Excess control, Corporate Governance, and Implied Cost of Equity: International Evidence*

Omrane Guedhami
Faculty of Business Administration, Memorial University of Newfoundland, St. John's, NL, Canada A1B 3X5
guedhami@mun.ca

Dev Mishra
College of Commerce, University of Saskatchewan, Saskatoon, SK, Canada S7N 5A7
mishra@commerce.usask.ca

Abstract

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Keywords: Ownership, Control, Expropriation, Corporate Governance, Cost of Equity

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Abstract

Recent research shows that public firms, outside the U.S., have controlling shareholders who tend to use different mechanisms (e.g., pyramidal and cross-holdings, multiple class shares) to enhance the separation between ownership and control rights, providing them with strong incentives and power to expropriate minority shareholders. According to prior research, however, this potential for expropriation can be costly to controlling shareholders and firms in terms of capital-raising costs. In this paper, we investigate whether excess control (i.e., the wedge between voting and cash flow rights of the ultimate owner) is associated with increased cost of equity. Using estimates of the cost of equity capital implied by analyst earnings forecasts and growth rate for a panel of 1,335 firms from 8 Asian and 13 Western European countries, we find strong, robust evidence that the cost of equity is increasing in excess control, while controlling for other firm-level characteristics. Economically, we estimate that a one standard deviation increase in excess control translates into firms' cost of equity becoming 22 basis points higher. This core finding persists after controlling for legal institutions variables. To our knowledge, we collectively provide the first evidence supporting a direct effect of excess control on the cost of equity capital.

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1. Introduction

The separation of ownership and control is widely documented in the modern literature on corporate governance. In a seminal study, La Porta, Lopez-de-Silanes, and Shleifer (1999) investigate the control pattern and ultimate ownership of companies and find that most firms around the world have concentrated ownership structures. These firms are predominantly controlled by a single large shareholder who often exercises ultimate control despite owning little cash flow rights.[1] This separation between ultimate ownership and control (excess control) provides large controlling shareholders with incentives to derive private benefits for themselves at the expense of other shareholders (e.g., Shleifer and Vishny, 1997; Bebchuk, Kraakman, and Triantis, 2000). More importantly, the extraction of private benefits can have serious cost of equity and value implications for the controlling shareholders and firms according to prior research (e.g., Claessens, Djankov, Fan, and Lang, 2002; La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 2002; among others). As explained by Dyck and Zingales (2004, p. 52), the potential extraction of private benefits by controlling shareholders "…reduces what minority shareholders are willing to pay for shares, lowering the value of all companies where such behavior represents a real possibility. And by raising the cost of finance, it limits the ability of such firms to fund attractive investment projects."

While extensive empirical evidence suggests that excess control is negatively associated with firm value, consistent with the entrenchment effect (e.g., Claessens et al., 2002; La Porta et al., 2002; Lemmon and Lins, 2003; among others), little research, if any, focuses on the *direct* effect of excess control on the cost of equity.[2] In their investigation of the impact of legal institutions and securities regulations on the cost of equity capital, Hail and Leuz (2006, p. 486) argue that "It is possible that the valuation effects primarily reflect differences in the level of expropriation and firms' growth opportunities. But effective legal institutions may also reduce the risk premium demanded by investors, and hence firms' cost of capital." Accordingly, our study takes an alternative approach by

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[1] There are several other studies that corroborate this finding: Shleifer and Vishny (1986) on the U.S., Zingales (1994) on Italy, Becht and Roell (1999) and Faccio and Lang (2002) on Continental Europe, Khanna and Palepu (1999) on India, Claessens et al. (2000) on East Asian countries, Attig et al. (2006) and Morck et al. (2000) on Canada, Wiwattanakantang (2001) on Thailand, Yeh et al. (2001) on Taiwan, Joh (2003) on South Korea, and Cronqvist and Nilsson (2003) on Sweden.

[2] Consistent with the entrenchment effect view, recent research finds that excess control explains the firm's dividend and debt policies (Faccio et al., 2001, 2005), the informativeness of firm's reported earnings and auditor's choice in Asia (Fan and Wong, 2002, 2005), the extent of income management by firms in Asian and European countries (Haw et al., 2004), and the likelihood of cross-listing in the U.S. (Doidge et al., 2005).

exploring the channel through which excess control affects firm value.[3] More specifically, we empirically investigate whether excess control is associated with increased cost of equity capital.

To test our prediction on the impact of excess control on the cost of equity capital, we use a panel of 2,926 firm-year observations spanning 1995-1997 for a sample of 1,335 listed corporations from 8 East Asian and 13 Western European countries derived from Claessens et al. (2000) and Faccio and Lang (2002), the largest existing multinational databases on ownership and control structures of ultimate owners. Essential to our study, the merged database is unique in that it documents the ownership (cash flow rights) and control (voting rights) structures of ultimate owners, allowing us to examine the equity financing costs of the divergence between ownership and control rights of the largest ultimate owner. We then compute the implied cost of equity using analyst earnings forecasts and share price data available from I/B/E/S, given that existing research shows that the realized return is a noisy and arguably biased proxy for the cost of capital (Elton, 1999). In estimating firms' cost of equity, we employ four widely used models in recent literature: two of these models are based on the Edward-Bell-Ohlson residual income valuation model as implemented in Gebhardt, Lee, and Swaminathan (2001) and Claus and Thomas (2001), while the other two models are based on the abnormal earnings growth model as in Ohlson and Juettner-Nauroth (2005) and Easton (2004).

After controlling for firm-, industry- and country-level characteristics shown to affect the cost of capital, we find strong, robust evidence that excess control is significantly positively associated with the implied cost of equity, consistent with the negative firm value impact and the entrenchment effect associated with excess control. To highlight the economic importance of this finding, we estimate that, on average, a one standard deviation increase in excess control translates into approximately a 22 basis point increase in the cost of equity. We also find that legal institutional variables (consistent with Hail and Leuz, 2006), country credit ratings (consistent with Erb et al., 1996) and other firm and industry characteristics (consistent with Gebhardt et al., 2001 and Gode and Mohanram, 2003; among others) are significantly associated with the implied cost of equity. Our

[3] Excess control can have value implications from two sources, namely expected future cash flows and the appropriate discount rate. Indeed, analysts may take into account the negative impact of excess control when predicting future cash flows and adjust them accordingly. In such case, and if the market trusts that analysts adjust future cash flows to reflect the potential for expropriation, then the market is likely to discount these cash flows at a usual rate. If, however, the market believes that analysts cannot or do not optimally account for the negative effect of excess control, then the market may adjust the firm's cost of capital and discount the expected cash flows at a higher rate. Therefore, if part or all of the value impact of expropriation comes from the market's adjustment of the discount rate, excess control will cause a firm's cost of equity to increase. Given our focus on the financing cost implications of excess control for controlling shareholders, as predicted by corporate governance research, in addition to the importance of the cost of finance for a firm's investment and financial policies, we examine the impact of excess control on the cost of equity capital rather than firm value.

findings are robust to various estimation methods of the cost of equity. Collectively, our findings reflect the scope for opportunism by the controlling shareholder when they hold a lower portion of cash flow rights relative to voting rights and when legal institutions are weak.

To our knowledge, this is the first cross-country study to present evidence of a direct association between excess control and the cost of equity capital. However, our study is closely related to Claessens et al. (2002) who examine firm value implications of excess control, but differs by focusing primarily on the cost of equity capital. We extend their analysis by showing that excess control increases the cost of equity capital, consistent with their finding of a negative effect on firm value. Our empirical analysis also adds to recent contributions in the cost of capital literature, specifically Hail and Leuz (2006). Similar to Hail and Leuz, we use discounted cash flow valuation models to investigate the determinants of the cost of equity capital in a sample involving a large number of countries. We extend their cross-country findings by showing that ultimate ownership and control structures, in addition to legal institutions, explain differences in firms' cost of equity capital.

The rest of the paper proceeds as follows. Section 2 reviews the relevant literature on corporate ownership structure and implied cost of capital models. Section 3 describes the sample, defines the cost of equity estimates, and reports summary statistics on the regression variables. Section 4 covers our main results and analyzes their robustness. Section 5 concludes.

2. Literature Review

This paper builds on two strands of finance literature, the ownership structure literature and the cost of capital literature. Both are large, diversified and still growing. Although theoretically acknowledged, the empirical relationship between excess control and the implied cost of capital has not been analyzed to date, to the best of our knowledge. In this section, we present a brief review of the literature closely related to the tenor of our study. Specifically, we review (i) the ownership structure literature and the agency problems related to excess control and its implications for firm value, and (ii) the cost of capital literature related to the estimation of the implied cost of equity.

2.1 Excess Control, the Potential Expropriation of Minority Shareholders, and Value Implications

Extensive evidence of ownership concentration around the world, especially in less protective environments, has shifted attention from the classical agency conflict between shareholders and managers (Berle and Means, 1932) toward the agency conflict between minority and controlling shareholders (Shleifer and Vishny, 1997). La Porta et al. (1999) document that firms in wealthy countries tend to have controlling shareholders, usually a family, with significant control rights in excess of their cash flow rights and extensive managerial involvement.[4] Corroborating evidence on the separation between ownership and control comes from two key geographical regions: East Asia and Western Europe. For instance, Claessens et al. (2000) find that not only are more than two-thirds of East Asian firms controlled by a single shareholder, but excess control is also more pronounced in family-controlled and small firms. In a follow-up study on Western European countries, Faccio and Lang (2002) document that while single-controlling shareholder is as common as in East Asia, excess control, or more precisely the ratio of control to ownership, is comparatively much lower.

More importantly, ultimate ownership structures, hence excess control, induce significant agency problems between controlling owners and minority shareholders. By retaining a lower portion of cash flow rights relative to voting rights, controlling shareholders will not feel any incentive to maximize minority shareholders' wealth. Their position provides them, instead, with the opportunity and ability to extract private benefits from minority shareholders by, for example, distorting transfer prices, concealing related-party transactions, and even outright theft (e.g., Johnson et al, 2000 and La Porta et al., 2002). One immediate implication emphasized in this literature is that excess control should lower firm value and raise the cost of finance for controlling shareholders. According to Fan and Wong (2005, p. 2), "This entrenchment problem can come at a price to the controlling owners and their firms: outside investors anticipate the problem; hence, they discount the share prices … and raise the difficulty for the firms to issue equities in the future." In this regard, Claessens et al. (2002) find that firm value in Asian countries decreases with the level of excess control, consistent with the entrenchment effect. Similarly, in providing theory and evidence on the value effects of expropriation by the controlling shareholder, La Porta et al. (2002) show that higher cash flow ownership (as well as better investor protection) is associated with lower expropriation of minority shareholders and higher valuation of firms from 27 wealthy economies. More recently, Durnev and Kim (2005) present a comparable model that predicts less expropriation and better corporate governance when controlling shareholders own higher cash flow rights and when investor protection is stronger, resulting in higher valuation.

Collectively, prior research suggests that the separation of ownership and control is widespread, provides controlling shareholders with power and incentives to extract private benefits

[4] According to Bebchuk et al. (2000), three basic mechanisms permit a company's controller to retain only a minority of cash flow rights attached to the firm's equity: differential voting rights structures, pyramid structures, and cross-ownership structures. The pyramiding and cross-ownership structures used by groups are documented in La Porta et al. (1999) for a sample of 27 rich countries, in Claessens et al. (2000) for 9 Asian countries, and in Faccio and Lang (2002) for 13 European countries.

of control, and can be *ex ante* costly to controlling shareholders and firms in terms of capital-raising costs and equity value. Since our research focuses on the relation between excess control and the cost of equity capital, we next discuss the literature related to the cost of capital.

2.2 Models of Implied Cost of Equity Capital

Although the Sharpe (1964) and Lintner (1965) capital asset pricing model (CAPM) (or a variation of this model) is widely used by U.S. corporations to estimate their cost of equity (e.g., Graham and Harvey, 2001), serious doubts have been raised about the ability of the CAPM to predict firms' cost of equity capital. For example, after studying industry costs of equity using the CAPM and their three-factor model, Fama and French (1997, p.153) conclude that "Estimates of the cost of equity for industries are imprecise … Estimates of the cost of equity for firms and projects are surely less precise."[5] Similarly, Elton (1999) argues that the realized return is a native, but noisy and often biased proxy of expected return (p. 1200): "I believe developing better measures of expected return and alternative ways of testing asset pricing theories that do not require use of realized returns have a much higher payoff than any additional development of statistical tests that continue to rely on realized returns as a proxy of expected return."

As an alternative approach, the cost of equity implied by the discounted cash flow method is gaining ground in empirical work. Indeed, many studies have used several variations of Edwards and Bell (1961), Ohlson (1995), and Feltham and Ohlson (1995), popularly known as Edward-Bell-Ohlson residual income valuation model, and abnormal growth models, e.g., Ohlson and Juettner-Nauroth (2005), in generating implied cost of equity estimates used in cross-sectional analyses. For example, Easton and Monahan (2005) present a comparison of seven different models that estimate the cost of equity based on price and forecasted earnings. In recent cross-country research, Hail and Leuz (2006) use estimates for the cost of equity capital based on four widely used models. Two of these are based on abnormal earnings growth valuation models of Ohlson and Juettner-Nauroth (2005 OJ) and Easton (2004 ES), while the other two are based on Edward-Bell-Ohlson residual income valuation model, originally implemented in Gebhardt, Lee, and Swaminathan (2001 GLS) and Claus and Thomas (2001 CT).[6]

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[5] Fama and French (2004) outline several drawbacks associated with the CAPM. In this study, we do not attempt to discuss the theoretical or empirical flaws of the CAPM.

[6] The GLS model uses industry growth rate (more specifically, return on investment) to capture earnings growth beyond a three-year analyst forecast horizon, whereas the CT model uses inflation premium to proxy the long-term growth rate beyond five years. We note that only the OJ model (as implemented in Gode and Mohanram (2003)) provides a closed form equation to estimate the implied cost of equity.

The list of studies proposing, testing and using implied cost of equity models is quite extensive. However, they share two points of consensus. First, they concur that analyst forecasts are sluggish and noisy; therefore maximum care should be exercised when using them to estimate the cost of equity capital. Second, they concur that all models provide cost of equity estimates of somewhat similar value in cross-sectional regressions (e.g., Gode and Mohanram, 2003; Botosan and Plumlee, 2005; Easton and Monahan, 2005).

In this study, we follow Hail and Leuz (2006) by relying on CT, ES, GLS, and OJ models to obtain estimates of the cost of equity capital. Several reasons motivate this choice. First, each model makes use of various inputs differently (e.g., growth rates, earnings estimates, and forecast horizon) in estimating cost of equity, all of which are important for firm valuation. For example, the CT and OJ models use two different growth rates (short- and long-term), GLS incorporates growth based on industry and firm's return on investment (ROI), and ES generates growth using two years of earnings forecasts and dividend payout ratio. Therefore, we expect that the combined cost of equity estimates in aggregate will capture additional information, which is otherwise not captured in individual models. The detailed implementation of these models follows in the next section and in Appendix A. Second, in tests of the implied cost of equity, these models involve loadings with major risk factors as predicted by theory and consistent with other models. Third, it is important to note that an interesting common feature of these models is that the cost of capital for a firm-year can be estimated without relying on historical data for several years. Hence, even for a new firm that does not have historical realized returns, the cost of equity can still be computed without relying on a pure play.

3. Sample Selection and Data

3.1 Sample Selection and Cost of Equity Capital Estimates

Our sample consists of firms from 8 East Asia countries covered in Claessens et al. (2000) (Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand) and 13 Western European countries covered in Faccio and Lang (2002) (Austria, Belgium, Finland, France, Germany, Ireland, Italy, Norway, Portugal, Spain, Sweden, Switzerland, and the U.K).[7] The combined

[7] Although covered in Claessens et al. (2000), we exclude Japan from our analysis in step with Claessens et al. (2002). Japanese firms are required by law to provide their own future earnings forecasts. Although these are not included in estimating consensus forecasts (that we use in this study), the forecasts given by analysts are likely to be affected by the firms own forecasts (See I/B/E/S glossary for details). We note that the results reported in this paper are not affected by sequentially removing each country from the analysis, suggesting that our evidence is not driven by a single country dominating the data.

database provides the cash flow (ownership) and voting rights (control) of the ultimate owner assembled for 1996 for East Asia and 1996 to 1999 for Western Europe. We then merge this initial sample with Worldscope and I/B/E/S databases used to collect financial information and analyst forecasts, respectively. As the ultimate ownership data is mainly assembled for 1996, we compute the cost of equity for the years 1995 through 1997.[8] To be included in the sample, we require the firm to have: i) non-negative first year average earnings forecast, ii) non-negative second year average earnings forecast, iii) either a third year average earnings forecast or long-term growth rate, iv) forecasts recorded in I/B/E/S between 1995 and 1997, v) price per share available for the statistics release date, vi) forecasts recorded by at least two analysts, for which the statistics period explicitly preceded the forecast period, and vii) non-negative book value in Worldscope. After this initial screening process, we obtain a sample of 1,423 firms with 3,245 firm-year observations. We then exclude 319 observations for which the cost of equity models are undefined (OJ Model), do not converge (CT model), are within 1% outliers in the model with the most dispersed estimates (CT model), and firm-year observations with a growth forecast exceeding 200%.[9] These additional requirements yield a final sample of 1,335 firms and 2,926 firm-year observations.

For each year, we choose the forecast that was made farthest back from the forecast period. For example, if a firm's forecasts for the year-end (December) are recorded three times in a particular year, say, February, March and April, we select the forecast made in February.[10] I/B/E/S reports earnings forecasts and prices in local currency, which we convert to US$.[11] As previously discussed, we estimate the cost of equity using four different models: CT, GLS, OJ and ES. Appendix A indicates that the implied cost of equity estimates of CT model (KCT), GLS model (KGLS), OJ model (KOJ), and ES model (KES) make different assumptions about growth rates, forecast horizon, and inputs like

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[8] It is often argued that ownership structures are quite stable over time in most firms (e.g., La Porta et al., 1999 and Faccio and Lang, 2002). However, our core results, including the relation between excess control and the cost of equity capital, are not sensitive to examining each year in cross-section, reinforcing that our evidence is not driven by the panel nature of our data.

[9] Easton and Monahan (2005) report that the cost of equity estimates of the residual income valuation model are sensitive to growth rate and their reliability decreases with larger and sluggish growth forecasts. They further find that Claus and Thomas's (2001) model provides a fairly reliable estimate for firms with relatively lower consensus growth forecasts.

[10] For some firms, the first and last earnings forecasts are not exactly one year apart. The actual price for such firm-year is simultaneously discounted at the beginning of the period while estimating the implied cost of equity that makes estimated present value of future residual earnings equal to current price. For example, if the statistics period for a forecast made for December, 1995 is May, 1995, we discount the price for five months back to January 1995.

[11] For a trivial number of firms, forecasts were recorded in US$, and for some other Euro region firms, forecasts were recorded in Euro.

book value per share. Our estimate of the firm's implied cost of capital (KAVE) is the average of the cost of capital estimates of all four models as in Hail and Leuz (2006). The only difference is that Hail and Leuz's estimates are based on the local currency of each country, while our estimates are in a common currency (US$).[12]

Table 1 reports descriptive statistics for these implied cost of equity estimates derived from the various models.[13] Panel A shows that the implied cost of equity estimates of abnormal growth models (KOJ and KES) are on the higher side compared to the residual income valuation models (KCT and KGLS), consistent with Hail and Leuz (2006). Moreover, the averages of the cost of equity estimates of these four models follow exactly the same order as in Hail and Leuz.[14] Further, we note that KGLS provides the lowest estimate, consistent with Gode and Mohanram (2003) and Hail and Leuz (2006), among others. Therefore, we consider that the KOJ is the upper bound and KGLS is the lower bound of our cost of equity estimates. KAVE is the ultimate cost of equity capital estimate. The mean KAVE is 12.1% with a standard deviation of 4.9%.

Panel B of Table 1 reports Pearson's correlation coefficients between the cost of equity estimates of each model. These exhibit pairwise correlations ranging from 75.31% (KGLS) to 91.61% (KES) with KAVE. These figures are very similar to the ranges of 74.7% to 95.9% reported in Hail and Leuz (2006). Note that Hail and Leuz present correlations based on country-year averages, while we present them based on firm-year observations. Panel C presents cross-country differences in the implied cost of equity capital (KAVE). The average implied cost of equity capital ranges from 9.4% in Malaysia to 16.6% in Finland. Finland also exhibits the highest average cost of equity capital estimate in Hail and Leuz. Finally, it is important to note that the correlation coefficient between Hail and Leuz's estimates and our estimates of the country average implied cost of equity capital is about 71.19%.

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[12] In cross-country studies, prices and returns are usually converted to a common currency, usually the US$ (e.g., Harvey, 1995; Erb et al., 1996; Bekaert and Harvey, 1995; Mishra and O'Brien, 2005). Furthermore, since our sample includes firm-level cost of equity estimates, we believe it is important that these estimates be denominated in common currency for multivariate analysis. Accordingly, we convert earnings forecasts, book value, and stock prices into US$ using the exchange rate for the date on which forecasts were released by I/B/E/S.

[13] Converted earnings forecasts are likely to be affected by short-term exchange rate volatility of a currency. We address this issue in the empirical tests by using country fixed effects and other country specific controls.

[14] The mean of the cost of equity capital estimates for 40 countries in Hail and Leuz (2006) for the models KOJ, KES, KCT, and KGLS are 14.59%, 13.96%, 12.17%, and 9.25% respectively. Our estimates of the average cost of equity capital not only have the same ordering across models but also are very close in magnitude.

We believe that our ultimate measure of firms implied cost of equity capital (KAVE) captures the information contained in the estimates of two major streams of the implied cost of equity models, namely the residual income valuation model and the abnormal earnings growth model. Based on the statistical properties of our cost of equity estimates described above—which closely resemble those of Hail and Leuz—and their association with the standard determinants of implied cost of equity reported in existing literature as discussed in the next section, we are confident that our estimates are fairly representative of firms' true cost of equity capital. However, we understand that these estimates suffer from limitations of earnings forecasts and growth rate assumptions, common in these kinds of studies.[15]

3.2 Explanatory Variables and Descriptive Statistics

Excess Control (*Expropriation*): Existing evidence on corporate ownership around the world reveals significant divergence between ultimate ownership and the control rights of the largest controlling shareholder, implying that the primary agency conflict in firms remains the potential expropriation of minority investors by the controlling shareholder. Prior studies emphasize that the potential for expropriation can have serious financing costs for the ultimate controlling shareholder. We place this prediction under the microscope and examine whether the likelihood of expropriation, which we measure by the difference between the ultimate controlling shareholder's control rights and ownership rights (*Expropriation*) after Claessens et al. (2002), is positively related to the cost of equity capital.

While our analysis focuses primarily on the effect of excess control on the cost of equity capital, we also control for other potential determinants shown in previous studies to affect the implied cost of equity capital (e.g., Gebhardt et al., 2001; Gode and Mohanram, 2003; Lee et al., 2004; Botosan and Plumlee, 2005; and Hail and Leuz, 2006; among others). The following summarizes the firm-, industry-, and country-level determinants of the implied cost of capital, and discusses the theoretical predictions and empirical findings on the cost of capital implications of these determinants. Appendix B provides definitions and data sources for all regression variables.

[15] Analysts forecasts are considered sluggish and inaccurate (Guay et al., 2005), especially because there are systematic differences in forecasting practices among analysts. Every analyst that follows a firm may not provide forecasts every month. This is one of the limitations of analyst forecast data. However, an advantage of analyst earnings forecasts is that they allow one to estimate a firm's cost of equity without requiring several years of historical data (unlike the CAPM). We make every effort to incorporate quality forecasts. For example, we exclude the firm-years which show high discrepancy between the reported growth rate and that implied by forecasted earnings and the firm-years that do not fully converge.

Price Volatility *(Volatility)*: The CAPM regards beta as the only measure of market risk. However, in tests that use realized returns (e.g., Fama and French, 1992; 1997), the cost of equity computed using beta is found to be imprecise. Similarly, recent empirical studies (e.g., Gebhardt et al., 2001; Lee et al., 2004) show that beta exhibits little or no association with the implied cost of capital. Hail and Leuz (2006) argue that beta is less important than return variability in explaining cross-country differences in the cost of equity capital. Moreover, they exclude beta from cross-country regressions on the grounds that it presumes capital market integration, while the degree of capital market integration is poorly known (e.g., Stulz, 1999; Bekaert and Harvey, 1995). Furthermore, other studies have found that return volatility is a better proxy for firm's market risk (e.g., Lee et al., 2004; Mishra and O'Brien, 2005). In the same vein, Gode and Mohanram (2003) find that unsystematic risk, estimated as the volatility of residuals from CAPM regressions, matters in explaining the implied cost of equity. Price (or return) volatility includes total risk. Total risk is expected to include both systematic and unsystematic variability. Consequently, we use price volatility, which we measure with the standard deviation of annual prices over four years divided by the average annual price, and expect a positive association between price volatility and the cost of equity capital.

Long-term Growth Rate *(Av_Growth)*: The empirical literature draws two different predictions about the association between the implied cost of capital and earnings growth rate. On the one hand, Gebhardt et al. (2001) predict a negative association based on La Porta's (1996) evidence that higher long-term growth firms earn lower subsequent returns, and vice versa for lower long-term growth firms. Thus, high long-term growth creates downward pressure on the expected cost of capital. On the other hand, Gode and Mohanram (2003) and Lee et al. (2004) perceive high growth firms to be riskier than low growth firms. Indeed, Gode and Mohanram (2003) argue that any errors in the estimation of the growth rate will have a substantial impact on the value of the firm; hence, the market perceives such firms as risky. A common feature of the above studies is that they measure the long-term growth rate by the five-year earnings growth rate available in *I/B/E/S,* and generally document a positive association between growth rate and the implied cost of equity capital. Consequently, we predict a positive association between the cost of equity capital and the expected long-term earnings growth rate.

Market to Book Ratio *(Market to Book):* Higher book to market firms are expected to earn higher *ex-post* returns (e.g., Fama and French, 1992), implying a negative relationship between the *Market to Book* and the cost of equity capital. Additionally, in corporate hedging literature (e.g., Géczy et al., 1997), *Market to Book* has been used as a proxy for expected investment opportunities. Firms with high investment opportunities tend to have higher prices, which leads to a higher market to book ratio. High investment opportunities are expected to produce higher long-term growth in earnings and cash flows, leading one to anticipate a lower cost of equity for a higher *Market to Book* firm. Corroborating empirical evidence suggests a negative and significant relationship between the implied cost of equity and *Market to Book* (e.g., Gebhardt et al., 2001; Gode and Mohanram, 2003; Botosan and Plumlee, 2005; Hail and Leuz, 2006). Accordingly, we expect a negative association between the cost of equity capital and *Market to Book*, which is the ratio of market value to book value of equity.

Dispersion of Analyst Forecasts *(Var_Analyst Coverage):* A higher dispersion in earnings forecasts implies wider disagreement among analysts, thus greater uncertainty about the forecasted earnings per share. Gode and Mohanram (2003) report a positive association between earnings volatility and the implied cost of equity, while Gebhardt et al. (2001) report a negative association. Although, Botosan and Plumlee (2005) use a slightly different proxy for earnings variability, they also report a positive association between earnings variability and the implied cost of equity capital. Therefore, we expect a positive association between the cost of equity capital and *Var_Analyst Coverage*, which is the standard deviation of first year analyst forecasts divided by mean earnings forecasts.

Industry Membership *(Industry Cost of Capital):* Gebhardt et al. (2001) present evidence that a firm's implied cost of equity is positively and significantly associated with its industry membership. Much of the empirical literature using the implied cost of equity corroborates this result (e.g., Fama and French, 1997; Gode and Mohanram, 2003; Hail and Leuz, 2006). Therefore, we expect the cost of equity capital to be positively associated with the *Industry Cost of Capital*, which is the average of the cost of equity estimates at two-digit industry codes.

Analyst Coverage *(Analyst Coverage):* Analyst coverage warrants a negative association with the cost of equity capital from two different sources. First, analyst coverage is a proxy for firm size. Larger firms are more likely to have greater analyst coverage. Second, when the number of analysts following a firm's stock is high, there is a greater likelihood of more reliable average earnings forecasts, thus fairer valuation of the firm's stock. Given that the literature predicts a negative relationship between the cost of equity and firm size (e.g., Fama and French, 1992), analyst coverage is expected to exhibit a negative association with the cost of equity. Gebhardt et al. (2001) use both firm size and analyst coverage as proxies for information availability. However, they do not report analyst coverage in their final regressions, as it is highly correlated with firm size (by more than 80%). In separate regressions, Gebhardt et al. (2001) find a negative association between the implied cost of equity and analyst coverage. In the cross-country analysis, we argue that it is more important to control for analyst coverage due to the expected differences in coverage practices across countries (e.g., Hail and Leuz, 2006). We expect a negative association between the cost of equity capital and *Analyst Coverage*, which is the number of analysts providing earnings forecasts.

Leverage *(Leverage):* Modigliani and Miller (1958) demonstrated that a firm's cost of equity is an increasing function of its debt ratio. This is further illustrated in Hamada (1969), and also empirically supported by Fama and French (1992). Obviously, higher leverage is associated with higher risk and, hence, a higher implied cost of equity capital. Consistent with this prediction, Gode and Mohanram (2003) and Boston and Plumlee (2005) find evidence that leverage is significantly positively associated with the implied cost of equity. Accordingly, we expect the cost of equity capital to be positively associated with *Leverage*, which is the ratio of total debt to total capital (market value of equity *plus* book value debt).

Legal Institutions Variables*:* Extant corporate governance studies emphasize the importance of legal institutions in limiting the potential expropriation of minority shareholders by controlling shareholders. Consequently, firms in more protective countries should have higher valuation and lower financing costs (La Porta et al., 1997; Hail and Leuz, 2006; among others). To proxy for the quality of the legal system, we rely on the following traditional constructs derived from La Porta et al. (1998): the level of minority shareholders' protection against managers or controlling shareholders (*Rights*), efficiency of the judiciary system (*Judicial*), an assessment of the strength of law and order (*Rule*), and an assessment of the quality of disclosure requirements (*Disclosure*). We expect a negative association between the cost of equity and these legal institutions variables.

Table 2 provides descriptive statistics of all explanatory variables (Panel A) and presents Pearson's correlation coefficients between these variables (Panel B). Starting with our key test variable *Expropriation*, the descriptive statistics indicate that average excess control is 4.13%, ranging from a minimum of zero to a maximum of 66.98%. In unreported descriptive statistics, we find that controlling shareholders hold excess control rights in 35.63% of the sample firms. Moreover, we find significant cross-country variation in excess control, with the lowest average excess control observed in Thailand (0.64%) and the highest (15.97%) in Switzerland. Panel B indicates that *Expropriation* is positively and significantly (at the 1% level) correlated with the proxy for the cost of equity capital (*KAVE*), providing initial support to the predicted relation. In the next section, we more formally analyze whether this relation is robust to controlling for other determinants of the cost of equity capital. Finally, we generally report low pairwise correlation coefficients among the control variables, especially between our key test variable (*Expropriation*) and other determinants of the cost of equity capital, suggesting that multicollinearity is not a serious concern that would materially affect our multivariate regression results.

4. Empirical Evidence

Existing corporate governance research emphasizes the equity financing costs of accumulating control power in excess of cash flow rights by controlling shareholders. We contribute to this literature by empirically examining whether excess control is associated with an increased cost of equity capital, while controlling for other factors that are known to affect the cost of equity capital. We estimate several specifications of the following cross-sectional, time-series model (subscripts suppressed for notational convenience):

$$KAVE = \alpha_0 + \alpha_1 Expropriation + \alpha_2\ Controls + Fixed\ effects + \varepsilon \quad (1)$$

We specify the regression variables as follows:

KAVE=	the average implied cost of equity capital based on four different models discussed in Section 2.2 and described in Appendix A;
Expropriation =	the difference between the ultimate controlling shareholder's control rights and ownership rights;
Controls =	a set of firm- and country-level control variables outlined in Section 3.2;
Fixed effects =	dummy variables controlling for fixed effects of countries, years, and industry groups based on the one-digit SIC codes; and
ε =	an error term.

4.1 The Impact of Excess Control on the Cost of Equity Capital

Our empirical strategy consists of initially estimating the impact of excess control on the cost of equity capital while controlling for firm-level determinants. Table 3 reports the results of estimating Equation (1) for the pooled sample period 1995-1997. We note that together these factors explain over 21% of the variability in firms' cost of equity capital (adjusted R^2 ranges from 21.4% to 39.9%), which is comparable to what Hail and Leuz (2006) reported in their firm-level analysis. All models control for year effects but are unreported in the table for brevity. To control for industry-specific effects, Model 1 includes industry dummies, while Models 2 and 3 include the industry average cost of equity capital (*Industry Cost of Capital*). Finally, Model 3 controls for fixed country effects to capture the influence of any unobserved country-specific factors affecting the cost of capital, such as institutional development, political risk and exchange rate volatility.

Leaving the discussion of the control variables to the next section, we concentrate in this section on discussing our test variable (*Expropriation*). As shown in Models 1 through 3, we find strong evidence supporting the predicted effect of excess control on the cost of equity capital. In Model 1, our basic regression, the coefficient for *Expropriation* is positive and statistically significant at the 1% level across all models, suggesting that the cost of equity financing increases with excess control. Highlighting the first-order economic importance of this point estimate, a one standard deviation increase in excess control yields an approximately 22 basis point increase in the cost of equity. The sign, magnitude, and significance of the coefficient for *Expropriation* are not affected by replacing the fixed effects of industries with the industry average cost of capital (Model 2) or controlling for country-specific effects (Model 3). This evidence reflects the significance of agency problems between minority and controlling shareholders, who have more scope for entrenchment when they hold a lower portion of cash flow rights relative to voting rights. We interpret the positive effect of excess control on the cost of equity as providing empirical support for the argument that minority shareholders anticipate these agency problems and discount the share prices, hence raising the cost of equity financing and the ability of firms to fund their investments (e.g., Claessens et al., 2002; La Porta et al., 2002; Dyck and Zingales, 2004; among others).

The upshot of this sub-section is that the separation between ownership and control rights comes at a price to controlling shareholders: an increased equity financing cost reflecting the anticipated expropriation of minority investors. The evidence presented in this section extends previous findings of a negative effect of excess control on firm value (e.g., Claessens et al., 2002; La Porta et al., 2002; among others) by identifying the channel through which excess control affects equity valuation. In the following section, we perform additional robustness checks and extensions of our basic results.

4.2 Additional Analysis and Robustness Checks

Country-Specific Controls

In Table 4 we include several country-specific factors capturing the quality of the legal and political environments. After including these country-specific controls, we continue to estimate a positive and significant relation between *Expropriation* and the cost of equity, reinforcing the findings in Table 3.

Recent evidence in Hail and Leuz (2006) suggests that the quality of the legal environment explains much of the cross-country variation in the cost of equity capital. Accordingly, in Models 1 to

4 we follow standard practice by separately entering the legal institutions controls to coarsely mitigate concerns about multicollinearity. With the exception of *Rights*, we find that the coefficients for *Judicial*, *Rule*, and *Disclosure* are negative and statistically significant at the 1% level, suggesting that the quality of the legal environment is perceived by minority shareholders to be effective in restraining any potential expropriation by insiders. This evidence is consistent with the findings of prior research (e.g., La Porta et al., 2002) that firms located in more protective environments enjoy higher equity valuations. In Model 5 we include all of the legal institutions controls, and we find that *Rule* and *Disclosure* are the only controls that continue to have negative and statistically significant coefficients, suggesting that these proxies may better capture the quality of the legal environment. In particular, the robust finding that the cost of equity is decreasing with the quality of disclosure standards (*Disclosure*) is consistent with cross-country evidence in Hail and Leuz (2006) that firms in countries with more extensive disclosure requirements enjoy significantly lower cost of capital.

In addition to the legal institutions determinants, we consider whether country risk explains the cost of equity capital, especially given that our sample covers firms from emerging markets. Indeed, existing research shows that country risk explains the cost of capital (e.g., Erb et al., 1996; Harvey, 2000; and Mishra and O'Brien, 2005). We follow prior studies (e.g. Erb et. al., 1996) and measure country risk ratings with the natural logarithm of 100 *minus* Institutional Investor country ratings (*Ln(100-Country Rating)*).[16] Model 6 of Table 4 reports the results. Given that country ratings embrace several of the country-level institutional variables analyzed in Models 1 through 4, we exclude these controls from Model 6.[17] Consistent with Erb et al. (1996), the coefficient for *Ln(100-Country Rating)* is positive and statistically significant at the 1% level, suggesting that country risk explains firms' implied cost of equity capital. Importantly, we continue to find results supporting our primary evidence of a positive relation between *Expropriation* and the cost of equity capital, even controlling for the impact of legal institutions and country ratings, implying that our evidence reflects pervasive economic phenomena.

<u>*Firm-Specific Controls*</u>

All regressions reported in Tables 3 and 4 include a set of firm-level determinants of the cost of equity capital discussed in Section 3.2. We note that all variables have the expected sign and are

[16] Country credit ratings are from Institutional Investor magazine, which reports country credit ratings biannually, usually in March and September. We collect the ratings for the month of September of each year.

[17] We note that this proxy for country risk is highly correlated with the legal variables, *Rights* (ρ = -0.20), *Judicial* (ρ = -0.62), *Rule* (ρ = -0.71), and *Disclosure* (ρ = -0.20).

significant across all models. Consistent with prior literature (e.g., Fama and French, 1992 and Gebhardt et al., 2001), we find that the coefficient for *Analyst Coverage*—our proxy for firm size and information availability—is negative and statistically significant at the 1% level in all models. This finding also lends support to Easley and O'Hara (2004) and Bowen et al. (2006) who show that the level of analyst coverage reduces information asymmetry and thus the cost of raising equity capital. Similarly, the coefficient for *Var_Analyst Coverage* is consistently positive and statistically significant at the 1% level, reflecting the sensitivity of investors to the greater uncertainty among analysts about the firm's long-term forecasted earnings. This finding is compatible with Gode and Mohanram (2003).

Consistent with prior empirical research on the cost of capital (e.g., Gode and Mohanram, 2003; Botosan and Plumlee, 2005; Hail and Leuz, 2006), we find that the coefficient for *Market to Book* is negative and significant at the 1% level across all models, suggesting that higher *Market to Book* firms have lower expected returns, and thus lower expected cost of equity capital. This result is also consistent with empirical evidence in the asset pricing literature of a positive relation between stock returns and the book to market ratio (e.g., Fama and French, 1992, and Berk et al., 1999). An alternative explanation for this finding is that firms with higher investment opportunities tend to have higher *Market to Book,* thus lower cost of equity capital. In another finding that is consistent with prior studies, all models in Tables 3 and 4 suggest a positive and statistically significant (at the 1% level) relation between *Volatility* and the cost of equity capital.[18] We recall that *Volatility* captures both systematic and unsystematic variation in returns. Therefore, the significant coefficient for *Volatility* also captures the variation associated with "unsystematic risk" as in Gode and Mohanram (2003).[19]

In a related finding, the loadings for *Leverage* are also consistent with our prediction and existing literature. While *Volatility* is expected to capture part of the differences in *Leverage* (as firms with greater leverage involve greater risk (Hamada, 1969)), the coefficient for *Leverage* is positive and significant at the 1% level across all models. This finding is consistent with Gode and Mohanram (2003), who show that *Leverage* remains significant even after controlling for beta and unsystematic variability in the regression tests.

[18] Although arguments and evidence by Hail and Leuz (2006) suggest the use of return variability rather than beta as a measure of risk, in additional tests we replace *Volatility* with beta reported in Worldscope for a smaller sample of firms. The unreported results indicate a statistically insignificant relation between beta and the implied cost of capital, consistent with Hail and Leuz (2006).

[19] It is important to note that although *Volatility* remains statistically significant in Model 6 of Table 4, the magnitude of its effect substantially declines after including country credit ratings in the regression. One potential explanation holds that *Volatility* may capture country-specific risk of a firm, as illustrated in Mishra and O'Brien (2005) and Bansal and Dahlquist (2002).

The coefficient for *Av_Growth,* the proxy for firms' long-term growth measured by I/B/E/S five-year earnings growth forecasts as explained in Appendix A, is positive and statistically significant at the 1% level, implying that the market perceives high growth firms as riskier, consistent with the asset pricing theory and empirical literature on the cost of capital (e.g., Gebhardt et al., 2001, and Gode and Mohanram, 2003).[20]

Last but not least, in Models 2 and 3 of Table 3 and all models in Table 4, we control for industry effects by including industry differences in the cost of capital rather than industry dummies (Model 1 in Table 3). As expected, the coefficient of *Industry Cost of Capital* is positive and significant, consistent with existing cost of capital studies (e.g., Gebhardt et al., 2001, and Gode and Mohanram, 2003; among others).

Robustness Checks

We perform extensive sensitivity tests to ensure the robustness of our results, some of which are reported in Table 5. First, forecast bias captures earnings variability (unpredictable earnings surprises) (Gebhardt et al., 2001) and firm's disclosure policy (Hope, 2003). Mikhail et al. (2004) argue that firms reporting large and repeated earnings surprises involve higher cost of capital. Therefore, our cost of equity capital estimates may be affected by forecast bias. As our sample covers firms spanning several countries, forecasting behavior and tendency of forecasters to provide optimistic/pessimistic forecasts is likely to vary systematically across countries. To address the concern that forecast bias is driving our results, we control in Model 1 for *Forecast bias*—measured as the absolute value of the difference between one-year-ahead mean analyst earnings per share forecasts and the corresponding actual earnings per share reported in I/B/E/S. Consistent with Hail and Leuz (2006), the coefficient for *Forecast bias* is positive and statistically significant at the 5% level. Importantly, our previous results, including that the cost of equity capital is increasing in *Expropriation*, persist in this regression.

Second, a concern in our empirical analysis is that the main test variable *Expropriation* is zero for about 64.4% of the sample firms. Therefore, we test our basic model (Model 2 in Table 3) using the sub-sample of firms with strictly positive excess control. The results from this test reported in Model 2

[20] As alternative proxies for firm's long-term growth, we use the average of the annual change in earnings forecasts over five years and the five-year analyst growth as in the CT model. In unreported results, we find that both proxies load positive at the 1% level.

of Table 5 indicate that the coefficient for *Expropriation* is positive and statistically significant at the 1% level, with an increase in its magnitude compared to the previous regressions.

Third, another concern relates to the presence of outliers in *Expropriation,* which may be conceived as driving the results. For example, if we restrict *Expropriation* at less than 50%, we lose three observations and at less than 40%, we lose eleven observations. We perform all tests reported in Tables 3 and 4 after excluding these extreme observations (at the cutoff of 40% and 50%) for *Expropriation*, and (predictably) find that the results (not reported) are virtually identical with these slightly reduced samples.

Fourth, most cross-country studies (e.g., Beakert and Harvey, 1995; Harvey, 1995; Lee et al., 2004) normally estimate the cost of equity in US$, in the same way as we do. However, these and most other studies (e.g., Claus and Thomas, 2001; Gebhardt et al., 2001; Gode and Mohanram, 2003) use the cost of equity in excess of U.S. T-bills rate (labeled *Risk Premium*) as the dependent variable, unlike our study and that of Hail and Leuz (2006). The main reason for using *Risk Premium* is to isolate time series variation in the risk free rate (thus the cost of equity capital).[21] Although all the regressions control for year fixed effects to account for time series variation in the cost of equity capital, we also examine the sensitivity of our results to using *Risk Premium (RP)* as the proxy for the cost of equity capital in Models 3 through 6 of Table 5. We note that none of our previous findings, including the positive and significant relation between *Expropriation* and the cost of equity capital, are affected by using *Risk Premium (RP)* as our dependent variable.

Fifth, in our main regressions *Analyst Coverage* serves the purpose of an information variable in addition to capturing firm size. Indeed, larger firms are expected to involve lower informational asymmetry as more analysts are expected to follow such firms. In an unreported test for brevity, we also control for firm size, proxied by the natural logarithm of total sales and the natural logarithm of total assets. As expected, we find that the coefficients on firm size proxies are negative and statistically significant at the 1% level. Importantly, the previous evidence on *Expropriation* is not sensitive to using these alternative proxies for firm size.

Sixth, the corporate ownership literature argues that a firm's ownership structure is endogenously determined by its contracting environment in ways consistent with value maximization (e.g., Demsetz and Lehn, 1985; Himmelberg et al., 1999; among others). La Porta et al.

[21] In cross-country studies, the use of *Risk Premium* also serves as a control for the effect of inflation differences across countries (e.g., Hail and Leuz, 2006). However, inflation differences are not a concern in our analysis as we estimate the cost of equity capital in a common currency (US$).

(1999, p. 512) note that "the existing ownership structures are primarily an equilibrium response to the domestic legal environments that companies operate in." Extant studies use the instrumental variable approach to address the endogeneity of firm's ownership structure. Another important issue in using this approach is to find exogenous instruments that are highly correlated with the ownership variable but not with the dependent variable (i.e., cost of equity estimates). In determining the potential instruments, we follow these studies (e.g., Fan and Wong, 2005; Guedhami and Pittman, 2006; Hail and Leuz, 2006) and consider firm size (natural logarithm of total sales and total assets), profitability (return on assets), economic growth (GDP growth), and legal origin (dummy for English legal origin). However, when we verify the validity of these instruments, we find that the Pearson's correlation coefficient between *Expropriation* and each of these instruments is less than 0.04 for each pair. Even when we regress *Expropriation* on these four instruments, we find that altogether they explain less than 3% of the variation in *Expropriation*. As a valid alternative instrument, we use the average excess control in firms located in the same country. In the first stage, we regress *Expropriation* on country-level excess control and obtain the fitted (estimated) values. In the second stage, we use these fitted values as instruments for *Expropriation* to estimate the impact of excess control on the cost of equity capital. The unreported results indicate that the coefficient for *Expropriation* is positive and significant at the 5% level, suggesting that endogeneity is not responsible for our earlier evidence.

Finally, in unreported robustness tests, we perform regressions using cost of equity estimates based on the individual models and find greater explanatory power of CT and GLS models compared to OJ and ES models.[22] Additionally, combining ES with GLS or CT estimates to obtain our dependent variable (average cost of equity capital) provides similar results to combining OJ with GLS or CT to generate our dependent variable.

5. Conclusion

Recent evidence on corporate ownership structure reveals significant divergence between ultimate ownership and control rights of the largest controlling shareholder, implying that the conflicting interests of minority and controlling shareholders is the main agency problem affecting firms. Prior research also suggests that the potential expropriation of minority investors can be costly to controlling shareholders in terms of higher equity financing costs. In this paper, we investigate

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[22] This finding is consistent with Gode and Mohanram (2003), who show that the explanatory power of residual income valuation models (CT and GLS) is greater than that of the OJ model.

whether excess control (i.e., the discrepancy between voting and cash flow rights of the ultimate owner) is positively related to the implied cost of equity capital.

We use a sample of 2,926 firm-year observations for 1,335 firms from 8 Asian and 13 Western European countries and estimate the cost of equity capital implied by analyst earnings forecasts and growth rate. Our cost of equity estimates are based on four different models of implied cost of equity recently used by Hail and Leuz (2006). As predicted by theory, we find strong, robust evidence that the implied cost of equity is increasing in excess control, even after controlling for firm- and country-level factors identified by prior research. This evidence relates to Claessens et al. (2002) who document that excess control negatively affects firm value, and suggests that the discount rate is a significant channel through which the risk of expropriation by controlling shareholders affects firm value. Additionally, consistent with recent empirical evidence, we find that legal institutions variables have a significant impact on the implied cost of equity. Finally, we find strong evidence that the implied cost of equity is lower for firms with higher market to book ratio, higher analyst coverage, lower price volatility, lower variance of analyst forecasts and lower leverage.

Appendix A

Models of Implied Cost of Equity and their Implementation

Ohlson and Juttner-Nauroth (2005 OJ): Estimating KOJ

The OJ model (as used in Gode and Mohanram, 2003), assumes that price is a function of future earnings, short-term growth rate, long-term growth rate, and a discount rate. The model is specified in equation 1.

$$K = A + \sqrt{A^2 + \frac{e_1}{p_0}\left[g_2 - (y-1)\right]}, \tag{1}$$

where, K = cost of equity (denoted by KOJ in the body of the paper); $A = \frac{1}{2}\left((y-1) + \frac{D_1}{P_0}\right)$; e_1= earnings per share for year 1; e_2= earnings per share for year 2; $g_2 = \frac{e_2 - e_1}{e_1}$; y = a constant which is equal to 1+ long-term growth rate; long-term growth rate (y-1) was fixed at inflation premium (in this case a constant 4%). Finally, we estimate D_1 as e_1 multiplied by the dividend payout ratio.

This model is undefined for the observations that return a negative value inside the square root. We exclude all firm-year observations that are undefined in OJ model.

Claus and Thomas (2001 CT): Estimating KCT

Next, we use Claus and Thomas's (2001) implementation of the residual income valuation model to estimate the cost of equity capital. Equation 2 specifies the model, which uses price per share (P_t) observed in the market, current book value per share (B_t) from annual reports, forecasts of future earnings per share (EPS_{T+j}) for five years from I/B/E/S, and long-term growth rate (g_n) beyond five years to estimate the cost of equity capital (K) that makes the right hand side of equation equal to the left hand side.

$$P_T = B_T + \frac{EPS_{T+1} - KB_T}{(1+K)} + \frac{EPS_{T+2} - KB_{T+1}}{(1+K)^2} + .. + \frac{EPS_{T+5} - KB_{T+4}}{(1+K)^5} + \frac{(EPS_{T+5} - KB_{T+4})(1+gn)}{(K-gn)(1+K)^5} \tag{2}$$

B_t is the most recent book value per share available for a given period and $B_{(t+i)}$ is estimated using equation (2).

$$B_{T+i} = B_{T+i-1} + EPS_{T+i} - D_{T+i} \tag{3}$$

The residual earnings for each period are equal to the earnings for that period minus the required dollar return on investment at the beginning of the year. The investment at the beginning of the year is the clean surplus book value estimate based on equation (3). The summary mean forecasts for the first two years are available for each firm. The earnings beyond two years are estimated as follows: (i) actual earnings forecasts where available, (ii) based on five-year growth rate, where available, and iii) otherwise, based on the growth rate estimated using average growth in the first three years of earnings forecasts.

In implementing the CT model, we assume the long-term growth rate beyond five years (g_n) as 4%. The figure 4% is approximately equal to the excess of US T-Bond yield over the real risk free rate for that period. Further, we use the firm's dividend payout ratio where available, and 50% dividend payout for all other cases, as in Claus and Thomas (2001), to estimate the dividend for a year (D_{T+i}).

We understand that a 50% payout assumption across the board is strong; however, an assumption about dividend payout is necessary.

We implement equation 2 and manually search for a value of K (denoted by KCT in the paper) that makes actual price equal to the right hand side of the equation. We further exclude 37 observations that did not converge, and 1% of the lowest and highest KCT estimates. Easton and Monahan (2005) report that the CT model provides relatively reliable cost of equity estimates for firms with relatively lower consensus growth forecasts. Therefore, in implementing this model, we included firm-years with a five-year growth rate not exceeding 200%.

Gebhardt, Lee and Swaminathan (2001 GLS): Estimating KGLS

The GLS model uses a similar underlying theory of residual income valuation as in the CT model. However, we implement this model using actual forecasted earnings per share for up to three years. From year four up to year twelve, earnings per share series are forecasted such that forecasted ROI gradually (linearly) converges to industry ROI in the 12th year, where industry ROI is estimated as the average of the actual ROI from 1994 to 1998, where available in Worldscope, at one-digit industry codes. After year 12, growth in earnings is set to zero. The terminal value at the end of the 12th year is estimated as the present value of constant series of future residual earnings. The model appears in equation 4, in which we manually search for a K (known as KGLS in the body of the paper) that makes the left and right hand sides equal. (The variables that are not defined here are defined under the CT model above).

$$P_T = B_T + \frac{EPS_{T+1} - KB_T}{(1+K)} + ... + \frac{EPS_{T+i} - KB_{T+t-1}}{(1+K)^i} + ... + \frac{EPS_{T+t+1} - KB_{T+t}}{K(1+K)^i} \quad (4)$$

Easton (2004 ES): Estimating KES

The ES model is a special case of the OJ abnormal growth model. In implementing this model, we use actual earnings forecasts for two years, dividend payout ratio, and current price, and manually search for the cost of equity capital (K) that makes the left and right hand side of equation 5 equal.

$$P_T = \frac{EPS_{T+2} + K.D_{T+1} - EPS_{T+1}}{K^2} \quad (5)$$

Dividend in this model is estimated as EPS_{T+1}*dividend Payout ratio as in the OJ model. The ES model also converges in the same cases as the OJ model. Both ES and OJ models place a bound on the change in earnings per share after the first year. The ES model requires a positive change in forecasted earnings per share, while in the OJ model the change may be negative, but should not be so low on the negative side such that the term under the square root remains positive. K (denoted as KES in the paper) is manually searched.

Appendix B

Variables, Definitions, and Sources

Variable	Definition	Source
Panel A: Firm-Level Variables		
KAVE	Our estimate of a firm's implied cost of equity capital, which is the average of estimates derived from the four models described in Appendix A.	Authors' Estimation
Expropriation	The difference between the ultimate controlling shareholders voting rights (control) and cash flow rights (ownership).	Claessens et al. (2000) and Faccio and Lang (2002)
Volatility	Standard deviation of annual stock prices divided by average annual stock price.	Worldscope / Estimated
Av_Growth	Estimated as the average of all five-year growth rate forecasts released in a year for a firm. I/B/E/S releases consensus earnings and growth rate forecasts every month. We proxy the five-year growth rate using growth in the first three years of mean earnings forecasts, where the I/B/E/S five-year growth rate is unavailable.	I/B/E/S
Market to Book	Market value of equity *divided by* book value of equity.	Worldscope
Var_Analyst Coverage	Standard deviation of first year analyst earnings forecast divided by mean of the first year earnings forecast.	I/B/E/S
Industry Cost of Capital	Estimated as the average of the implied cost of equity estimates at two-digit SIC codes.	Estimated
Analyst Coverage	Number of analysts providing estimates of earnings per share for a firm in a year.	I/B/E/S
Leverage	Total debt (Total book value of debt) *divided by* total capital (market value of equity + book value of debt).	Worldscope
Panel B: Country and Legal Institutional variables		
Rights	This index of anti-director rights is formed by adding one when: (1) the country allows shareholders to mail their proxy vote; (2) shareholders are not required to deposit their shares prior to the General Shareholders' Meeting; (3) cumulative voting or proportional representation of minorities on the board of directors is allowed; (4) an oppressed minorities mechanism is in place; (5) the minimum percentage of share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting is less than or equal to ten percent (the sample median); and (6) shareholders have preemptive rights that can only be waived by a shareholders meeting. The range for the index is from zero to six.	La Porta et al. (1998)
Judicial	Assessment of the efficiency and integrity of the legal environment as it affects business, particularly foreign firms, produced by the country risk rating agency International Country Risk (ICR). It may be taken to represent investors' assessment of conditions in the country in question. Average between 1980 and 1983. Scale from 0 to 10, with lower scores representing lower efficiency levels. Source: International Country Risk Guide.	La Porta et al. (1998)
Rule	Assessment of the rule and order tradition in a country.	La Porta et al. (1998)
Disclosure	An assessment of disclosure requirements relating to: (1) prospectus; (2) compensation of directors and key officers; (3) ownership structure; (4) inside ownership; (5) contracts outside the ordinary course of business; and (6) transactions between the issuer and its directors, officers, and/or large shareholders. The index ranges from 0 to 1, with higher values indicating more extensive disclosure requirements.	La Porta et al. (1998)
Ln(100-Country Rating)	Natural log of (100-country credit rating). The country credit ratings measure country's political, financial and economic risk exposure.	Institutional Investor/Estimated

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Table 1

Summary of Implied Cost of Equity

Panel A: Descriptive statistics of implied cost of capital estimates

Variable	N	Average	Standard Deviation	Min	Q1	Q2	Q3	Max
KOJ	2,926	14.6%	5.7%	3.1%	11.1%	13.5%	16.8%	72.7%
KES	2,926	13.6	5.5	2.8	10.2	12.4	15.7	71.1
KCT	2,926	12.0	6.0	4.7	8.7	10.3	12.8	56.0
KGLS	2,926	8.2	5.6	0.6	4.2	6.4	10.3	40.0
KAVE	2,926	12.1	4.9	3.4	9.0	10.8	13.8	53.4

Panel B: Pearson correlation coefficients between implied cost of capital estimates

	KOJ	KES	KCT	KGLS
KES	0.9930			
KCT	0.6288	0.6687		
KGLS	0.4445	0.4864	0.6456	
KAVE	0.8918	0.9161	0.8643	0.7531

Panel C: Implied cost of capital by country

Country	N	Mean	Standard Deviation	Min	Max
Austria	38	12.5%	3.9%	7.3%	19.7%
Belgium	75	12.4	4.8	5.6	33.7
Finland	57	16.6	7.3	7.3	44.2
France	208	12.5	5.4	5.3	32.9
Germany	98	10.0	2.6	4.6	17.4
Hong Kong	260	15.9	6.3	6.0	53.4
Indonesia	90	14.4	5.7	7.0	39.6
Ireland	21	10.5	2.1	7.1	15.0
Italy	47	12.9	5.1	5.6	27.3
Korea	157	15.1	5.9	5.0	34.6
Malaysia	204	9.4	2.6	4.5	26.9
Norway	59	13.4	3.7	5.8	25.9
Philippines	124	15.1	6.0	6.6	34.4
Portugal	57	13.7	5.6	6.8	34.9
Singapore	179	10.2	3.3	5.2	26.7
Spain	66	12.9	4.5	6.1	26.9
Sweden	88	13.2	3.7	7.5	24.1
Switzerland	90	12.0	3.7	7.2	29.8
Taiwan	35	10.4	3.2	6.4	19.4
Thailand	98	12.4	4.7	6.3	28.2
U.K.	875	10.3	2.8	3.4	26.8
All	2,926	12.1	4.9	3.4	53.4

This table reports descriptive statistics for the cost of capital estimates based on four models for a sample of 2,926 firm-year observations from 8 East Asian countries and 13 Western European countries over the period 1995-1997. *KOJ*, *KES, KCT*, and *KGLS* refer to the implied cost of equity estimates derived from Ohlson and Juttener-Narouth (2000), Easton (2004), Claus and Thomas (2001), and Gebhardt, Lee and Swaminathan (2001) models, respectively. *KAVE* is the mean of the *KOJ, KES, KCT* and *KGLS* estimates. Detailed description of the four models is reported in Appendix A.

Table 2

Descriptive Statistics for the Explanatory Variables

Panel A: Summary of the variables

Variable	N	Mean	Standard Deviation	Minimum	Maximum
Expropriation	2,926	4.13	7.80	0.00	66.98
Analyst Coverage	2,926	11.63	7.51	2.00	37.00
Market to book	2,926	2.80	6.53	0.00	183.62
Var_Analyst Coverage	2,926	0.16	0.34	0.00	9.76
Volatility	2,926	0.40	0.23	0.01	1.97
Leverage	2,926	34.89	22.72	0.00	98.63
Av_Growth	2,926	0.19	0.29	-0.34	11.58
Industry Cost of Capital	2,926	0.13	0.02	0.07	0.24
Rights	2,926	3.62	1.39	0.00	5.00
Judicial	2,926	8.57	2.16	2.50	10.00
Rule	2,926	8.00	1.75	2.73	10.00
Disclosure	2,926	0.71	0.23	0.00	1.00

Panel B: Correlation between the explanatory variables

	Expropriation	*Analyst Coverage*	*Market to Book*	*Var_Analyst Coverage*	*Volatility*	*Leverage*	*Av_Growth*	*Industry Cost of Capital*	*Rights*	*Judicial*	*Rule*	*Disclosure*
Analyst Coverage	**0.07**											
Market to Book	-0.03	-0.01										
Var_Analyst Coverage	0.02	-0.03	**-0.05**									
Volatility	0.01	**-0.05**	0.04	**0.07**								
Leverage	0.01	0.00	**0.05**	**0.10**	**0.19**							
Av_Growth	0.00	**-0.08**	0.00	**0.22**	**0.09**	**0.07**						
Industry Cost of Capital	0.04	**-0.05**	**-0.08**	**0.09**	**0.06**	**0.14**	**0.09**					
Rights	**-0.16**	-0.04	**0.09**	**-0.10**	**-0.10**	**-0.26**	**-0.05**	**-0.12**				
Judicial	-0.01	**0.06**	**0.06**	**-0.05**	**-0.33**	**-0.25**	**-0.06**	**-0.09**	**0.54**			
Rule	0.03	0.03	0.03	0.02	**-0.38**	**-0.19**	-0.02	-0.04	**0.14**	**0.75**		
Disclosure	**-0.08**	**0.12**	0.04	**-0.06**	-0.04	**-0.16**	**-0.05**	**-0.12**	**0.63**	**0.55**	**0.07**	
KAVE	**0.05 1**	**-0.18**	**-0.12**	**0.25**	**0.19**	**0.18**	**0.26**	**0.36**	**-0.12**	**-0.18**	**-0.14**	**-0.16**

This table reports descriptive statistics (Panel A) and Pearson correlations (Panel B) for all regression variables. The sample consists of 2,926 firm-year observations from 8 East Asian countries and 13 Western European countries over the period 1995-1997. Spearman correlations (unreported for brevity) are consistent with the Pearson correlations. Boldface indicates statistical significance at the 1% level. *KAVE* is the mean of cost of equity capital estimates based on the four models described in Appendix A. *Expropriation*, the main test variable, is the difference between the ultimate controlling shareholder's control rights and ownership rights. Ownership data is from Claessens et al. (2000) and Faccio and Lang (2002). Detailed definitions and data sources for all other variables are reported in Appendix B.

Table 3

Impact of the Separation between Ownership and Control on the Cost of Equity Capital

Variable	Expected sign	Model (1)	Model (2)	Model (3)
Intercept	(?)	0.097**	-0.006	-0.001
		(24.31)	(-0.90)	(-0.10)
Expropriation (x100)	(+)	0.027**	0.026**	0.023*
		(2.61)	(2.59)	(2.36)
Analyst Coverage (x10)	(-)	-0.010**	-0.009**	-0.012**
		(-9.17)	(-9.00)	(-12.03)
Market to Book (x100)	(-)	-0.082**	-0.073**	-0.047**
		(-6.65)	(-6.16)	(-4.28)
Var_Analyst Coverage	(+)	0.026**	0.024**	0.021**
		(10.72)	(10.11)	(9.50)
Volatility	(+)	0.028**	0.027**	0.017**
		(8.05)	(7.87)	(4.96)
Leverage(x100)	(+)	0.027**	0.019**	0.018**
		(7.31)	(5.30)	(5.26)
Av_Growth	(+)	0.030**	0.029**	0.025**
		(10.36)	(10.21)	(10.17)
Industry Cost of Capital	(+)		0.863**	0.785**
			(17.37)	(17.17)
Industry Controls		YES	NO	NO
Year Controls		YES	YES	YES
Country Controls		NO	NO	YES
Adj. R^2		0.214	0.2676	0.399
N		2,926	2,926	2,926

This table presents regression results of the implied cost of equity (*KAVE*) on excess control (*Expropriation*) while controlling for other firm-level determinants of the implied cost of equity. The sample consists of 2,926 firm-year observations from 8 East Asian countries and 13 Western European countries over the period 1995-1997. *KAVE* is the mean of cost of equity capital estimates based on the four models described in Appendix A. *Expropriation*, the main test variable, is the difference between the ultimate controlling shareholder's control rights and ownership rights. Ownership data is from Claessens et al. (2000) and Faccio and Lang (2002). Detailed definitions and data sources for all other variables are reported in Appendix B. Beneath each estimate is the robust *t*-statistic. The superscript asterisks ** and * denote statistical significance at the 1% and 5% levels, respectively, one-tailed when directional predictions are made, and two-tailed otherwise.

Table 4

Impact of the Separation between Ownership and Control and other Country-Level Variables on the Cost of Equity Capital

Variable	Expected sign	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Intercept	(?)	-0.003	0.010	0.012	0.008	0.025**	-0.050**
		(-0.38)	(1.23)	(1.50)	(0.99)	(2.86)	(-6.70)
Expropriation (x100)	(+)	0.024**	0.026**	0.027**	0.022*	0.025**	0.024**
		(2.39)	(2.57)	(2.74)	(2.24)	(2.53)	(2.50)
Analyst Coverage (x10)	(-)	-0.009**	-0.009**	-0.009**	-0.009**	-0.008**	-0.010**
		(-9.04)	(-8.81)	(-8.95)	(-8.85)	(-8.01)	(-10.12)
Market to Book (x100)	(-)	-0.072**	-0.070**	-0.071**	-0.071**	-0.071**	-0.059**
		(-6.03)	(-5.84)	(-5.93)	(-5.99)	(-5.99)	(-5.07)
Var_Analyst Coverage	(+)	0.024**	0.024**	0.025**	0.024**	0.025**	0.024**
		(10.04)	(10.15)	(10.37)	(10.01)	(10.46)	(10.40)
Volatility	(+)	0.027**	0.023**	0.021**	0.027**	0.023**	0.012**
		(7.80)	(6.41)	(5.92)	(7.92)	(6.27)	(3.30)
Leverage(x100)	(+)	0.018**	0.016**	0.017**	0.016**	0.016**	0.016**
		(4.90)	(4.42)	(4.66)	(4.62)	(4.40)	(4.69)
Av_Growth	(+)	0.028**	0.028**	0.029**	0.028**	0.029**	0.027**
		(10.20)	(10.17)	(10.28)	(10.17)	(10.32)	(10.05)
Industry Cost of Capital	(+)	0.860**	0.859**	0.866**	0.846**	0.849**	0.831**
		(17.26)	(17.33)	(17.48)	(17.03)	(17.13)	(17.15)
Rights	(-)	-0.001				0.001	
		(-1.06)				(1.53)	
Judicial	(-)		-0.001**			0.002*	
			(-3.83)			(2.03)	
Rule	(-)			-0.002**		-0.004**	
				(-4.12)		(-3.95)	
Disclosure	(-)				-0.015**	-0.027**	
					(-4.29)	(-5.03)	
Ln(100-Country Rating)	(-)						0.019**
							(12.62)
Industry Controls		NO	NO	NO	NO	NO	NO
Year Controls		YES	YES	YES	YES	YES	YES
Adj. R^2		0.2676	0.2710	0.2716	0.272	0.278	0.305
N		2,926	2,926	2,926	2,926	2,926	2,926

This table presents regression results of the implied cost of equity (*KAVE*) on excess control (*Expropriation*) while controlling for firm- and country-level determinants of the implied cost of equity. The sample consists of 2,926 firm-year observations from 8 East Asian countries and 13 Western European countries over the period 1995-1997. *KAVE* is the mean of cost of equity capital estimates based on the four models described in Appendix A. *Expropriation*, the main test variable, is the difference between the ultimate controlling shareholder's control rights and ownership rights. Ownership data is from Claessens et al. (2000) and Faccio and Lang (2002). Detailed definitions and data sources for all other variables are reported in Appendix B. Beneath each estimate is the robust *t*-statistic. The superscript asterisks ** and * denote statistical significance at the 1% and 5% levels, respectively, one-tailed when directional predictions are made, and two-tailed otherwise.

Table 5

Robustness Checks

Variable	Expected sign	KAVE Model (1)	KAVE Model (2)	RP Model (3)	RP Model (4)	RP Model (5)	RP Model (6)
Intercept	(?)	-0.006	0.009	0.047**	-0.056**	-0.025**	-0.100**
		(-0.90)	(0.75)	(11.81)	(-8.37)	(-2.89)	(-13.48)
Expropriation (x100)	(+)	0.025**	0.044**	0.027**	0.026**	0.025**	0.024**
		(2.54)	(3.04)	(2.61)	(2.59)	(2.53)	(2.50)
Analyst Coverage (x10)	(-)	-0.009**	-0.013**	-0.010**	-0.009**	-0.008**	-0.010**
		(-8.97)	(-7.51)	(-9.17)	(-9.00)	(-8.01)	(-10.12)
Market to Book (x100)	(-)	-0.073**	-0.063**	-0.082**	-0.073**	-0.071**	-0.059**
		(-6.14)	(-3.17)	(-6.65)	(-6.16)	(-5.99)	(-5.07)
Var_Analyst Coverage	(+)	0.024**	0.014**	0.026**	0.024**	0.025**	0.024**
		(9.89)	(3.17)	(10.72)	(10.11)	(10.46)	(10.40)
Volatility	(+)	0.027**	0.028**	0.028**	0.027**	0.023**	0.012**
		(7.81)	(4.57)	(8.05)	(7.87)	(6.27)	(3.30)
Leverage(x100)	(+)	0.019**	0.025**	0.027**	0.019**	0.016**	0.016**
		(5.26)	(3.97)	(7.31)	(5.30)	(4.40)	(4.69)
Av_Growth	(+)	0.028**	0.093**	0.030**	0.029**	0.029**	0.027**
		(10.08)	(10.87)	(10.36)	(10.21)	(10.32)	(10.05)
Industry Cost of Capital	(+)	0.863**	0.659**		0.863**	0.849**	0.831**
		(17.39)	(7.87)		(17.37)	(17.13)	(17.15)
Rights	(-)					0.001	
						(1.53)	
Judicial	(-)					0.002*	
						(2.03)	
Rule	(-)					-0.004**	
						(-3.95)	
Disclosure	(-)					-0.027**	
						(-5.03)	
Ln(100-Country Rating)	(-)						0.019**
							(12.62)
Forecast BIAS(x100)	(+)	0.041*					
		(1.99)					
Industry Controls		NO	NO	YES	NO	NO	NO
Year Controls		YES	YES	YES	YES	YES	YES
Adj. R^2		0.268	0.334	0.210	0.264	0.274	0.302
N		2,926	1,036	2,926	2,926	2,926	2,926

This table reports robustness checks on the relation between excess control (*Expropriation*) and the cost of equity capital. The sample consists of 2,926 firm-year observations from 8 East Asian countries and 13 Western European countries over the period 1995-1997. *KAVE* (Models 1 and 2) is the mean of cost of equity capital estimates based on the four models described in Appendix A. *Expropriation*, the main test variable, is the difference between the ultimate controlling shareholder's control rights and ownership rights. *Forecast bias* (Model 1) is the absolute value of the difference between one-year-ahead mean analyst earnings per share forecasts and the corresponding actual earnings per share reported in I/B/E/S. Model 2 analyzes the sub-sample of firms with strictly positive excess control. In Models 3 through 6, the dependent variable Risk Premium (RP) is estimated as the excess of cost of equity annual average of US 3 month T-bills rate. Ownership data is from Claessens et al. (2000) and Faccio and Lang (2002). Detailed definitions and data sources for all other variables are reported in Appendix B. Beneath each estimate is the robust *t*-statistic. The superscript asterisks ** and * denote statistical significance at the 1% and 5% levels, respectively, one-tailed when directional predictions are made, and two-tailed otherwise.