Financial Development, Corporate Governance
and Cost of Equity Capital

Abstract

This paper explicitly examines the interactive impact of country level legal and financial development, and firm level governance attributes on the cost of equity capital. Using a comprehensive sample of 7380 firm years drawn from 22 developed countries, we show that firm level governance attributes affect the cost of equity capital only in the Common Law countries with high level of financial development. Our study is the first to highlight the complementary effects of legal origin, financial development and firm level governance attributes in influencing the cost of equity capital.

1. Introduction

What are the major factors that affect a firm's cost of equity capital? According to one strand of research, legal protection of minority shareholders is a significant factor.[1] Hail and Leuz (2006) document that firms from countries with more extensive disclosure, stronger securities regulation, and stricter enforcement mechanisms enjoy a lower cost of capital. Another strand posits that firm-level corporate governance is crucial factor. Chen et al. (2009) shows that firm-level corporate governance quality has a significantly negative effect on the cost of equity capital in emerging countries with weak legal protection of investors. Besides the country and firm level corporate governance factors, another key factor that affects the cost of capital is the level of financial development and access to capital (Doidge, Karolyi and Stulz, 2007; Aggarwal et al 2008; Rajan and Zingales, 1998; Love, 2003). However, none of the papers explicitly investigates the role of financial development in influencing the corporate governance – cost of equity capital relationship.[2] Our study contributes to the literature by directly studying the corporate governance – cost of equity capital link by examining the level of financial development.

Rajan and Zingales (1998) suggest that the ex-ante development of financial markets explains the ex-post growth of sectors dependent on external financing. A possible explanation for their finding is that developed financial markets and institutions reduce the cost of external finance for firms. However, they do not directly estimate cost of external finance for firms conditioned on the level of country-level financial development. Our paper

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[1] Legal protection encompasses both rights stipulated by laws and regulations and the effectiveness of enforcement. La Porta et al, (1997, 1998, 2002) show that countries with strong legal protection of investors have better corporate governance and higher firm valuation than countries with weak legal protection of investors.

[2] Love (2003) is an exception. She examines the linkage but does not estimate the cost of equity capital directly in her study.

is related to the work of Love (2003) who studied the relationship between financial development and financing constraints. She explicitly shows that financial development affects a firm's investment via its ability to obtain external finance. She also shows that the impact of financial development on a firm's financing constraint remains robust to the inclusion of several legal system indicators. We extend Love's work in two ways. First, we incorporate the impact of firm-level corporate governance. Second, we estimate the implied cost of equity rather than infer it from the stochastic discount factor derived from the Euler equation.

We expect the results of our study to inform the debate regarding whether firm-level corporate governance and country level financial development act as substitutes or in a complementary manner in affecting a firm's cost of equity capital. As such, the empirical results of our study have major implications for policy makers and firm managers especially in countries with low levels of financial development. If our empirical work supports the substitution hypothesis, then it would provide an incentive to managers of firms to follow higher standards of corporate governance. On the other hand, if the data support complementarity hypothesis, then it is imperative for policy makers to improve the legal framework and financial development, before firm level corporate governance improvements will work.

We utilize a large, recent, cross-country sample. By jointly examining the effects of country-level financial development, institutional factors and firm level corporate governance initiatives, we hope to discern the relative impact of these major factors in influencing the cost of equity capital. While prior studies have looked at financial development as a potential explanatory variable, they do not condition their tests based on the level of financial development. We partition our sample on the basis of country-level financial development. This provides us a direct test of the relative importance of this crucial variable in determining

the relationship between firm-level corporate governance and cost of equity capital. Furthermore, while prior studies have examined the impact of corporate governance on valuation, our focus is on cost of equity capital.[3]

Our empirical work is based on 7380 firm years of data drawn from 22 countries for the 2003-2007 period. We combine firm level governance scores with country level data on financial development and legal origin. We find that firms with high corporate governance scores have significantly lower cost of equity capital. On further examination, we find that the corporate governance-cost of equity linkage is significant only for a) firms in Common Law countries and b) firms in countries with high level of financial development. It appears that the legal origin effect works in a complementary manner with the financial development effect to influence the impact of firm level corporate governance on cost of equity capital.

Our study indicates that strong legal institutional framework in a country is a prerequisite for benefitting from firm level improvements in corporate governance attributes. Prior work has also documented that institutional development is associated with higher economic growth in a country due to an increase in the level investments (due to cost of capital reductions). Taken together, our work highlights how country level initiatives work in tandem with firm level improvements in governance.

The rest of the paper is organized as follows. We summarize the theoretical underpinnings relevant to our empirical tests in section 2. Section 3 describes the sample selection process and measurement of key variables used in the study. Section 4 contains our empirical results and their discussions. Section 5 concludes the paper.

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[3] Chen et al (2009) is an exception. However, they do not examine the role of financial development explicitly and their sample consists of only emerging countries.

2. Theoretical Underpinnings

In this section we survey extant research on factors that affect a firm's cost of equity capital. We first summarize work that relates firm level corporate governance to cost of equity capital. This is followed by work that relates financial development to a firm's external financing environment. Finally, we develop our principal hypotheses based on prior literature on substitution and complementary effects of firm-level governance and country level financial development.

2.1 Firm Level Cost of Equity Capital and Cost of Equity

Ashbaugh-Skaife et al. (2006) study the importance of firm level governance attributes in determining the cost of equity capital. They find that the following four types of governance attributes are associated with cost of equity – financial information quality, ownership structure, shareholder rights, and board structure. Their sample covers US firms during the 1996-2002 period. Their overall finding is that strong firm level corporate governance has a negative impact on a firm's cost of equity capital.

Chen, Chen, and Wei (2009) study 17 emerging markets covering the 2001-2002 period. They find that firm level corporate governance significantly influences cost of equity capital. This relationship is particularly strong in countries where legal protection of investors is weak.

2.2 Financial Development and Cost of Equity Capital

Economists have long realized that financial development strongly influences the economic growth of a country and that this effect works through firms' abilities to access external finance. Levine (1999) and Demiguc-Kunt and Maksimovic (1998) summarize the major findings of the research on financial development-economic growth linkage. Financial development is characterized by a well-developed banking system and or a well-functioning capital market. Rajan and Zingales (1998) argue that bank-based systems are better at

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promoting growth in countries with poor legal systems while market-based systems do better as legal systems develop.

The bank-based view of financial development highlights the positive role of banks in acquiring information about firms and managers thus improving corporate governance and capital allocation (Diamond, 1984; Ramakrishnan and Thakor, 1984). Banks also facilitate the management of cross-sectional, inter-temporal and liquidity risk and thereby enhancing investment efficiency and economic growth (Allen and Gale, 1999; Bencivenga and Smith, 1991; Levine, 2002). Furthermore, banks play a role in mobilizing capital to exploit economies of scale (Sirri and Tufano, 1995).

The market-based view of financial development highlights the growth enhancing role of well-functioning capital markets. Such markets foster greater incentives for investors to research firms since it is easier to profit from trading on information in large, liquid markets (Holmstrom and Tirole, 1993). Markets enhance corporate governance by facilitating takeovers and make it easier to tie managerial compensation to firm performance (Jensen and Murphy, 1990). Markets also facilitate risk management (Levine, 1991; Obstfeld, 1994).

The financial services view articulated by Merton and Bodie (1995) and Levine (1997) combines the essential aspects of both banks and markets. The financial services view emphasizes financial arrangements – contracts, markets and intermediaries – in ameliorating market imperfections. The role of the financial system is to assess potential investment opportunities, exert corporate control, facilitate risk management, enhance liquidity and ease savings mobilization.

Levine (2002) provides empirical evidence that is consistent with the view that countries with greater degrees of financial development – as measured by aggregate measures of bank development and market development – experience significantly higher economic growth rates. Rajan and Zingales (1998) posit that well developed financial markets and

institutions help a firm overcome the problems of moral hazard and adverse selection thereby reducing the cost of raising money from outsiders.

Love (2003) studied the relationship between financial development and financing constraints by using the investment Euler equation. Her empirical evidence supports the view that financial development affects a firm's investment via its ability to obtain external finance. Her estimates show that for firms in countries with low financial development, a one standard deviation decrease in the stock of cash is associated with an increase in the cost of capital by about 14%.

Summing up, it appears that a firm in a country with sound financial system will have access to capital at a lower cost than a firm in a country with weak financial development.

2.3 Substitution versus Complementary Effects

Extant work has examined complementary versus substitution effects regarding firm level corporate governance and country level legal institutional development. The empirical findings are however divided on the issue of complementarity versus substitutability. Research work that supports substitutability include Durnev and Kim (2005), Klapper and Love (2004), Chen et al. (2009) while Aggarwal et al (2008), and Doidge, Karolyi and Stulz (2007) find support for complementary effects.

Durnev and Kim (2005) find that firms that practice better corporate governance are valued higher and this relationship is stronger in weaker legal regimes. They suggest that good corporate governance is driven by private incentives that alleviate the detrimental effects of ineffective legal framework in weaker legal regimes. They conclude that high quality governance is relatively scarce in weak legal regimes and that there is a scarcity premium for good governance. However, they do not indicate the mechanism by which firms earn such a "scarcity premium".

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According to Doidge, Karolyi and Stulz (2007), financial globalization should reduce the importance of country characteristics such as legal protection of investors and financial development. Their argument implies substitutability of firm-level governance in countries with poor legal and financial development. They suggest that firms which have access to foreign capital markets are less dependent on the level of financial or economic development in their own country. In order to access capital in well-developed foreign capital markets, these firms have incentives to adopt good governance provisions at the firm level. Furthermore, financial globalization enables firms to "borrow" the investor protection of countries where it is higher. Thus country-level investor protection, financial development, and firm level corporate governance could be substitutable for each other.

The work of Aggarwal et al (2008) supports complementary effects of institutional development and firm-level corporate governance. They propose that firm level governance is less productive in countries with poor economic development and weak investor protection implying that firm level governance and legal protection of investors are complementary. Furthermore, they suggest that firms have incentives to invest more in firm level governance when a country becomes economically and financially developed and better protects investor rights. They also find that only 13% of foreign firms have higher quality governance than US firms and that 86% of those firms come from U.K. and Canada. This finding is inconsistent with the hypothesis that investor protection and internal governance mechanisms are substitutes.[4]

Doidge, Karolyi and Stulz (2007) argue that the extent to which firms choose to improve upon the investor protection granted by the state depends on the costs and benefits of doing so. They find that in countries with weak development, it is costly to improve investor

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[4] Since US is recognized to have strong investor protection as compared to other countries, substitutability would imply that firms in other countries should have higher internal governance than US firms on average.

protection due to the lack of institutional infrastructure. Also, good governance has political costs. Furthermore, the benefit from improving governance is lower since capital markets lack depth. Such countries have poor investor protection and the authors find evidence that there is complementarity between country-level investor protection and firm level governance.

We must emphasise that prior work with the exception of Chen at al. (2009) on the substitution versus complementary effects focus mainly on valuation effects. We distinguish our work by examining cost of equity capital. A further differentiating factor is the explicit use of financial development indicator rather than legal protection.

Our work is also related to Doidge et al. (2007) who try to explain the dominant role of countries in firm level corporate governance choices. They posit that countries matter since they influence the costs that firms incur to comply with good governance and the benefits that accrue to them from doing so. Furthermore, they claim that better governance is associated with a reduction in a firm's cost of funds if and only if investors expect a firm to be well governed after the fund have been raised. Thus it is imperative for the firm to commit itself convincingly to potential investors that it will pursue good governance in the future. However, countries with poor investor protection or low level of financial development could lack adequate mechanism for guaranteeing future governance of the firm. Thus the benefit of good governance is less valuable to a firm in a country with poor financial development. Therefore, the theoretical framework of Doidge et al. (2007) implies complementarity with respect to firm level governance and country level financial development.

Summing up, we have arguments for both complementarity and substitution effects involving firm level governance and country level financial development. There is a substantial body of work that suggests that financial development provides a channel by

which firm level governance can result in lower cost of equity capital. On the other hand, the only theoretical argument for substitution effect stems from financial liberalization. We expect that only very large firms will have access to capital from foreign markets and will be able to circumvent the effect of local financial development. For the vast majority of firms, we believe that local financial development will play a role in determining the access and cost of providing equity capital to firms.

We formally state the *complementarity hypothesis* as follows:

Firms operating in a country with a high level of financial development AND high quality firm level corporate governance experience lower cost of equity capital, ceteris paribus.

As an alternate hypothesis, we formally state the *substitution hypothesis* as follows:

Firms operating in a country with a high level of financial development OR high quality firm level corporate governance experience lower cost of equity capital, ceteris paribus.

2.4 Legal Origin Effects

In a series of articles La Porta and co-authors (La Porta et al. 1997, La Porta et al. 1998, La Porta et al. 2002, La Porta, Lopez-de-Silanes, and Schleifer, 2006) show that legal origin is strongly related to institutional development variables. For instance, the quality of protection available to minority shareholders in a country is strongly related to the legal origin of the country. They conclude that countries following English Common Law tradition generally have higher levels of institutional development as compared to countries that follow the Civil Law tradition. We confirm this strong linkage. In Table 1, we summarise measures of institutional development commonly used in other studies. We observe that common law countries, on average, have higher levels of investor protection, public and private enforcement, as compared to civil law countries. Although, common law countries have

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higher levels of what is termed by Dyck and Zingales (2004) as extra-legal institutions, proxied by the newspaper circulation in our study, the difference is not statistically significant.

[Please Insert Table 1 Here]

A large body of work also suggests that cross-country differences in legal origin help to explain cross-country differences in financial development (La Porta et al 1998, Claessens and Laeven, 2003). This is succinctly summarized in Beck et al (2003). They probe the legal origin-financial development angle further by examining the mechanisms through which legal origin operates. The law and finance theory emphasizes two interrelated channels – political and adaptability – through which legal origin affects financial development. The political channel view holds that legal traditions differ in terms of the priority they give to private property rights as compared to the rights of the state. The political channel view contends that common law evolved to protect private property owners against the crown (government). This legal protection enabled private property owners to transact confidently and positively influenced financial development. In contrast, the French and German civil codes were created to consolidate state power by placing the government above the law. Thus the civil law tradition promotes the development of institutions that advance state power with adverse implications for financial development.

The adaptability channel posits that legal traditions differ in their ability to evolve with changing conditions. Several scholars (Priest 1977, Bailey and Rubin 1994) argue that common law grants substantial discretion to judges which enable them to replace inefficient rules with efficient ones. Thus common law countries effectively minimize the gap between the contracting needs of the economy and the capability of the legal system thereby fostering financial development more efficiently than other systems that are more rigid. Civil law

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tradition typically rejects jurisprudence and relies exclusively on statutory law to resolve disputes. This rigidity of civil law systems results in lower efficiency of contracting law with negative repercussions for financial development.

Summing up, prior work indicates that legal origin succinctly captures cross-country variations in institutional development that are expected to intermediate the relationship between firm level corporate governance and cost of equity capital. As such, in some of our tests, we partition our sample on the basis of legal origin. Thus we are able to extend our hypotheses to include three critical independent variables of interest – firm level corporate governance, financial development and legal origin.

3. Sample Selection and Measurement of Key Variables

3.1 Sample Selection and Country Level Financial Development Measures

Our sample covers the period 2003 to 2007 and includes firms from major OECD countries. We exclude firms listed in off-shore financial centres since the operating environment of these firms may differ from their listing environment. We also exclude countries with very low sample sizes. This data is matched with Datastream to augment our control variables and I/B/E/S analysts forecasts which are required in our estimates of cost of capital.

We use financial development to characterize the quality of institutions in a given country. Following Khurana, Martin, and Pereira (2006), we use two indicators for financial development – financial intermediary development and stock market development. The proxies for financial development are Financial Intermediary Development (FININT) and Stock Market Development (STKMKT). The data is sourced from Khurana, Martin, and Pereira (2006) which in turn is drawn from World Bank database of 2002. STKMKT is the sum of the three variables: market capitalization over GDP, total value traded over GDP, and total value traded over market capitalization and standardized to have zero mean and a

standard deviation of one.   The sum of the ratio of liquid liabilities to GDP, and the credit going to private sector over GDP is coded as FININT.

Our sample composition is reported in Table 2. We utilize a total of 7380 firm years to conduct our empirical tests. In addition to the sample size, we also provide scores on financial development for each country. Prior research (e.g., La Porta et al. 1997, La Porta, Lopez-de-Silanes, and Schleifer, 2006) demonstrates that financial development is driven by legal institutions and securities regulation. Furthermore, a rich literature on law and finance also shows that legal origin of a country plays a significant role in the development of its financial markets. Therefore, we include legal origin in our empirical analyses in addition to financial development. The legal origin as reported by La Porta et al (1997) is also shown in the last column.

[Please Insert Table 2 Here]

The average FININT score of Common Law countries is 1.108 and the corresponding score for Civil Law countries is 1.225. The average STKMKT score of Common Law countries is 0.682 and score for Civil Law countries is 0.873. Thus it appears that sorting by legal origin and by financial development will result in different sets of countries.

3.2   Measurement of Firm Level Corporate Governance

Our primary source of data on corporate governance aspects is from the RiskMetrics Corporate Governance database. We first describe the sample of firms covered by the database provided by Institutional Shareholder Services (ISS) of RiskMetrics. For each firm, for each governance feature, RiskMetrics provides information regarding compliance or its absence. Next, we use this information and based on best practices, we score each firm on each governance attribute and construct our overall index, aggregating these attributes.[5]

RiskMetrics provides firm level Corporate Governance Quotient (CGQ) for companies from 2003. The CGQ rankings are designed to measure a firm's investment in internal governance as represented by its adoption of governance attributes that increase the power of its minority shareholders. ISS reports two main ratings for each firm CGQ_Industry and CGQ_Index. CGQ_Industry gives a firms' percentile ranking within its GICS industry group and CGQ_Index gives a firm's percentile ranking within its index. In order to compute these indices, ISS collects information on a set of governance attributes for a large number of companies. The coverage of the international sample, which we use in this study, includes non-US firms that are part of the following indices: (i) the MSCI-EAFE index;(ii) the FTSE All Share index; (iii) the FTSE All World Developed Index; and (iv) the S&P/TSX index. The MSCI-EAFE index covers one thousand stocks from twenty one developed countries outside North America and captures 85% of the market capitalization of these countries. The FTSE All Share index, consists of the FTSE 100, FTSE 250, and FTSE SmallCap Indices and captures 98% of the UK market. The FTSE All World Developed Index includes the largest firms in the developed markets. The S&P/TSX index represents 71% of the market capitalization of the Toronto Stock Exchange.

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[5] Our choice of ISS is based on its widespread use in research studies such as Brown and Caylor (2006) and Doidge et al. (2007). Also, since ISS provides raw data on governance attributes, it enables us to create our own index.

In this paper, we use corporate governance data for the 2003-2007 period. The number of sample firms per year ranges from 1253 in 2003 to 1615 in 2007. The countries with the largest number of sample firms are Japan, the United Kingdom and Canada. The countries with the smallest number of sample firms are Portugal, Ireland and New Zealand. ISS compiles fifty-five governance attributes for firms. A firm's performance on each attribute is determined by examining a firm's regulatory filings, its website and annual reports. Firms do not pay to get rated but are allowed to access their ratings and verify the accuracy of ratings. Firms can only change their ratings by altering the governance structure and publicly disclosing it. ISS scores each firm on each attribute depending on whether it meets a threshold level of acceptability. The fifty five attributes cover four broad categories: Board, Audit, Anti-takeover and Compensation and Ownership. The Board component of governance encapsulates the aspects of functioning of the board of directors pertaining to board independence, size, composition of committees, transparency and the conduct of work. The audit component captures the independence of audit committee and the role of auditors. Anti-takeover provisions include the firm's charter and bylaws, dual-class structure, role of shareholders, poison pill, and blank check preferred. The Compensation and Ownership component deals with executive and director compensation issues, options, stock ownership and loans. Appendix A contains a list of the variables used and the acceptable standards used in the scoring.

The rating provided by ISS evaluates the strength, deficiencies, and overall quality of a company's corporate governance practices and is designed on the premise that good corporate governance ultimately results in increased shareholder value. The exact weighting of the different features of governance in computing the index is not available to us. Also, ISS claims that CGQ is a "reliable tool for identifying portfolio risk related to governance and leverages governance to drive increased shareholder value". This emphasis on creating

an index with strong relationship to value creation does not appeal to us as researchers as our goal is to objectively assess the influence of governance features on a firm's risk. So, we construct our own index using the raw data provided to us by RiskMetrics.

A clear benefit of constructing our own governance indicator is that we are able to capture a wide variety of governance features employed by firms. A disadvantage of this approach is that the list of corporate governance features used and the weights assigned to each feature tend to be subjective, a criticism albeit applicable to any constructed index.

We create our own index based on the raw data provided by ISS. We score each firm based on whether or not it meets the threshold of good governance for that attribute. Based on this binary coding of each attribute, we aggregate the scores obtained by each firm to arrive at the overall score.

We compute summary statistics of firm-level corporate governance scores and report results by country, year and industry grouping in Table 3. The lowest mean scores are obtained by Portugal (0.328) and the highest by United Kingdom (0.507). We obtain similar results when use median scores. Based on legal origin Portugal falls in the civil law category and is rated low on stock market development but high on financial intermediary development. United Kingdom follows the Common Law tradition and scores high on both stock market and financial intermediary development. The average CG scores across years shows an increasing pattern from 2003 until 2006 and then levels off in 2007. The summary statistics of corporate governance scores by sectors do not show significant differences across the industrial, services and financial sectors.

[Please Insert Table 3 Here]

3.3   Cost of Equity Estimates

We compute the implied cost of equity using earnings forecasts reported in Institutional Brokers' Earnings System (I/B/E/S) and share prices extracted from Datastream. Our decision to use implied cost of equity derived from earnings forecast is based on strong criticisms that have been forwarded against realized returns. Elton (1999) argues that realized return is a noisy and biased proxy for the cost of capital. Dhaliwal, Eheitzman, and Li (2006) point out that ex-ante estimate is more appropriate for estimating returns demanded by investors than ex post realizations. Furthermore, unlike the CAPM, the implied cost of equity approach does not require a long time series of historical returns to estimate the cost of equity capital.

To estimate the cost of equity, we employ four commonly used methods. The models of Gebhardt, Lee, and Swaminathan (2001) and Claus and Thomas are based on Edward-Bell-Ohlson residual income valuation model while the models of Easton (2004) and Ohlson and Juettner-Nauroth (2005) are based on abnormal earnings growth[6]. These are described in detail below.

We use the following abbreviations to describe each model:

P_t = Market price of a firm's stock at time t

BV_t = Most recent available book value per share of a firm

BV_{t+1} = Expected book value per share of a firm assuming "clean surplus" relationship

        holds

$FEPS_{t+i}$ = I/B/E/S analyst median forecasted EPS of a firm for the year i at time t

$DPOUT$ = Forecasted dividends payout ratio calculated from firm-specific historical three-year median dividends payout ratio.   A country-specific three-year historical

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[6] The interested reader is advised to refer to informative appendices of Guedhami and Mishra (2009) and Chen, Chen, and Wei (2009) for further details on these models.

median dividend payout ratio is used as a substitute whenever firm-specific dividend payout ratio is missing.

g_{lt} = Expected (perpetual or long-term) earnings growth rate. g_{lt} is calculated by annualizing country-specific one-year ahead realized monthly inflation rates.

Gebhardt, Lee and Swaminathan (2001):

$$P_t = BV_t + \sum_{i=1}^{12} \frac{FEPS_{t+i} - (R_{GLS} * BV_{t+i-1})}{(1 + R_{GLS})^i} + \frac{FEPS_{t+12} - (R_{GLS} * BV_{t+11})}{R_{GLS}(1 + R_{GLS})^{12}}$$

This model uses a two-stage approach to estimate the intrinsic value of the firm. Specifically, the first stage considers I/B/E/S analyst forecasts of EPS for the first three years ahead. The second stage runs from 4th year to 12th year and assumes that EPS will grow linearly to the industry-specific median ROE. Industry-specific median ROE is calculated as historical five-year industry-specific median returns where industry is classified either as industrial, financial or services. This adjustment suggests that a firm's characteristic is more representative of other firms operating in the same industry in long run. The terminal value beyond 12th year assumes zero incremental economic profits, i.e. residual income do not change. This model assumes "clean surplus" relation, e.g., $BV_{t+1} = BV_t + FEPS_{t+1} - DIV_{t+1}$. The forecasted dividend per share DIV_{t+1} is calculated as $FEPS_{t+1}*DPOUT$, where DPOUT is forecasted dividend payout ratio. Firms with negative ROE are excluded from calculation. R_{GLS} backed out from the pricing equation gives the estimate of implied cost of capital.

Claus and Thomas (2001):

$$P_t = BV_t + \sum_{i=1}^{5} \frac{FEPS_{t+i} - (R_{CT} * BV_{t+i-1})}{(1 + R_{CT})^i} + \frac{FEPS_{t+5} - (R_{CT} * BV_{t+4}) * (1 + g_{lt})}{(R_{CT} - g_{lt})(1 + R_{CT})^5}$$

This model uses abnormal earnings, a special case of residual income approach to circumvent various problems noted in the dividend growth model. The abnormal earnings are calculated from I/B/E/S analyst earnings forecasts up to 5 years ahead. More specifically, the model uses analyst forecasts for the first 3 years ahead. The forecasts for the 4th and 5th year are calculated from the forecasted 3rd year EPS and long-term earnings growth rate. In absence of long-term earnings growth rate, it is substituted by the earnings growth derived from $FEPS_{t+2}$ and $FEPS_{t+3}$. After 5th year, it is assumed that the abnormal earnings will grow at a constant rate g_{lt}. Country-specific inflation rate is used as a proxy for long-term earnings growth rate. This model also assumes "clean surplus" relation. R_{CT} backed out from the pricing equation gives the estimate of implied cost of capital.

Ohlson and Juettner-Nauroth (2005):

$$P_t = \frac{FEPS_{t+1}}{R_{OJ}} + \frac{FEPS_{t+2} - FEPS_{t+1} - (R_{OJ} * FEPS_{t+1} * (1 - DPOUT))}{R_{OJ}(R_{OJ} - g_{lt})}$$

which can be further written as

$$R_{OJ} = A + \sqrt{A^2 + \frac{FEPS_{t+1}}{P_t}\left(\frac{FEPS_{t+2} - FEPS_{t+1}}{FEPS_{t+1}} - g_{lt}\right)}$$

where

$$A = \frac{1}{2}\left(g_{lt} + \frac{DPOUT * FEPS_{t+1}}{P_t}\right)$$

This model follows procedure outlined in Gode and Mohanram (2003). It uses short-term growth computed from one-year ahead analyst earnings forecasts which gradually declines to long-term growth rate g_{lt}. The short-term growth rate is calculated as the average between the forecasted percentage change in earnings from year $t+1$ to $t+2$, while the long-term growth rate can be obtained from I/B/E/S. The model requires positive earnings for the period $t+1$

and *t+2* for numerical approximation to converge. The long-term growth rate equals country-specific inflation rate.

Easton (2004):

$$P_t = \frac{FEPS_{t+2} - FEPS_{t+1} + (R_{Easton} * FEPS_{t+1} * DPOUT)}{R_{Easton}^2}$$

This model is a special case of the OJ model where the abnormal returns are assumed to exist in perpetuity after the initial period. It uses one-year and two-year ahead I/B/E/S earnings forecasts combined with dividend payout to estimate abnormal earnings. This model requires positive changes in forecasted earnings for numerical approximation to converge.

For each year, we compute the implied cost of equity by using forward looking earnings forecasts provided by analysts. Our cost of equity estimates are backed out by numerical approximation using the Generalized Reduced Gradient Algorithm. We take arithmetic averages of the four estimates in order to mitigate potential measurement errors associated with a particular method. In order to further reduce the impact of errors, we winsorized our estimates to 0% and 60%.

Table 4 contains summary statistics of our cost of equity estimations. The overall mean ranges from 8.16% to 11.13% for the four methods. The average cost of equity estimates by country ranges from 9.22% for Switzerland to 12.94% for Ireland.

[Please Insert Table 4 Here]

3.4   Control Variables

In order to isolate the impact of corporate governance, it is essential to control for other factors which are shown by prior research to have an influence on the cost of equity. These include firm characteristics and cross-country differences in certain critical variables.

We control for beta, firm size, book-to-market, inflation, price momentum, analysts forecast error, liquidity and free float.

Fama and French (1992) show that stock returns are negatively correlated with firm size and positively related to book-to-market ratio. Size is measured by the natural logarithm of market value (MV) denominated in US dollars. Book to Market (B/M) is the ratio of book value per share to share price. Also Capital Asset Pricing Model (CAPM) predicts that cost of equity is positively related to beta. Beta is calculated by regressing each firm's last 60 months or at least 24 months return on the current and lagged MSCI world market index returns. Firms with less than 24 months of historical data are excluded from the sample. Beta is winsorized to between 0 and 4 to control for outliers.

Following Hail and Leuz (2006), we control for inflation. The inflation rate affects cost of equity estimates since inputs such as book value of equity, stock price, and analysts' earnings forecasts are typically stated in nominal terms. Inflation is calculated by annualizing country-specific one-year ahead realized monthly inflation rates. Guay et al. (2003) claim that implied cost of equity estimates using analysts' forecasts may be biased due to sluggishness implicit in the forecast. They suggest the inclusion of a price momentum variable to mitigate the impact of this bias. Furthermore, analysts of RiskMetrics could also be influenced by the past return performance of stocks. Momentum returns for each firm is calculated by compounding the last six months return. An implicit assumption of our approach is the unbiasedness of the analysts. However, if analysts underestimate the impact of corporate governance on future earnings, their forecasts will have an upward bias for firms with poor corporate governance scores. This will translate into an overestimation of the cost of equity, creating a spurious correlation between corporate governance scores and cost of equity. We use forecast error as a control variable to mitigate the effect of this spurious correlation.

Forecast error is measured by the analyst forecast error computed as actual minus expected earnings scaled by the current price for the next year.

In equilibrium, expected returns are higher for illiquid stocks as compared to liquid stocks[7]. Following Lesmond et al. (2005), we calculate liquidity as the ratio of non-zero trading days divided by total trading days over the last quarter. Another measure of liquidity that is used in our study is the free float. Free float is measured by the percentage of total shares in each issue that is available for trading.

4. Empirical Results

In this section, we study the validity of the substitution and complementarity hypotheses. First, we examine the role played by legal institutional variables developed by prior research such as La Porta et al. (2006) and Dyck and Zingales (2004). Second, we repeat these tests using variables that characterize financial development. Third, we conduct robustness checks of our principal results. Finally, we discuss our results and compare them to previous work.

4.1 Investor Protection, Firm-level Governance and Cost of Equity

We estimate the effect of corporate governance measures on implied cost of capital by performing the following regression:

$$R_{i,j,t} = \alpha_0 + \alpha_1 CG_{i,j,t} + \sum \alpha_2 Controls + \varepsilon_{i,j,t}$$

where the subscript i,j, and t refers to country, firm, and time respectively. Details of the control variables are given in section 3.4. Our estimations further include fixed effects for country, year and industry.

We first follow the method of Chen, Chen, and Wei (2009) and report our principal results in Table 5. Our focus is on the interactive effects of country-level legal protection of

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[7] See for instance, Amihud and Mendelson (1986).

investors and firm-level corporate governance and its impact on the cost of equity capital. Regression results are reported on the basis of partitions based on Investor Protection, Private Enforcement, Public Enforcement, and Extra-legal institutions. Investor protection is the principal component of indices of disclosure requirements, liabilities, standards, and anti-director rights, from La Porta et al. (2006). Private and Public enforcement indices are also sourced from La Porta el al. (2006). "Extra-legal" institutional variables may also affect the cost of capital. For instance, Dyck and Zingales (2004) shows that countries with competitive product markets and diffused-newspaper circulation have lower private benefits, which may bring down the cost of equity capital. Data on newspaper circulation is obtained from Dyck and Zingales (2004). Contrary to the findings of Chen, Chen, and Wei (2009) that focused on emerging markets, we find that firm level corporate governance works best in reducing the cost of equity in countries that protect investors well. Similar results are found for private enforcement, public enforcement, and newspaper circulation.

[Please Insert Table 5 Here]

Our evidence strongly indicates that the benefit of firm-level corporate governance is more explicit in markets that protect investors well, in environments with strong private and public enforcement of security laws, and where newspaper circulations are more diffused. It appears that the complementarity hypothesis is valid when we examine a range of institutional variables.

4.2 Financial Development, Firm-level Governance and Cost of Equity

In this sub-section, we empirically examine the direct and interactive effects of legal origin, financial development and firm level corporate governance scores on the implied cost of equity capital. Our regression results are based on panel data covering the 2003-2007

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period using firms from 22 countries. As such, our tests are designed to examine the validity of complementarity hypothesis as opposed to the substitution hypothesis.

We regress the average cost of equity capital on a set of control variables and CG scores. Our estimations include fixed effects for country, year and industry. The results are reported in Table 6. The results of unconditional regressions indicate that firms with high CG scores have lower cost of equity capital and this relationship is statistically significant at the 1% level. Our results on control variables are generally consistent with theory and prior research. Cost of equity is positively related to beta, book-to-market equity. Cost of equity is negatively related to analysts' forecast errors, momentum, and firm size. These findings are consistent with the work of Hail and Leuz (2006), Fama and French (1992), and Guay et al. (2003). We do not find a significant association between liquidity and cost of equity capital. Free float is sometimes significant but in the opposite direction. As such our results are at variance with those of Chen et al. (2009) for emerging markets.

[Please Insert Table 6 Here]

We then conduct regressions on sub-samples based on legal origin and financial development. Interestingly, we observe a stronger negative relationship between CG scores and cost of equity for the Common Law subsample. For the Civil Law subsample, there is no reliable relationship between CG scores and cost of equity. It appears that the legal origin of the country in which a firm is operating in plays a mediating role in the relationship between corporate governance and cost of equity capital.

We use financial development to segregate the sample into two and repeat the regressions. Financial development is characterized by Financial Intermediary Development (FININT) and Stock Market Development (STKMKT). All firms with below median scores

on FININT (STKMKT) are classified as low and the rest as high. The association between CG Score and cost of equity holds for the subsample with high financial development. The results are robust to alternate ways of characterizing financial development (FININT or STKMKT). There is no significant relationship between CG scores and cost of equity for the low financial development subsample.

The results of Table 6 provide certain important insights into the effect of corporate governance on cost of equity. First, country level financial development plays a critical complementary role with the firm level corporate governance. Second, legal origin also plays a significant role in influencing the impact of corporate governance on cost of equity capital. Third, we provide evidence supporting the complementarity hypothesis and rejecting the substitution hypothesis.

We investigate the interactive effects of legal origin and financial development on the relationship between corporate governance and cost of equity capital by using a two-stage partition of our sample. First, we partition the sample on the basis of legal origin. Next, we divide each subsample on the basis of financial development. We rerun our regressions for each of the subsamples. The results are reported in Table 7. The CG scores have a strong negative impact on the Common Law subsample with high financial development.[8] The results are robust to alternate methods of characterizing financial development (FININT or STKMKT). CG scores have no reliable relationship to cost of equity for the Civil Law subsample. These results indicate that legal origin and financial development play complementary roles in influencing the impact of corporate governance on cost of equity. Furthermore, the effect of each factor is not subsumed by the other. Thus our evidence is clearly consistent with the complementarity hypothesis.

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[8] Sorting by either proxy for financial development produces the same set of countries for Common Law countries. This is not true for Civil Law countries.

[Please Insert Table 7 Here]

4.1   Robustness Checks

We conduct three types of robustness checks. First, we reran all our multivariate tests by using an alternate governance index.   We use the GOV_{44} index used in Aggarwal et al (2007). We obtain qualitatively similar results. The results are portrayed in Table 8. Second, we used an alternate index of financial development based on Global Financial Centres index. Global Financial Centres index provides ranking based on competitiveness.   The scores are computed using instrumental factors and online survey. Once again our results are qualitatively unaltered.[9]

[Please Insert Table 8 Here]

Finally, we reclassified financial development status of three of the countries in our sample – Hong Kong, Ireland, and Greece which do not have financial development scores reported in Khurana et al. (2006). We classified Hong Kong and Ireland as high and Greece as low for the variables FININT and STKMKT. The results reported in Table 6 are qualitatively similar when we exclude firms from these three countries. We also changed the ordering of the three countries. The results remain robust to these changes.

4.2   Discussion

Our study builds on recent findings in the finance literature regarding the role of legal institutions and financial sector development (Hail and Leuz, 2006, La Porta et al., 1997, 2000, 2006, and Love, 2003).   We extend this literature by jointly examining the role of

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[9] These results are available from the authors upon request.

financial development and firm level corporate governance in explaining international differences in the cost of equity capital. Arguably, the external governance environment in which a firm operates is more important than internal governance mechanisms that a firm adheres to. This is because the quality of a country's legal institutions reflects an ongoing commitment to good governance. Often internal governance preferences of a firm reflect self-serving choices rather than a commitment to continued good governance. Our study includes both features and is the first one to show that internal governance and country level financial development play complementary roles in influencing a firm's cost of equity capital. Overall, our results based on a comprehensive cross-country sample show that financial development, and firm level governance choices act in a complementary fashion to affect a firm's cost of equity capital. Our results are robust to alternate ways of characterizing financial development and firm level corporate governance.

5. Conclusion

A strand of research document that firm level corporate governance attributes are associated with the cost of equity capital. Another strand of research provides evidence regarding the beneficial impact of superior legal institutions and regulations on the cost of capital. Our study jointly examines the effects of country level financial development and firm level governance attributes on the cost of equity capital. We provide evidence that firm level governance attributes affect the cost of equity capital only in Common Law countries with high level of financial development. As such our study highlights the complementary effects of legal origin, financial development and firm level governance attributes in influencing cost of equity capital.

After notable recent corporate governance failures, there has been an increasing tendency to mandate improvements in firm level corporate governance. A cross country empirical study on the economic impact of such improvements is useful not only to policy

makers and managers but also to potential investors. Our study focusing on cost of equity estimates shows that improving firm level corporate governance alone will not be sufficient. An essential prerequisite is the existence of a high level of financial development in the country in which the firm operates.

Appendix A

CGQ Rating Variables Summary

Acceptable Governance Standards
Board
1. All directors attended 75% of board meetings or had a valid excuse 2. CEO serves on the boards of two or fewer public companies 3. Board is controlled by more than 50% independent outside directors 4. Board size is greater than 5 but less than 16 5. CEO is not listed as having a related-party transaction 6. No former CEO on the board 7. Compensation committee composed solely of independent outsiders 8. Chairman and CEO are separated or there is a lead director 9. Nominating committee composed solely of independent outsiders 10. Governance committee exists and met in the past year 11. Shareholders vote on directors selected to fill vacancies 12. Governance guidelines are publicly disclosed 13. Annually elected board (no staggered board) 14. Policy exists on outside directorships (four or fewer boards is the limit) 15. Shareholders have cumulative voting rights 16. Shareholder approval is required to increase/decrease board size 17. Majority vote requirement to amend charter/bylaws (not supermajority) 18. Board has the express authority to hire its own advisors 19. Performance of the board is reviewed regularly 20. Board-approved succession plan in place for the CEO 21. Outside directors meet without CEO and disclose number of times met 22. Directors are required to submit resignation upon a change in job 23. Board cannot amend bylaws without shareholder approval or can do so only under limited circumstances 24. Does not ignore shareholder proposal. 25. Company has policy on mandatory retirement age or term limits for directors 26. All board members participate in accredited director education programs.
Audit
1. Consulting fees paid to auditors are less than audit fees paid to auditors 2. Audit committee composed solely of independent outsiders 3. Auditors ratified at most recent annual meeting 4. Company has policy on rotation of auditors and discloses it
Anti-takeover
1. Single class, common 2. Majority vote requirement to approve mergers (not supermajority) 3. Shareholders may call special meetings 4. Shareholder may act by written consent 5. Company either has no poison pill or a pill that was shareholder approved 6. Company is not authorized to issue blank check preferred
Compensation and Ownership
1. Directors are subject to stock ownership requirements 2. Executives are subject to stock ownership guidelines 3. No interlocks among compensation committee members 4. Directors receive all or a portion of their fees in stock 5. All stock-incentive plans adopted with shareholder approval 6. Options grants align with company performance and reasonable burn rate 7. Company expenses stock options 8. All directors with more than one year of service own stock 9. Officers' and directors' stock ownership is at least 1% but not over 30% of total shares outstanding 10. Repricing is prohibited 11. An option pricing model is used to measure the cost of all stock-based incentive plans. 12. Non-employee directors should not participate in pension plans 13. Corporate loans should not be given to participants of stock option plans.
Combination Variables
1. Board is controlled by independent outside directors and ownership by officers and directors is significant. 2. Board is controlled by independent outside directors and the board committees are composed solely of independent outside directors. 3. No unequal voting rights, no classified board, no ability on the ability to call special meetings, and

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Table 1 Institutional Development in Common Law versus Civil Law Countries

	Common Law Mean (Median)	Civil Law Mean (Median)	t-test differences t-stat (prob)
Investor protection	0.634 (0.612)	0.374 (0.363)	4.67 (0.00)
Public enforcement	0.623 (0.675)	0.459 (0.500)	2.72 (0.01)
Private enforcement	0.678 (0.684)	0.448 (0.443)	4.19 (0.00)
Newspaper circulation	2.620 (2.200)	2.210 (1.630)	0.64 (0.52)

This Table reports mean and median score of investor protection variables sorted on the basis of Common and Civil Law. Legal origin is from La Porta et al. (1997). Investor protection is from La Porta et al. (2006). Private and Public enforcement are from La Porta el al. (2006). Newspaper circulation is from Dyck and Zingales (2004).

Table 2 Sample Across Countries and Year

Country	2003	2004	2005	2006	2007	FININT	STKMKT	Legal Origin
Australia	63	62	92	88	87	0.61	0.42	Common
Austria	17	14	16	15	17	1.26	-0.74	Civil
Belgium	21	16	22	22	23	0.62	1.03	Civil
Canada	125	126	82	117	118	0.59	0.5	Common
Denmark	18	17	18	17	17	1.02	-0.05	Civil
Finland	21	21	23	25	24	0.27	1.63	Civil
France	68	62	68	70	69	0.85	0.61	Civil
Germany	63	66	68	71	69	1.52	0.69	Civil
Greece	36	35	36	31	31	n/a	n/a	Civil
Hong Kong	41	48	93	96	91	n/a	n/a	Common
Ireland	12	13	13	14	14	n/a	n/a	Common
Italy	42	31	55	51	50	0.75	0.38	Civil
Japan	404	410	471	479	477	2.71	0.17	Civil
Netherlands	36	35	38	36	27	2.14	1.45	Civil
New Zealand	10	12	17	16	16	1.07	-0.39	Common
Norway	13	13	13	12	13	0.43	-0.1	Civil
Portugal	10	8	10	11	12	2.13	-0.28	Civil
Singapore	37	37	45	48	46	1.25	0.61	Common
Spain	39	30	42	42	41	1.36	2.25	Civil
Sweden	23	24	23	27	25	-0.05	1.87	Civil
Switzerland	40	43	46	46	45	2.14	3.31	Civil
United Kingdom	114	124	328	312	303	2.02	2.27	Common
Total	1,253	1,247	1,619	1,646	1,615			

This Table reports year-wise distribution of firms across twenty two countries. Firms covered by Riskmetrics database are first matched with Datastream and next missing observations or firms with inadequate data required to calculate various inputs are excluded from the sample. FININT is financial intermediary development and STKMKT is stock market development score from Khurana et al. (2006). Legal origin is from La Porta et al. (1997).

Table 3 Corporate Governance Scores Across Countries, Years and Industry Groups

Variable	Mean	St. Dev.	Distribution				
			1st	25th	50th	75th	99th

Panel A: Summary Statistics of Corporate Governance by Country

Variable	Mean	St. Dev.	1st	25th	50th	75th	99th
All countries	0.438	0.102	0.266	0.362	0.410	0.513	0.713
Australia	0.498	0.071	0.370	0.443	0.495	0.548	0.676
Austria	0.434	0.069	0.311	0.378	0.429	0.477	0.614
Belgium	0.361	0.074	0.225	0.304	0.347	0.404	0.541
Canada	0.610	0.090	0.394	0.547	0.613	0.680	0.808
Denmark	0.420	0.089	0.253	0.344	0.411	0.502	0.581
Finland	0.483	0.104	0.326	0.388	0.481	0.560	0.719
France	0.452	0.077	0.255	0.403	0.459	0.507	0.604
Germany	0.464	0.085	0.308	0.385	0.477	0.533	0.635
Greece	0.335	0.063	0.199	0.285	0.330	0.366	0.548
Hong Kong	0.406	0.056	0.284	0.366	0.410	0.447	0.530
Ireland	0.450	0.094	0.255	0.391	0.460	0.524	0.626
Italy	0.409	0.076	0.243	0.344	0.425	0.471	0.543
Japan	0.363	0.030	0.299	0.340	0.365	0.388	0.428
Netherlands	0.464	0.110	0.259	0.374	0.466	0.545	0.691
New Zealand	0.445	0.061	0.333	0.394	0.447	0.495	0.588
Norway	0.412	0.091	0.285	0.333	0.399	0.480	0.635
Portugal	0.328	0.066	0.229	0.277	0.322	0.367	0.477
Singapore	0.421	0.063	0.287	0.377	0.422	0.463	0.553
Spain	0.399	0.108	0.199	0.314	0.403	0.471	0.636
Sweden	0.432	0.089	0.256	0.360	0.426	0.496	0.641
Switzerland	0.476	0.108	0.285	0.377	0.477	0.568	0.679
United Kingdom	0.507	0.072	0.328	0.461	0.517	0.558	0.647

Panel B: Summary Statistics of Corporate Governance by Year

Variable	Mean	St. Dev.	1st	25th	50th	75th	99th
2003	0.374	0.084	0.240	0.325	0.347	0.404	0.633
2004	0.406	0.090	0.266	0.347	0.380	0.444	0.691
2005	0.450	0.097	0.291	0.369	0.436	0.521	0.694
2006	0.471	0.101	0.297	0.388	0.461	0.543	0.738
2007	0.467	0.100	0.269	0.388	0.459	0.533	0.728

Panel C: Summary Statistics of Corporate Governance by Industry

Variable	Mean	St. Dev.	1st	25th	50th	75th	99th
Industrial	0.438	0.100	0.269	0.362	0.410	0.511	0.704
Services	0.440	0.110	0.259	0.355	0.410	0.518	0.753
Financial	0.441	0.107	0.261	0.358	0.423	0.513	0.727

This Table presents mean, median and distribution of key Corporate Governance score across countries, year and industry. Industry classification of each firm is from Datastream.

Table 4 Summary Statistics of Key Variables

Variable	Mean	St. Dev.	Distribution				
			1st	25th	50th	75th	99th
Panel A: Cost of Equity Estimates Using Different Methods							
Cost of Equity- Average	9.74%	4.24%	2.62%	7.39%	9.06%	10.99%	26.79%
Cost of Equity- GLS	8.16%	4.59%	0.20%	6.41%	7.85%	9.24%	21.79%
Cost of Equity- CT	9.41%	7.61%	1.55%	5.81%	8.21%	10.69%	60.00%
Cost of Equity- OJ	10.88%	5.08%	1.30%	7.89%	10.44%	13.14%	27.35%
Cost of Equity- Easton	11.13%	6.17%	1.23%	4.25%	10.10%	12.74%	36.38%
Panel B: Average Cost of Equity Estimates by Country							
Australia	9.94%	3.38%	5.43%	8.20%	9.37%	10.72%	27.66%
Austria	10.88%	4.27%	2.77%	8.39%	9.89%	11.94%	32.92%
Belgium	10.48%	3.14%	6.14%	8.54%	9.96%	11.91%	23.43%
Canada	10.02%	4.26%	4.26%	7.90%	9.33%	10.90%	31.88%
Denmark	9.26%	3.88%	3.79%	6.95%	8.29%	10.74%	30.84%
Finland	10.67%	4.00%	5.26%	8.14%	9.73%	11.83%	26.42%
France	9.69%	2.65%	5.44%	7.76%	9.46%	10.96%	17.84%
Germany	10.36%	4.13%	4.72%	7.95%	9.58%	11.26%	24.97%
Greece	11.77%	5.61%	3.85%	8.26%	10.20%	12.76%	33.88%
Hong Kong	10.17%	4.85%	2.26%	7.58%	9.28%	11.86%	27.19%
Ireland	12.94%	6.96%	7.15%	9.13%	10.52%	12.72%	34.75%
Italy	10.42%	4.90%	4.59%	7.62%	9.45%	11.53%	34.00%
Japan	8.48%	3.39%	3.77%	6.32%	7.87%	9.70%	20.25%
Netherlands	9.39%	2.29%	5.63%	7.92%	9.11%	10.68%	16.31%
New Zealand	11.53%	5.46%	3.68%	8.03%	9.71%	13.23%	29.94%
Norway	11.00%	5.17%	2.98%	7.83%	10.09%	11.83%	26.46%
Portugal	10.08%	4.63%	4.57%	7.82%	8.93%	11.17%	29.89%
Singapore	12.24%	7.18%	4.71%	7.87%	10.24%	12.69%	40.39%
Spain	9.66%	2.87%	4.86%	8.21%	9.24%	10.74%	19.21%
Sweden	9.64%	3.10%	2.69%	7.66%	9.01%	11.34%	18.11%
Switzerland	9.22%	3.52%	5.08%	7.11%	8.52%	10.22%	20.40%
United Kingdom	10.34%	4.71%	1.85%	8.28%	9.96%	12.11%	26.59%
Panel C: Descriptive Statistics of Control Variables							
Beta	0.974	0.660	0.000	0.507	0.853	1.313	3.143
Log(MV)	8.001	1.424	4.863	7.038	7.918	8.930	11.428
Log(B/M)	-0.722	0.671	-2.792	-1.072	-0.647	-0.270	0.511
Inflation	1.92%	1.49%	-0.30%	0.40%	1.95%	3.03%	4.56%
Momentum	9.62%	25.85%	-44.74%	-5.77%	7.87%	22.43%	90.77%
Forecast Error	-0.43%	12.94%	-18.20%	-0.35%	0.06%	0.51%	7.33%
Liquidity	89.30%	7.47%	60.00%	87.69%	90.77%	93.85%	98.46%
Freefloat	71.88%	23.02%	17.00%	53.00%	77.00%	92.00%	100.00%

This Table summarizes key statistics of cost of equity for the whole sample, across countries and control variables used in this paper. Cost of equity- GLS is calculated from Gebhardt et al. (2001), Cost of equity- CT is from Claus and Thomas (2001), Cost of equity- OJ is from Ohlson and Juettner-Nauroth (2005), and Cost of equity- Easton is from Easton (2004). Cost of Equity- Average is simple average of four models. Cost of equity estimates are winsorized to 0 and 0.60 and backed out by numerical approximation using Generalized Reduced Gradient (GRG2) Algorithm. Beta is calculated

by regression each firm's last 60 months or at least 24 months return on the current and lagged MSCI world market index returns. Firms with less than 24 months of historical data are excluded from the sample. Beta is winsorized to between 0 and 4 to control outliers. Market Value (MV) is the dollar denominated outstanding shares in issue. Book to Market (B/M) is the ratio of book value per share to share price. Inflation is calculated by annualizing country-specific one-year ahead realized monthly inflation rates. Momentum returns for each firm is calculated by compounding last six months return. Forecast Error is the analyst forecast error computed as actual minus expected scaled by the current price for the next year. Liquidity is from Lesmond et al. (2005) and calculated as the ratio of non-zero trading days divided by total trading days over the last quarter. Freefloat is the percentage of total shares in issue available for ordinary shareholders.

Table 5 Corporate Governance, cost of equity and investor protection

	Investor protection		Private Enforcement		Public Enforcement		Newspaper circulation	
	Low	High	Low	High	Low	High	Low	High
CG	-0.021	-0.031	-0.009	-0.036	-0.023	-0.031	-0.003	-0.058
	(0.106)	(0.004)	(0.524)	(0.000)	(0.044)	(0.005)	(0.753)	(0.000)
Beta	0.003	0.008	0.004	0.007	0.003	0.007	0.004	0.006
	(0.022)	(0.000)	(0.009)	(0.000)	(0.020)	(0.000)	(0.002)	(0.000)
Log (MV)	-0.003	-0.004	-0.005	-0.003	-0.002	-0.005	-0.003	-0.004
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Log (B/M)	0.007	0.009	0.014	0.006	0.007	0.009	0.013	0.006
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inflation	0.565	0.421	0.548	0.358	0.46	0.43	0.246	0.494
	(0.016)	(0.001)	(0.041)	(0.007)	(0.032)	(0.001)	(0.249)	(0.001)
Momentum	-0.01	-0.023	-0.015	-0.018	-0.01	-0.022	-0.018	-0.016
	(0.016)	(0.000)	(0.042)	(0.000)	(0.017)	(0.000)	(0.000)	(0.000)
Forecast Error	-0.028	-0.04	-0.012	-0.042	-0.027	-0.04	-0.011	-0.042
	(0.165)	(0.001)	(0.681)	(0.000)	(0.136)	(0.001)	(0.731)	(0.000)
Liquidity	-0.038	0.003	-0.014	-0.008	-0.024	0	0.002	-0.017
	(0.057)	(0.742)	(0.570)	(0.377)	(0.205)	(0.994)	(0.862)	(0.137)
Freefloat	0.009	0.009	0.009	0.009	0.01	0.008	0.012	0.008
	(0.006)	(0.009)	(0.040)	(0.001)	(0.002)	(0.014)	(0.000)	(0.021)
N	3723	3657	1849	5531	3680	3700	2517	4524
Adj-R^2	13.50%	15.70%	15.60%	15.50%	13.50%	15.80%	11.30%	17.50%
Year F.E.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry F.E.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country F.E.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This Table shows regression estimates of firm-level Corporate Governance and Cost of Equity under two states of investor protection. The dependent variable in this Table is Cost of Equity- Average as of December of each year. Beta is calculated by regression each firm's last 60 months or at least 24 months return on the current and lagged MSCI world market index returns. Firms with less than 24 months of historical data are excluded from the sample. Beta is winsorized to between 0 and 4 to control outliers. Market Value (MV) is the dollar denominated outstanding shares in issue. Book to Market (B/M) is the ratio of book value per share to share price. Inflation is calculated by annualizing country-specific one-year ahead realized monthly inflation rates. Momentum returns for each firm is calculated by compounding last six months return. Forecast Error is the analyst forecast error computed as actual minus expected scaled by the current price for the next year. Liquidity is from Lesmond et al. (2005) and calculated as the ratio of non-zero trading days divided by total trading days over the last quarter. Freefloat is the percentage of total shares in issue available for ordinary shareholders. Investor protection is from La Porta et al. (2006). Private and Public enforcement are from La Porta el al. (2006). Newspaper circulation is from Dyck and Zingales (2004). The model includes year, industry and country fixed effects. *p*-values are in parentheses and are based on robust standard errors.

Table 6 Corporate Governance & Cost of Equity Regression results

		Legal Origin		Financial Development			
	Unconditional	Common Law	Civil Law	FININT-High	FININT-Low	STKMKT - High	STKMKT - Low
CG	-0.029	-0.049	-0.006	-0.046	-0.015	-0.046	-0.007
	(0.000)	(0.000)	(0.492)	(0.000)	(0.217)	(0.000)	(0.542)
Beta	0.006	0.009	0.003	0.007	0.003	0.007	0.004
	(0.000)	(0.000)	(0.002)	(0.000)	(0.018)	(0.000)	(0.002)
Log(MV)	-0.004	-0.005	-0.003	-0.004	-0.002	-0.005	-0.002
	(0.000)	(0.000)	(0.000)	(0.000)	(0.010)	(0.000)	(0.005)
Log(B/M)	0.008	0.007	0.009	0.005	0.015	0.008	0.008
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inflation	0.428	0.394	0.503	0.485	0.372	0.491	0.308
	(0.000)	(0.007)	(0.002)	(0.001)	(0.037)	(0.001)	(0.186)
Momentum	-0.016	-0.024	-0.010	-0.017	-0.015	-0.023	-0.011
	(0.000)	(0.000)	(0.005)	(0.000)	(0.001)	(0.000)	(0.001)
Forecast Error	-0.038	-0.040	-0.029	-0.037	-0.046	-0.034	-0.046
	(0.000)	(0.001)	(0.142)	(0.002)	(0.499)	(0.014)	(0.064)
Liquidity	-0.012	0.005	-0.026	-0.018	0.012	-0.007	-0.007
	(0.156)	(0.610)	(0.126)	(0.099)	(0.376)	(0.557)	(0.572)
Freefloat	0.009	0.009	0.009	0.012	0.006	0.007	0.011
	(0.000)	(0.039)	(0.001)	(0.000)	(0.106)	(0.043)	(0.000)
N	7380	2860	4520	5123	2257	3092	4288
Adj-R^2	15.73%	15.40%	14.17%	17.17%	12.02%	17.68%	12.52%
Year F.E.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry F.E.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country F.E.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This Table shows regression estimates of firm-level Corporate Governance and Cost of Equity. The dependent variable in this Table is Cost of Equity- Average as of December of each year. Regressions are ran separately on the sample split on based of legal origin and financial development as reported under Legal origin and Financial development respectively. Financial development scores for Hong Kong, Ireland and Greece are not available in Khurana et al. (2006). It is assumed that Hong Kong and Ireland fall under FININT & STKMKT High and Greece under FININT & STKMKT Low. The results are qualitatively similar when we exclude these three countries from the sample or change their ordering. Beta is calculated by regression each firm's last 60 months or at least 24 months return on the current and lagged MSCI world market index returns. Firms with less than 24 months of historical data are excluded from the sample. Beta is winsorized to between 0 and 4 to control outliers. Market Value (MV) is the dollar denominated outstanding shares in issue. Book to Market (B/M) is the ratio of book value per share to share price. Inflation is calculated by annualizing country-specific one-year ahead realized monthly inflation rates. Momentum returns for each firm is calculated by compounding last six months return. Forecast Error is the analyst forecast error computed as actual minus expected scaled by the current price for the next year. Liquidity is from Lesmond et al. (2005) and calculated as the ratio of non-zero trading days divided by total trading days over the last quarter. Freefloat is the percentage of total shares in issue available for ordinary shareholders. The model includes year, industry and country fixed effects. *p*-values are in parentheses and are based on robust standard errors.

Table 7Legal Origin and Financial Development Regression Results

	Common Law				Civil Law			
	FININT-High	FININT-Low	STKMKT-High	STKMKT-Low	FININT-High	FININT-Low	STKMKT-High	STKMKT-Low
CG	-0.096	-0.026	-0.096	-0.026	-0.011	-0.005	-0.003	0.013
	(0.000)	(0.113)	(0.000)	(0.113)	(0.320)	(0.762)	(0.794)	(0.398)
Beta	0.011	0.006	0.011	0.006	0.003	0.002	0.003	0.003
	(0.000)	(0.052)	(0.000)	(0.052)	(0.013)	(0.147)	(0.020)	(0.037)
Log(MV)	-0.006	0.000	-0.006	0.000	-0.003	-0.003	-0.004	-0.002
	(0.000)	(0.860)	(0.000)	(0.860)	(0.000)	(0.001)	(0.000)	(0.002)
Log(B/M)	0.006	0.012	0.006	0.012	0.005	0.017	0.012	0.007
	(0.001)	(0.000)	(0.001)	(0.000)	(0.025)	(0.000)	(0.000)	(0.001)
Inflation	0.509	-0.107	0.509	-0.107	0.490	0.458	0.437	0.802
	(0.007)	(0.734)	(0.007)	(0.734)	(0.053)	(0.040)	(0.024)	(0.023)
Momentum	-0.026	-0.015	-0.026	-0.015	-0.010	-0.017	-0.018	-0.009
	(0.000)	(0.001)	(0.000)	(0.001)	(0.023)	(0.018)	(0.005)	(0.037)
Forecast Error	-0.039	-0.093	-0.039	-0.093	-0.027	-0.036	0.006	-0.045
	(0.002)	(0.306)	(0.002)	(0.306)	(0.145)	(0.643)	(0.709)	(0.079)
Liquidity	0.008	0.010	0.008	0.010	-0.030	0.004	-0.009	-0.021
	(0.522)	(0.569)	(0.522)	(0.569)	(0.187)	(0.868)	(0.799)	(0.236)
Freefloat	0.009	0.014	0.009	0.014	0.014	0.004	0.006	0.011
	(0.130)	(0.016)	(0.130)	(0.016)	(0.000)	(0.455)	(0.159)	(0.002)
N	1829	1031	1829	1031	3294	1226	1263	3257
Adj-R^2	18.97%	7.87%	18.97%	7.87%	10.66%	16.67%	17.71%	12.97%
Year F.E.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry F.E.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country F.E.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This Table reports regression estimates of firm-level Corporate Governance and Cost of Equity using two-stage split. The dependent variable in this Table is Cost of Equity- Average as of December of each year. Regressions are ran separately on the sample first split based on legal origin and then on financial development scores. Financial development scores for Hong Kong, Ireland and Greece are not available in Khurana et al. (2006). It is assumed that Hong Kong and Ireland fall under FININT & STKMKT High and Greece under FININT & STKMKT Low. The results are qualitatively similar when we exclude these three countries from the sample or change their ordering. Beta is calculated by regression each firm's last 60 months or at least 24 months return on the current and lagged MSCI world market index returns. Firms with less than 24 months of historical data are excluded from the sample. Beta is winsorized to between 0 and 4 to control outliers. Market Value (MV) is the dollar denominated outstanding shares in issue. Book to Market (B/M) is the ratio of book value per share to share price. Inflation is calculated by annualizing country-specific one-year ahead realized monthly inflation rates. Momentum returns for each firm is calculated by compounding last six months return. Forecast Error is the analyst forecast error computed as actual minus expected scaled by the current price for the next year. Liquidity is from Lesmond et al. (2005) and calculated as the ratio of non-zero trading days divided by total trading days over the last quarter. Freefloat is the percentage of total shares in issue available for ordinary shareholders. The model includes year, industry and country fixed effects. *p*-values are in parentheses and are based on robust standard errors.

Table 8 Legal Origin and Financial Development Regression Results using GOV44 index

	Common Law				Civil Law			
	FININT-High	FININT-Low	SKTMKT-High	SKTMKT-Low	FININT-High	FININT-Low	SKTMKT-High	SKTMKT-Low
GOV44	-0.082	-0.028	-0.082	-0.028	0.019	0.008	-0.004	0.043
	(0.000)	(0.218)	(0.000)	(0.218)	(0.143)	(0.586)	(0.719)	(0.004)
Beta	0.011	0.006	0.011	0.006	0.003	0.002	0.003	0.003
	(0.000)	(0.050)	(0.000)	(0.050)	(0.027)	(0.154)	(0.020)	(0.037)
Log(MV)	-0.006	0.000	-0.006	0.000	-0.003	-0.004	-0.004	-0.003
	(0.000)	(0.825)	(0.000)	(0.825)	(0.000)	(0.001)	(0.000)	(0.001)
Log(B/M)	0.006	0.012	0.006	0.012	0.005	0.017	0.012	0.007
	(0.000)	(0.000)	(0.000)	(0.000)	(0.029)	(0.000)	(0.000)	(0.001)
Inflation	0.555	-0.118	0.555	-0.118	0.554	0.418	0.441	0.776
	(0.003)	(0.714)	(0.003)	(0.714)	(0.028)	(0.064)	(0.022)	(0.028)
Momentum	-0.027	-0.015	-0.027	-0.015	-0.009	-0.016	-0.018	-0.009
	(0.000)	(0.009)	(0.000)	(0.009)	(0.028)	(0.021)	(0.005)	(0.042)
Forecast Error	-0.039	-0.091	-0.039	-0.091	-0.027	-0.036	0.006	-0.045
	(0.002)	(0.314)	(0.002)	(0.314)	(0.148)	(0.642)	(0.710)	(0.079)
Liquidity	0.006	0.010	0.006	0.010	-0.031	0.003	-0.009	-0.024
	(0.639)	(0.580)	(0.639)	(0.580)	(0.166)	(0.901)	(0.799)	(0.184)
Freefloat	0.007	0.014	0.007	0.014	0.014	0.003	0.006	0.01
	(0.235)	(0.020)	(0.235)	(0.020)	(0.000)	(0.522)	(0.157)	(0.004)
N	1829	1031	1829	1031	3294	1226	1263	3257
Adj-R^2	18.70%	7.80%	18.70%	7.80%	10.70%	16.70%	17.70%	13.20%
Year F.E.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry F.E.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country F.E.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This Table reports regression estimates of firm-level Corporate Governance (Gov 44 index) and Cost of Equity using two-stage split. The dependent variable in this Table is Cost of Equity- Average as of December of each year. Regressions are ran separately on the sample first split based on legal origin and then on financial development scores. Financial development scores for Hong Kong, Ireland and Greece are not available in Khurana et al. (2006). It is assumed that Hong Kong and Ireland fall under FININT & STKMKT High and Greece under FININT & STKMKT Low. The results are qualitatively similar when we exclude these three countries from the sample or change their ordering. Beta is calculated by regression each firm's last 60 months or at least 24 months return on the current and lagged MSCI world market index returns. Firms with less than 24 months of historical data are excluded from the sample. Beta is winsorized to between 0 and 4 to control outliers. Market Value (MV) is the dollar denominated outstanding shares in issue. Book to Market (B/M) is the ratio of book value per share to share price. Inflation is calculated by annualizing country-specific one-year ahead realized monthly inflation rates. Momentum returns for each firm is calculated by compounding last six months return. Forecast Error is the analyst forecast error computed as actual minus expected scaled by the current price for the next year. Liquidity is from Lesmond et al. (2005) and calculated as the ratio of non-zero trading days divided by total trading days over the last quarter. Freefloat is the percentage of total shares in issue available for ordinary shareholders. The model includes year, industry and country fixed effects. *p*-values are in parentheses and are based on robust standard errors.