interestingly, *Family_Control* loads negatively in 1996 and 1997, but is positive and statistically significant at the 5% level or better in 1998 and 1999. These findings are consistent with the evidence reported in Table 4, and lend additional support to the prediction in Hypothesis 2 that the crisis increased minority investors' awareness about the greater potential for expropriation in family-controlled firms.

Because our sample covers firms from various industries, one could argue that the impact of the crisis might be different across industries. In particular, our findings presented in Tables 4 and 5 may be driven by the fact that the industries that were most severely affected by the crisis have a relatively higher concentration of family-controlled firms (compared with non-family-controlled firms in the same industries). To address this concern, we use the industry-adjusted cost of equity capital as our dependent variable and replicate the results presented in Tables 4 and 5. The results (not reported for the sake of brevity) indicate that, consistent with our findings above, the coefficient on *Family_Control* remains negative in 1996 and 1997, and positive and statistically significant at the 5% level or better in the post-crisis period (1998 and 1999). Additionally, the results show similar effects of group affiliation, political connections, and voting rights on the cost of equity as the results reported in Table 5. Taken together, this evidence suggests that our results are not driven by the industry concentration of family-controlled firms.

Turning to our firm-level control variables, Tables 4 and 5 show significant relationships that are generally consistent with those reported in the literature. Given that we report similar results in these tables, we focus on the relations presented in Table 4. First, the coefficient on firm size (*Size*), our proxy for information availability, is negative and statistically significant at the 1% (5%) level in 1997 (1998), which is consistent with Gebhardt et al. (2001) and Francis et al. (2005). Second, the coefficient on *Leverage* is positive and significant at the 1% (5%) level in 1997 (1998), which supports theory and evidence that leverage increases the cost of equity capital (e.g., Dhaliwal et al., 2006; Modigliani & Miller, 1958). Third, *Growth* loads positively and significantly across all models,

consistent with Gode and Mohanram (2003) and Dhaliwal et al. (2006), among others. Further, consistent with Fama and French (1992) and Berk, Green, and Naik (1999), we find that the coefficient on *Market to Book* is negative and statistically significant at the 1% (5%) level in 1997 (1998), suggesting that higher *Market to Book* firms are expected to have lower *ex post* returns and thus lower expected cost of equity capital. Finally, although *Accuracy of Forecasts* is not a material determinant of a firm's cost of equity capital, we estimate a significantly positive relationship between our proxy for firm risk, *Risk*, and the cost of equity. This finding is consistent with the evidence provided in Hail and Leuz (2006), among other studies.

## Robustness Checks

In this section, we examine whether our core evidence that family control increases equity pricing following the Asian financial crisis is robust to an extensive battery of tests using the baseline models from Tables 4 and 5. The robustness tests, mostly unreported here for the sake of space (but available on the *Journal of International Business Studies* website), relate to the choice and estimation of the dependent variable, as well as to the use of alternative firm- and country-level variables. Overall, the results from these tests, described below, support earlier evidence that the cost of capital of family-controlled firms is higher than that of non-family firms in the post-crisis period, but that this was not the case prior to the crisis.

***Alternative cost of equity models.*** We employ the cost of equity estimated according to the standard Gordon dividend growth model ($K_{\text{Gordon}}$). In the implementation of this model, we use the 1-year-ahead dividend (which is estimated as the most recent dividend payout multiplied by forecasted 1-year-ahead earnings per share from I/B/E/S) and long-term growth forecasts from I/B/E/S. The main advantage of this model is that it involves fewer assumptions about the inputs used in computing the cost of equity capital compared with other cost of equity models (Harris & Marston, 1992). The results (unreported), replicating the models presented in Table 4, indicate that the coefficient on *Family_Control* is negative and statistically significant at the 5% level in 1996, consistent with the alignment effect prevailing in family-controlled firms in the pre-crisis period. In contrast, the effect of family control becomes positive and highly significant in the post-crisis period, consistent with Hypothesis 2. In tests replicating Table 5, we find a negative effect of family control prior to the crisis (1996), significant at the 5% level, which is consistent with the alignment effect. However, the effect of family control becomes positive and highly significant following the crisis, consistent with the entrenchment effect dominating the alignment effect after the crisis. Interestingly, although group affiliation is insignificant but negative in Table 5, the results using $K_{\text{Gordon}}$ show a negative and significant relationship in 1996 and 1999, providing weak evidence that investors rewarded group-affiliated firms with lower-equity financing costs. This inverse relation between group affiliation and the cost of equity capital is consistent with possible benefits of group affiliation through the use of internal capital markets, which may sidestep the deficiencies of external capital markets in economies such as those in East Asia.[21]

In additional unreported tests, we use an alternative proxy for the cost of equity capital that is not likely to be affected by price.[22] This proxy is based on Harvey's international cost of equity capital estimator worksheet ($K_{\text{HARVEY}}$), which is based on Erb, Harvey, and Viskanta (1996).[23] Our earlier results remain qualitatively unaffected by use of this proxy.

***Alternative assumptions.*** Following prior research, our implied cost of equity is computed following two major assumptions. First, the cost of equity estimates are derived by truncating expected dividend payout ratios by between 50% and 100%, assuming that firms are expected to distribute earnings back to shareholders in the long run (see Claus & Thomas, 2001). In a robustness test we relax this assumption and re-estimate the cost of capital by limiting the lower bound of the expected dividend payout ratio to 25% and by replacing the expected dividend payout of firms falling below this threshold with the industry average dividend payout ratio, following Campbell's (1996) classification. Second, we use the industry median expected return on equity (ROE), estimated as forecasted earnings per share for year 1 ($FEPS_1$) divided by book value per share at the beginning of the year ($BV_0$), to estimate the $FEPS_4$–$FEPS_{12}$ used in our initial estimates of $K_{\text{GLS}}$. Here we reproduce $K_{\text{GLS}}$ using the industry median realized ROE instead. Doing so results in a slightly reduced sample of 1163 firm–year observations from 1996

to 1999. The unreported results using these cost of equity estimates indicate that *Family_Control* is positive and highly significant (at the 1% level) in 1999, further reinforcing our conclusion that family-controlled firms are associated with higher-equity financing costs in the post-crisis period.

***Additional country-level controls.*** The baseline regressions reported in Table 4 include a set of firm-level control variables that are likely to affect the cost of equity capital, with GDP growth as the only country-level control. However, according to recent cross-country research, firms from countries with strong legal protection of minority investors and extensive disclosure standards should have higher valuation and lower financing costs. Given the high correlation between the institutional and legal variables, we separately control for the impact of time-variant and time-constant institutional variables. Surprisingly, the results (unreported) for the 4-year period indicate that in general these variables do not significantly influence the cost of equity capital, except for the level of stock market development (*Turnover*), which yields a negative and highly significant coefficient prior to 1996 through 1998. Importantly, we continue to find a positive and highly significant relationship between *Family_Control* and the cost of equity capital in the post-crisis period, consistent with Hypothesis 2.

***Alternative firm-level controls.*** In unreported tests, we re-estimate the regressions in Tables 4 and 5 using alternative firm-level controls. We first use the dispersion of the 1-year-ahead analyst forecasts, which we label *Variance of Forecasts*, instead of our previous control *(Accuracy of Forecasts*).[24] Our main evidence on the impact of *Family_Control* on the cost of equity capital is relatively unaffected by the choice of these two instruments. Although *Accuracy of Forecasts* is statistically insignificant, *Variance of Forecasts* is generally significantly positively related to the cost of equity capital in 1998 and 1999, suggesting that the extent of disagreement (information asymmetry) among analysts is positively associated with the cost of equity capital. This evidence is consistent with Dhaliwal et al. (2006).

In our empirical analysis, we use the standard deviation of residuals from the market model as our proxy for risk, following Gode and Mohanram (2003). The regular proxy for firm risk, beta, often loads with a negative sign (e.g., Gebhardt et al., 2001) with the implied cost of equity. The implied cost of capital literature thus suggests the use of alternative proxies, such as the standard deviation of stock returns (Hail & Leuz, 2006) or the standard deviation of abnormal (residual) returns (Gode & Mohanram, 2003). In a robustness test we re-run our tests using (1) the standard deviation of total returns from DataStream, (2) both beta and the standard deviation of abnormal returns estimated using DataStream total returns, and (3) the price volatility scaled by the average price estimated using I/B/E/S monthly price data. Our results (unreported) remain relatively unaffected by the choice of these proxies of a firm's market risk.

Finally, while we use the natural logarithm of US dollar sales as a proxy for information availability, we include the number of analysts following a firm (*Analyst Coverage*) as an alternative proxy in unreported tests. The results indicate that the coefficient on *Analyst Coverage* is negative and significant (at the 1% level), which is consistent with our earlier findings using the proxy for firm size (*Size*). Importantly, the coefficient of *Family_Control* is negative in 1996 and 1997 (but insignificant at conventional levels), and positive and significant in 1998 and 1999 (at the 1% and 5% level, respectively). This finding provides further evidence that our conclusions remain unaffected by the choice of other proxies for information.

***Cost of capital or cash flow effects.*** Poor firm performance may simply be related to poor cash flows, and not to the cost of equity capital. For example, poor firm performance could result in investor expectations of lower cash flows, or a higher cost of capital. Either reason could cause value depreciation. To address this concern, we decompose the cash flow effect and discount rate effect in firm value, following the methodology outlined in Hail and Leuz (2008). In unreported results, we find that the discount rate effect reduces firm value post-crisis by about the same magnitude as the cash flow effect. Indeed, we find that both the cash flow and the discount rate effects are negative for family firms, with the discount rate effect being −3.4% in 1999 (vs 1996) and −6% in 1998. There appears to be an equal split between the discount rate effect and the cash flow effect on firm value for family-controlled firms post-crisis.

***Alternative explanations.*** Alternative explanations may exist for our results. Four important concerns

arise in our analysis of the cost of equity of family-controlled firms. First, although we focus on family firms as a unique class of shareholders, the intuition underpinning our hypotheses might be applicable to other types of controlling shareholders. Consequently, the documented effect of family control on the cost of equity should also hold for other types of ultimate owners. We address this particular concern by re-estimating Eq. (1) after replacing *Family_Control* with three types of controlling owners as identified in Claessens et al. (2000): widely held firms, the State, and widely held financial institutions. In unreported results, we find no evidence that these types of investors are associated with expropriation of minority shareholder wealth. Further, we do not find higher equity financing costs following the crisis for these types of firms as documented for family owners.[25]

Second, there is the concern of survivorship bias. Indeed, given that firms that do not survive are typically more risky, a higher proportion of non-family-owned firms disappearing from the sample could result in a higher cost of capital for family-owned firms in the post-crisis period (1998 and 1999) than in the pre-crisis period (1996). It is important to address this concern, particularly because the firms affiliated with family groups may be more likely to survive a crisis because they have been artificially propped up, despite an increase in risk compared with non-affiliated firms, which normally have fewer lifelines. In our sample, we observe an increase in the number of firms in 1997, and a slight increase in the proportion of family-controlled firms (not significant at the 5% level). The increase in the number of firms in 1997 is explained by the number of valid observations available in I/B/E/S that meet the criteria outlined earlier in the section "Sample selection"and that have a valid cost of equity under each of the four models we use.[26]

Although we observe a slight increase in the proportion of family–controlled firms represented in the sample over 1997–1999 as compared with 1996, in (unreported) proportion tests we find that the proportion of family firms during and after the crisis is not significantly different (at the 5% level) from the proportion of family firms in 1996. Moreover, in unreported results, using the firms represented in both 1996 and 1998, we find that the raw cost of equity capital increased significantly for both family firms (at the 1% level) and non-family firms (at the 5% level), consistent with Table 2. However, this increase in the raw cost of equity capital in 1998 was over 200 basis points higher for family firms (6.34%) than for non-family firms (4.14%). When we use the industry-adjusted cost of equity, we find an insignificant increase in 1998 for non-family firms, while we find a significant (at the 1% level) increase for family firms by more than 300 basis points in 1998. This finding is consistent with the results reported in Table 2. When we compare 1999 with 1996, we find no significant increase in the raw or industry-adjusted cost of equity of non-family firms, whereas we find a significant increase (at the 10% level) of more than 100 basis points for family firms. These findings suggest that our earlier results are not the product of a change in the proportion of family firms represented in our post-crisis sample.

To further address this concern, in Table 6 we start with the number of observations in our sample of 1996 firms and hold it fixed. For each year, we separately estimate departure from the sample due to (1) non-survival, (2) I/B/E/S coverage, and (3) model convergence. This exercise shows that only about 42% of the firms that validly enter our 1996 sample also enter the 1998 and 1999 samples. In addition, the proportion of family firms increases by about 2% in 1998, whereas we observe only two cases of non-survival in 1999. These results show that patterns in the mixture of family vs non-family or increases/decreases in the final sample of "firms by year" are driven primarily by I/B/E/S coverage.

Third, because the cutoff for defining the existence of a large controlling shareholder is 10%, it is likely that a firm may have both a family firm and two (or more) distinct controlling/large shareholders. This possibility raises the concern that our results may be driven by the existence of other large shareholders in the family firm. To address this concern, we replicate Tables 4 and 5 by excluding all firms in which there is at least one other large shareholder of the non-family type that has:

(1) voting rights (*Voting2*) equivalent to the voting rights of the largest shareholder (*Voting1*)– *Voting2*/*Voting1*=1 (five observations);
(2) *Voting2*/*Voting1* > 0.90 (19 observations); and
(3) *Voting2*/*Voting1* > 0.75 (31 observations).

These unreported robustness tests show that our results remain the same. Further, our results remain robust despite sample size reductions when we replicate Tables 4 and 5 excluding those firms

**Table 6** Survivorship bias analysis

| *Year* | *Family* | *Book value per share available in worldscope* | *Survived family % of total* | *Worldscope I/B/E/S merged* | *Surviving each stage of the I/B/E/S filter sequentially* | | | | *All needed data points Available in I/B/E/S and Worldscope* | *Converged for a cost of equity within the set of criteria* | | | | | *Family % total final* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | *A value for FEPS 1* | *A value for FEPS 2* | *Two or more analysts* | *Positive FEPS 1 and FEPS 2* | | $K_{CT}$ | $K_{OJ}$ | $K_{GLS}$ | $K_{ES}$ | *All models* | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 1996 | No | 107 | 60.37 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 60.37 |
| | Yes | 163 | | 163 | 163 | 163 | 163 | 163 | 163 | 163 | 163 | 163 | 163 | 163 | |
| | % Survived | 100 | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | |
| 1997 | No | 107 | 60.37 | 107 | 107 | 106 | 104 | 101 | 88 | 80 | 82 | 88 | 88 | 74 | 60.43 |
| | Yes | 163 | | 161 | 160 | 161 | 158 | 151 | 139 | 132 | 118 | 139 | 139 | 113 | |
| | % Survived | 100 | | 99 | 99 | 99 | 97 | 93 | 84 | 79 | 74 | 84 | 84 | 69 | |
| 1998 | No | 107 | 60.37 | 104 | 104 | 97 | 96 | 78 | 68 | 62 | 49 | 68 | 66 | 43 | 62.28 |
| | Yes | 163 | | 150 | 150 | 147 | 143 | 109 | 102 | 99 | 71 | 101 | 96 | 71 | |
| | % Survived | 100 | | 94 | 94 | 90 | 89 | 69 | 63 | 60 | 44 | 63 | 60 | 42 | |
| 1999 | No | 106 | 60.45 | 96 | 96 | 92 | 84 | 67 | 57 | 57 | 45 | 57 | 57 | 45 | 60.18 |
| | Yes | 162 | | 142 | 142 | 135 | 125 | 97 | 87 | 82 | 72 | 87 | 87 | 68 | |
| | % Survived | 99.26 | | 89 | 89 | 85 | 78 | 61 | 54 | 52 | 44 | 54 | 54 | 42 | |
| | | 1078 | | 1030 | 1029 | 1008 | 980 | 873 | 811 | 782 | 707 | 810 | 803 | 684 | |
| % of valid worldscope sample | | 100 | | 96 | 95 | 94 | 91 | 81 | 75 | 73 | 66 | 75 | 74 | 63 | |

This table presents results of survivorship bias analysis for the firms represented in the sample. The analysis starts with the firms that have a valid cost of equity estimate for 1996 and which are included in our final sample in this particular year. Holding this sample fixed, we first assume that firms that remain in our Worldscope panel with a valid book value per share survive for that year. Then, for each year, we estimate departure from this sample due to (1) non-survival in column 3, (2) I/B/E/S coverage in columns 5–10, and (3) model convergence in columns 11–15. In the table, the year represents the year in which the cost of equity is estimated, that is, the fiscal year-end month plus 10 months.

**Table 7** Robustness tests: Concentrated ownership

| *Year* | *1996* | *1997* | *1998* | *1999* | *1996* | *1997* | *1998* | *1999* | *1996* | *1997* | *1998* | *1999* | *1996* | *1997* | *1998* | *1999* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Panel A: Excluding all firms with Voting1 > 50%* | | | | | | | | | | | | | | | | |
| *Family_Control* (?) | −0.005 | −0.003 | 0.028*** | 0.014*** | −0.007 | −0.001 | 0.028*** | 0.015*** | −0.005 | −0.003 | 0.027** | 0.015*** | −0.005 | −0.005 | 0.028*** | 0.014*** |
| | (−0.65) | (−0.37) | (2.43) | (2.57) | (−1.11) | (−0.06) | (2.53) | (2.52) | (−0.65) | (−0.38) | (2.09) | (2.63) | (−0.66) | (−0.56) | (2.46) | (2.55) |
| *Group* | | | | | 0.007 | −0.009* | 0.002 | −0.004 | | | | | | | | |
| *Affiliation* (?) | | | | | (0.97) | (−1.76) | (0.12) | (−1.64) | | | | | | | | |
| *Political* | | | | | | | | | 0.001 | 0.000 | 0.015 | −0.013 | | | | |
| *Connection* (?) | | | | | | | | | (0.16) | (−0.01) | (0.46) | (−1.11) | | | | |
| *Voting1* (+) | | | | | | | | | | | | | 0.006 | 0.062* | 0.035 | 0.053** |
| | | | | | | | | | | | | | 0.38 | 1.407 | 0.385 | 2.31 |
| Controls, intercept, and country effect | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. $R^2$ (%) | 28.30 | 25.80 | 36.40 | 23.10 | 28.30 | 26.00 | 36.10 | 22.80 | 28.00 | 25.60 | 36.20 | 23.00 | 28.00 | 26.50 | 36.20 | 23.40 |
| *N* | 230 | 326 | 243 | 234 | 230 | 326 | 243 | 234 | 230 | 326 | 243 | 234 | 230 | 326 | 243 | 234 |
| *Panel B: Voting1 and family control* | | | | | | | | | | | | | | | | |
| *Voting1* (+) | −0.006 | 0.039 | 0.025 | 0.094** | 0.003 | 0.045 | −0.018 | 0.070** | −0.006 | 0.039 | 0.025 | 0.092** | −0.013 | 0.039 | 0.040 | 0.109*** |
| | (−0.29) | (1.54) | (0.39) | (2.24) | (0.11) | (1.52) | (−0.38) | (1.93) | (−0.26) | (1.53) | (0.39) | (2.18) | (−0.63) | (1.47) | (0.58) | (2.64) |
| *Family* × *Voting1* | | | | | −0.015 | −0.010 | 0.070** | 0.041* | | | | | | | | |
| | | | | | (−0.88) | (−0.57) | (1.97) | (1.63) | | | | | | | | |
| *Widely Held* | | | | | | | | | −0.059* | −0.010 | 0.030 | −0.057*** | | | | |
| *Financial* × *Voting1* | | | | | | | | | (−1.68) | (−0.19) | (0.31) | (−4.40) | | | | |
| *State* × *Voting1* | | | | | | | | | | | | | 0.027 | 0.002 | −0.070 | −0.057** |
| | | | | | | | | | | | | | 0.38 | 1.407 | 0.385 | 2.31 |
| Controls, intercept, and country effect | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. $R^2$ (%) | 31.07 | 28.11 | 38.08 | 24.17 | 31 | 27.97 | 38.53 | 24.66 | 31.31 | 27.92 | 37.86 | 24.14 | 31.20 | 27.91 | 38.18 | 24.59 |
| *N* | 265 | 377 | 276 | 256 | 265 | 377 | 276 | 256 | 265 | 377 | 276 | 256 | 265 | 377 | 276 | 256 |

This table presents unreported robustness tests replicating Tables 4 and 5. The sample, which is drawn from Claessens et al. (2000), consists of 1189 firm–year observations (1174 with complete information on the proxy for firm risk) from eight East Asian countries over the period 1996–1999. The dependent variable, *K*, is the mean of cost of equity capital estimates based on the four models described in "Cost of equity estimates." Panel A presents results on the effect of family control, with controls for group affiliation, political connections, and ownership structure, on the cost of equity capital after excluding firms in which the voting rights of the largest shareholder exceed 50%. Panel B presents results on the specification in which we add the voting rights of the largest shareholder and interactions between voting rights and the largest shareholder type. The control variables included in all regressions are *Risk*, *Size*, *Leverage*, *Market to Book*, *Accuracy of Forecasts*, *Growth*, and *GDPG*. The Appendix reports detailed definitions and data sources for all variables. *t*-statistics based on robust standard errors adjusted for clustering by country are reported in parentheses beneath each coefficient estimate. ***, **, and * denote statistical significance (one-tailed when predictions are made) at the 1%, 5%, and 10% levels, respectively.

with at least one more large shareholder of any type with:

(1) *Voting2*/*Voting1*=1 (nine observations);
(2) *Voting2*/*Voting1*>0.90 (121 observations); and
(3) *Voting2*/*Voting1*>0.75 (176 observations).

In sum, these tests imply that our previous evidence on the impact of family control on the cost of equity capital does not reflect the presence or size of other large blockholders.

Fourth, a related concern arises from concentrated ownership, in that the increase in the cost of capital post-crisis may merely reflect a concentrated ownership effect rather than a family effect. In order to address this issue, we replicate Tables 4 and 5 excluding all firms that have a shareholder with an absolute majority, that is, with voting rights (*Voting1*) > 50% (143 observations). The results, which are reported in Panel A of Table 7, are robust to this modification. Furthermore, in the first four columns of Panel B of Table 7, we replicate our Table 4 results including *Voting1* as the main test variable. This variable loads positively, but its significance varies by year. In the rest of the panel, we include the interaction terms between *Voting1* and the different owner types. We find that the *Family_Control* × *Voting1* interaction has a positive and significant coefficient post-crisis, while no such evidence is observed for the interactions of the other large shareholder types and their voting rights. This evidence suggests that concentrated ownership was not the sole motivator of the increase in the cost of capital post-crisis, but rather that family ownership and the concentration of ownership in the hands of family owners led to these increases. In other words, the cost of capital for family-controlled firms generally increased post-crisis, and is positively associated with the size of the voting rights in these family-controlled firms.

## CONCLUSION

Blame for the Asian financial crisis has been placed largely on the prevailing corporate governance systems in East Asia. These systems have been shaped by the concentration of control in the hands of a small number of major shareholders. This problem is most serious in East Asian family-controlled firms plagued by intense agency conflicts (Nam, 2001). Before the crisis, these firms were operating in highly protected environments (i.e., no or limited competition) that provided weak protection of property rights. Thus the possibilities for entrenchment were numerous, and several studies report examples of tunneling activity by family firms during the crisis. However, the literature also presents evidence that family control can enhance firm value, suggesting that an alignment effect may be observed in family firms.

Our study helps disentangle these effects by evaluating the dynamics of the link between family control and the cost of equity capital before, during, and after the crisis. To do so, we use a sample of 566 firms from eight East Asian countries and evaluate data over the period 1996 through 1999. The results of a univariate analysis that compares family and non-family-controlled firms' cost of equity in each year reveal that, while the difference is insignificant in the pre-crisis period, the post-crisis cost of equity is significantly higher for family firms. After controlling for country-level and other firm-level determinants of the cost of capital, our results show that family control is unrelated to the cost of equity capital before the crisis. This finding suggests that, before the crisis, investors were not aware of potential expropriation of their investment by major family shareholders. In contrast, we find robust evidence that family control was associated with an increase in the cost of equity capital after the crisis.

We can derive several lessons from our results concerning the Asian financial crisis. For instance, the crisis undoubtedly contributed to making investors more alert to the possibility of expropriation inherent in family firms. The importance of these firms in East Asia also explains the gravity of the crisis. Claessens et al. (2000) show that a relatively limited number of wealthy families control most of the wealth in East Asian economies. For instance, they document that the wealthiest family controls 17.1% of the market capitalization in the Philippines, 16.6% in Indonesia, and 11.4% in Korea. Their control over corporate assets accounts for a large fraction of the GDP. Thus an adverse shock such as the Asian financial crisis, which largely hit the corporate sector, together with the agency problem of entrenchment between majority shareholders and minority shareholders, soon amplified the shock to an "economic entrenchment" at the country level (Morck et al., 2005).

Given that investors are now aware of the possibilities of expropriation by family firms, and price these firms' securities accordingly, the crisis may have negative longer-term consequences at the macroeconomic level. As their cost of capital increases, family firms will be more reluctant to raise external funds, which will lead to an adverse

effect on the development of local capital markets. The greater the importance of these firms in an economy, the worse the expected effect. Several authors question whether this type of organizational structure should exist (Morck et al., 2005). To the extent that these firms are often politically connected, the probability that they will oppose institutional changes and lobby to maintain the *status quo* is high (Fogel, 2006). Political economy arguments (e.g., Gourevitch & Shinn, 2005; Pagano & Volpin, 2006) largely explain expropriation by insiders as the result of weak investor protection in some countries.[27] Thus any forthcoming regulatory change affecting the private benefits of these family firms requires that governments be politically committed and have both the means and the will to implement reforms aimed at diminishing costly free riding of family firms.

In a recent report, the Organization for Economic Co-operation and Development (Kirkpatrick, 2009) concludes that the financial crisis of 2007–2008, which originated in the US and spread across the globe, can be attributed to a large extent to misguided corporate governance practices, especially in the areas of transparency and remuneration, that led to increased risk exposure and widespread risk management failures in financial institutions. In comparing the 1997/1998 East Asian crisis with the 2007/2008 crisis, Dissanaike and Markar (2009) observe that poor corporate governance and a lack of transparency are common root causes of the crises. Our study directly shows how weak corporate governance is priced by investors during such events. At this point, additional research is needed to assess the impact of family firms on economic growth in general, the origins of family firms, and the impact of family firms on their surrounding environment (as suggested by Khanna & Yafeh, 2005). In light of the recent crisis, further investigation of the role and impact of family ownership/control structures is warranted, particularly to determine whether these structures enhanced the impact of the crisis and market volatility in countries where they are most prevalent.

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## NOTES

[1]Johnson et al. (2000) and Mitton (2002) describe several examples of expropriation of minority shareholders during the Asian financial crisis.

[2]In the robustness section, we more formally examine whether the evidence in this paper reflects the effect of concentrated ownership, and whether it is applicable to other types of blockholders (e.g., the State, financial institutions, and widely held corporations).

[3]In addition to Chen et al.'s (2009) explanation of how expropriation and market conditions can amplify the systematic risk, we offer three additional channels for the increase in non-diversifiable risk of family firms following the crisis. First, evidence in Claessens et al. (2000) indicates that a very small number of family firms in East Asia have effective control over the total value of listed corporate assets. If expropriation activities in family firms become more evident in the post-crisis period, then this is more likely to lead the market to a distinct treatment of family firms, increasing the systematic risk of these firms in economies dominated by family firms. Further, the semi-segmented nature of most of these markets, especially following the crisis, limits investors' opportunity to diversify risk, and thus a large fraction of the total risk is systematic risk. Finally, as minority shareholders are residual claimants in these firms, their cash flows are likely to be lower during downturns and higher during economic upturns, thus increasing the covariance of their cash flows with the rest of the market, which is dominated mainly by family firms.

[4]In an interesting contribution to this literature, Doidge et al. (2009) find that family/management control is associated with a lower likelihood of cross-listing in the US, because such listings would subject firms to constraining securities laws, including strict disclosure standards and a strong litigation environment, all of which reduce the potential extraction of private benefits. Luo et al. (2009) find that family ownership and control in large group-affiliated Taiwanese firms are negatively associated with foreign investment by the US and Japanese firms, which they attribute to the high monitoring costs of family-dominated firms.

[5]John and Senbet (1998) provide a comprehensive survey of the theoretical and empirical literature on mechanisms of corporate governance, both internal and external, and their role in mitigating various classes of agency problems arising from conflicts of interest between managers and shareholders, shareholders and bondholders, and capital contributors and other stakeholders in the corporation. In particular, the authors emphasize the monitoring role of the board of directors as an internal mechanism of corporate governance, and its interaction with external mechanisms, namely, the market for corporate control.

[6]This 10-month period appropriately accounts for the lag with which the market gets access to the firm's annual financial information and incorporates it into security prices (see, e.g., Hail & Leuz, 2006).

[7]In tracing a firm's ultimate controlling owner, Claessens et al. (2000) define controlling shareholders at the 10% cutoff, which is standard practice according to Faccio et al. (2009). Claessens et al.'s (2000) original data do not provide alternative cutoffs to identify the ultimate owner, and thus do not allow us to perform tests at cutoffs other than 10%.

[8]These firm–year observations represent about 65% of the firms for which we are able to estimate the cost of equity capital.

[9]Later, we also use DataStream to collect total return and market data to calculate a proxy for firm risk. This results in a slight reduction in our sample to 1174 firm–year observations in specifications that include this proxy for firm risk.

[10]Appendices in Hail and Leuz (2006) and Guedhami and Mishra (2009) provide a detailed description of the four models, including their assumptions and data requirements.

[11]In computing the industry-adjusted cost of equity, we first group all firms from the sample countries into 12 industries, according to Campbell's (1996) classification, and then subtract the industry–year median cost of equity from *K* to obtain the industry-adjusted cost of equity capital (*Adjusted K*).

[12]We follow Mitton (2002) by adopting his timeline and identifying 1996 as the pre-crisis period, 1997 as the crisis period, and 1998 and 1999 as the post-crisis period.

[13]In a cursory analysis, we find that, compared with 1996, the average Tobin's Q (*Market to Book Value*) was lower for family firms by 0.961 (0.516 for non-family firms) in 1998 and by 0.495 (0.227 for non-family firms) in 1999, suggesting that family firms experienced about twice as much relative value deterioration as non-family firms. We find similar results using the change in adjusted stock prices. An important question that we address in this paper is whether, and to what extent, the source of this value deterioration may be explained by the discount rate.

[14]In unreported tests, we obtain similar evidence when we compare the asset-weighted and sales-weighted average cost of equity capital for family and non-family firms for each year surrounding the crisis.

[15]We use this proxy given recent empirical evidence that beta exhibits little to no association with the implied cost of capital (e.g., Gebhardt et al., 2001; Lee et al., 2004). However, as a robustness test, we also use other proxies for the firm's market risk, like beta and return volatility.

[16]*Institutional Investor Magazine* reports country credit ratings biannually using a scale of 0 (high-country risk) –100 (low-country risk). We invert these ratings by taking the natural logarithm of 100 less the given credit ratings, following the approach of Erb et al. (1996).

[17]As discussed earlier, to reduce the concern of spurious results arising from the use of a single model, we follow recent research and rely on four widely used models to estimate the average cost of equity capital (*K*). In unreported regressions, we replace *K* with the cost of equity estimate derived from each of these models ($K_{OJ}$, $K_{ES}$, $K_{CT}$, and $K_{GLS}$). The results from tests that replicate Table 4 indicate that *Family_Control* continues to load positively and generally significantly in the post-crisis years (1998 and 1999) across all four models.

[18]Data on group affiliation and voting rights come from Claessens et al. (2000), while political connection data come from Faccio (2006).

[19]Johnson and Mitton (2003: 377) study cronyism in Malaysia around the time of the crisis, and note that "when hit by the initial Asian crisis, favored firms suffered large falls in expected subsidies. The imposition of capital controls, on the other hand, allowed the government to channel greater resources (and provide other advantages) to firms with strong political connections to the Prime Minister."

[20]In addition, evidence in Chaney et al. (2008) indicates that politically connected firms benefit from a lower cost of debt, which in turn may reduce the cost of equity. We thank the referee for raising this point.

[21]Friedman, Johnson, and Mitton (2003) provide several examples of group owners propping their firms to the benefit of minority shareholders during the Asian financial crisis. In addition to stressing the capital market power of pyramidal groups, Morck et al. (2005: 668) explain that "Sharing a controlling owner presumably lessens information asymmetry problems

between borrower and lender firms, and so allows firms in a pyramidal group preferential access to bank financing." However, the finding that this relation is weak and significant only in 1996 and 1999 (and not during the crisis) may suggest that the group affiliation effect just offsets the crisis effect.

[22]We also consider the earnings-to-price ratio, in line with Francis et al. (2005), as a proxy for the cost of equity capital. Using this proxy, we find that the coefficient on *Family_Control* loads negatively in 1996 and 1997, and positively in subsequent years. The coefficient is highly significant at the 1% level in 1998. Additionally, we use the dividend yield, similar to Bekaert and Harvey (2000). Bekaert and Harvey give three main advantages of using this proxy: (1) changes in price dominate variation over time; (2) dividend yield is closely related to cost of capital; (3) dividend yield is easily measurable. This proxy loads with a negative, but insignificant, coefficient on family control in years prior to the crisis, and with a positive coefficient post-crisis, which is highly significant in 1998 (at the 1% level).

[23]The details of this model are available at http://www.duke.edu/~charvey/applets/iccrc.html. In replicating our results using this proxy for the cost of equity, we do not control for country-fixed effects, because doing so would eliminate variation due to sovereign yield spread. However, controlling for country effects also gives positive and significant coefficients for family control in 1998 and 1999, but the coefficients are not negative in 1996 and 1997.

[24]In the tests reported in Tables 4 and 5, we choose to use *Accuracy of Forecasts* instead of *Variance of Forecasts*, given the high correlation of *Variance of Forecasts* with country-specific institutional and legal variables and other firm-specific variables. For example, the pairwise correlations between *Variance of Forecasts* and the country-level institutional and legal variables *Transparency and Fairness*, *Institutional Effectiveness*, *ICRG_Law & Order*, *Disclosure*, *Criminal*, *Common Law*, *Turnover*, *and Ln(100-CR_Ratings)* are 0.28, −0.54, −0.68, −0.81, −0.82, −0.73, 0.43, and 0.40, respectively, and the correlation is 0.43 with *Leverage*.

[25]We also include, in the same regression, family and two additional types of ultimate ownership: *Widely Held Financial* and *Widely Held Firm*. We find that *Family_Control* continues to load with a positive and significant coefficient in 1998 and 1999, while the other types of owners generally have statistically insignificant coefficients.

[26]For example, consider firm X, which existed in 1996–1999. The following cases may apply to firm X: (1) for fiscal year-end (1995) month plus 10 in 1996, the firm might not be followed by at least two analysts, and thus it is dropped from the sample although it is still active in 1996; or (2) in 1998, the GLS model might not have converged to a cost of equity capital within the range of 0–200%, and thus the firm is dropped from the 1998 sample although it is not dead. Consequently, firm X appears only in 1997 and 1999, but not in 1996 and 1998.

[27]We thank a reviewer for pointing this out.

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## Appendix

See Table A1

**Table A1** Variables, definitions, and sources

| *Variable* | *Description* | *Source* |
|---|---|---|
| *K* | Firm's cost of equity, estimated as the average of $K_{ES}$, $K_{OJ}$, $K_{CT}$, and $K_{GLS}$. This is our main test variable. | Estimated |
| *Family_Control* | A dummy variable equal to 1 for family-controlled firms, and 0 otherwise. | Claessens et al. (2000) |
| *Risk* | Standard deviation of the residuals from a market model, estimated in US dollars. Stock return and MSCI Country Index returns are extracted from DataStream. | Estimated |
| *Growth* | I/B/E/S 5-year earnings growth rate where available, otherwise estimated as growth in forecasted earnings from Year 1 to Year 3. | I/B/E/S |
| *Market to Book* | Market to book value ratio extracted from the Worldscope database. | Worldscope |
| *Accuracy of Forecasts* | Median EPS forecast for year 1 less the actual EPS for the forecast date, divided by the median EPS forecast for year 1. | I/B/E/S Estimated |
| *Size* | The natural logarithm of annual US dollar sales. | Worldscope |
| *Leverage* | Total debt (long-term debt divided by total capital). | Worldscope |
| *GDPG* | Percentage change in real GDP. | World Development Indicators/Economist Intelligence Unit |
| *Group Affiliation* | A dummy variable, equal to 1 for firms affiliated with a business group. | Claessens et al. (2000) |
| *Political Connection* | A dummy variable, equal to 1 if the firm is politically connected. | Faccio (2006) |
| *Voting1* | Voting rights of the controlling shareholder. | Claessens et al. (2000) |
| *Widely Held Firm* | A dummy variable, equal to 1 for a firm with dispersed ownership or classified as a widely held company (non-financial). "A widely held corporation is a corporation that does not have any owners with significant control rights." | Claessens et al. (2000) |
| *State* | A dummy variable, equal to 1 if the ultimate large shareholder is the State, and 0 otherwise. | As above |
| *Widely Held Financial* | A dummy variable, equal to 1 if the ultimate large shareholder is a widely held financial institution, and 0 otherwise. | As above |

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