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PEER FIRM EARNINGS QUALITY AND THE COST OF EQUITY

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DEDICATION

To my parents, Jingsheng Ma and Li Fang.

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ABSTRACT

This study examines how a firm's cost of equity is affected by industry peer firms' earnings quality. First, using Lambert, Leuz and Verrecchia (2007) as a theoretical basis, I predict and provide evidence that higher industry peer firms' earnings quality reduces a firm's cost of equity via the systematic market risk. Second, the negative association is more pronounced for the subsample with high industry peer earnings quality. Third, the cost of equity effect of industry peer firm earnings quality is mitigated by multinational operations and higher profitability relative to industry peers. These findings are consistent with the theory that industry peer firms' earnings quality changes the cost of equity by affecting investors' assessed covariance of the firm's expected future cash flows with that of other firms. Overall, my study contributes to a better understanding of the capital market consequences of financial information quality.

CHAPTER I. INTRODUCTION

This study examines the association between a firm's cost of equity and industry peer firms' earnings quality.[1] In a multi-securities setting, Lambert, Leuz and Verrecchia (2007) (hereafter LLV) identify paths through which not only a firm's but also peer firms' information quality affects the firm's cost of equity. Specifically, investors' assessment of a firm's value is affected by information contained in both the firm's and also peer firms' financial reports (e.g., Foster [1981]).[2] As the firm's and/or peer firms' information quality increases, investors receive less noisy signals of the firm's and peer firms' future cash flows. LLV suggest that these more accurate signals translate into lower (investors') assessed covariance of the firm's expected future cash flows with the cash flows of other firms and thus lower cost of equity.[3] Because earnings are the main resource of firm-specific accounting information (e.g. Biddle et al. [1995]; Liu et al. [2002]), I expect that peer firms' high earnings quality reduces the firm's cost of equity toward the risk-free rate through decreasing the non-diversifiable priced factor.[4]

Peer firm earnings quality is measured as either equally-weighted or market-share-weighted earnings quality of all industry peers. LLV define information quality

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[1] By industry peer firms, I refer to firms in the same industry.
[2] LLV's theory is applicable to firms whose values are correlated. My study concentrates on the cost of equity effects of industry peer firm earnings quality, because according to prior literature (e.g., Foster [1981], King [1966], Grinold, Rudd and Stefek[1989]), industry peer firms' expected cash flows are significantly correlated, and industry captures a substantial portion of stock return co-movement. For instance, Roll (1992) suggests that an industry factor explains up to 40 percent of the total stock return volatilities.
[3] The capital market pricing model (CAPM) suggests the cost of equity is a positive function of the covariance of the firm's expected future cash flows with the expected cash flows of other firms in the market.
[4] LLV's implication is that either a firm's or peer firms' high information quality moves the cost of equity toward the risk free rate. If the unconditional covariance of a firm's cash flows and other firms' cash flows is positive, then high information quality reduces the cost of equity; otherwise, high information quality increases the cost of equity. On average, firms' (especially industry peers') unconditional covariances are expected to be positive (e.g., Foster [1981]).

based on the precision of the information about firm performance/value. To match this definition, I utilize a peer firm earnings quality measure based on Francis et al. (2005). This measure reflects the extent to which peer firms' accruals map into cash flows in the prior, current, and future periods or into changes in revenues and property, plant, and equipment. Low peer firm earnings quality can be due to either peer firms' estimation errors or intentional manipulations. Therefore, this earnings quality measure meets the requirement of LLV.

I use three proxies for the cost of equity. The early financial economics literature measure a firm's ex ante expected returns based on realized (ex post) excess stock returns. I adopt this measure as one approach to estimate a firm's cost of equity. However, prior studies (e.g., Sharpe [1978]; Elton [1999]) suggest that, due to unexpected exogenous shocks, realized returns can be significantly different from ex ante expected returns. The second measure I use is the implied cost of equity derived from analyst earnings forecasts (e.g., Easton [2004]). By definition, the implied cost of equity is the discount rate that investors use to calculate the present value of a firm's expected future cash flows. This measure is not affected by noises in ex post realized returns, but its reliability can be reduced by biases in analyst forecasts (e.g., McInnis [2010]). Therefore, I use a third measure of cost of equity based on the industry-adjusted earning-price ratio (Francis et al. [2005]). This measure does not rely on either analyst forecasts or realized returns.

Using a large sample of U.S. firms from 1994 to 2010, my analyses provide empirical evidence consistent with expectation. With respect to realized excess returns, I conduct regressions on four common risk factors (market factor [MKTRF], size factor

[SMB], value factor [HML] and momentum factor [UMD]). Significant results suggest that observations with peer firm earnings quality above the median have a 14.5 to 17.5 percent lower market beta (i.e., the loading of firm excess return on market excess return). Assuming a 6% market risk premium per year, this effect translates into an 87 to 105 basis point lower cost of equity. Interestingly, I find the market risk effects of both earnings quality and peer firm earnings quality are more pronounced when the market excess return is negative (I discuss this finding and other related analyses later). High peer firm earnings quality also has a significant negative effect on the implied cost of equity and the industry-adjusted earning-price ratio. For example, observations with peer firm earnings quality above the median have a 50 basis-point lower implied cost of equity. The conclusions are robust to controlling for other variables known to affect firm risk and the cost of equity (leverage, firm size, operating cash flows, cash flow volatility, and book-to-market ratio). In summary, my findings are theory-consistent and economically significant.

I extend the analyses by examining variations in the sensitivity of the cost of equity to peer firm earnings quality. Extending the analysis in LLV, I expect industry peer firms' higher earnings quality to reduce a firm's cost of equity at an increasing marginal rate (see section 5.1). I find the negative association between cost of equity effects and peer firm earnings quality is more pronounced for the subsample with relatively higher peer firm earnings quality, consistent with expectation. Further, the theory requires the cost of equity effect of peer firm earnings quality to be dampened by low unconditional covariances. Supporting the theory, the cost of equity effects of peer firm earnings quality are mitigated for multinational firms which are geographically diversified and firms with higher profitability relative to industry peers (see section 5.2 for details). These firms have returns that are expected to be unconditionally less sensitive to market/industry-level news (e.g., Hao et al. [2011]).

Noting variations in the cost of equity effects of peer firm earnings quality is important for at least two reasons. First, from a theoretical perspective, it helps us explain and predict investor and stock price behavior. Second, from the research design perspective, it enhances the internal validity of my study and alleviates concerns about potential omitted variables (see Rajan and Zingales [1998]; Lang and Maffett [2010]). For example, Easley and O'Hara (2004) may argue that peer firms' high earnings quality could also possibly reduce a firm's cost of capital by decreasing information asymmetry among investors rather than the assessed covariances. However, those other models (e.g., Easley and O'Hara [2004]) generally have no predictions consistent with the increasing effect or the moderating role of multinational operations.[5] Therefore, testing theses variations could also largely exclude other explanations alternative to LLV.

Overall, I summarize the findings above as peer firm earnings quality having significant cost of equity effects that are consistent with a current theoretical framework (LLV) in which information quality affects investors assessed covariance of the firm's cash flows with that of other firms.

This study's motivations and contributions can be summarized in the following three major perspectives. The first motivation for my study is the current theory in LLV.

[5] For example, Easley and O'Hara (2004) suggest the ratio of private information to public information affects a firm's cost of equity. Multinational firms have more complicated operating environments that are likely to create information asymmetry between investors and managers. Thus, Easley and O'Hara (2004) should expect the cost of equity effect of peer firm's earnings quality to be greater for multinational firms, inconsistent with my findings. Therefore, it is hard to provide an explanation based on the model in Easley and O'Hara (2004) for the evidence on the direct effect.

The cost of equity effect of information quality has been an important issue in the accounting literature for decades (Beyeret al. [2010]). The early theories (e.g., Amihud and Mendelson [1986]; Easley and O'Hara [2004]) provide several possible links between information quality and the cost of equity, but these effects are primarily established in single-security settings and possibly *diversifiable* in a large economy (Hughes, Liu and Liu [2007]).[6] In a multi-securities setting, LLV identify the effects of information quality on the cost of equity via systematic risk, which is not diversifiable even as the number of securities and investors become large. Therefore, it is important to understand the validity of LLV, especially given the mixed empirical evidence provided by prior studies (e.g., Ashbaugh-Skaife et al. [2009] find evidence in favor of LLV, while Ogneva et al. [2007] do not). To the best of my knowledge, prior empirical tests on LLV predominantly focus on the link between a firm's cost of equity and its own information quality. My study provides the first empirical evidence that a firm's cost of equity depends not only on its own but also on peer firms' information quality, supporting LLV. Importantly, the analyses on variations in the effects of peer firms' information quality are also consistent with LLV. The study answers the call by Beyer et al. (2010) for more research on the cost of equity through testing the effect of information quality on the undiversifiable (systematic) component of asset risk.

The second motivation is the fact that institutions such as the SEC and FASB are concerned about the capital market consequences of existing and future regulations that could potentially change the quality of firms' financial reports (e.g., LLV). For example, Levitt (1998, p.81), the former SEC chairman suggested that "high quality accounting

[6] Easley and O'Hara (2004) develop their model in a multiple firm setting. But, Easley and O'Hara (2004) limited the number of firms in the economy. Hughes, Liu and Liu (2007) suggest the effect in Easley and O'Hara (2004) is *diversifiable* when the number of assets becomes very large.

standards …. reduce capital costs" and thus benefit the whole economy. To a firm's investors, high quality accounting standards increase not only the firm's but also peer firms' information quality. Thus, my study contributes to a more comprehensive understanding of regulations that change a large number of firms' information quality.

Further, conventional financial economics theories view positive externalities of financial information quality as a possible justification for financial reporting regulation (e.g., Dye [1990]; Beyer et al. [2010]). In the presence of externalities, profit-maximizing firms tradeoff only the firm-specific benefits and costs of high quality financial reporting and not the social values or costs (e.g., Ross [1979]; Milgrom [1981]; Grossman [1981]; Leuz and Wysocki [2008]).[7] If the externalities are *positive* (e.g., a firm's cost of equity can be lowered by peer firm's earnings quality), Admati and Pfeiderer (2000) suggest that a firm would wish to free ride on other firms' high quality financial reporting but not provide high quality information for investors to assess other firms. Their theory further suggests deficiencies caused by the positive externality could be effectively mitigated by 1) proper regulations requiring a minimum level of financial reporting quality or 2) subsidies that reduce the perceived cost of high quality financial reporting. However, if the externalities are *negative*, firms will compete with each other in financial reporting quality, thus leading their financial reporting quality to be higher than the socially optimal level. To cope with deficiencies caused by this negative externality, the theory (Fishman and Hagerty [1989]) suggests that in contrast to the traditional wisdom, socially responsible regulators should impose limits to prevent

[7] The classic financial economics theories cast doubt on the use of the firm-specific effect of information quality in evaluating regulations. These studies argue that, since firms can voluntarily enforce high quality reporting and make decisions in their best interest, regulations may not be necessary (e.g., Ross [1979]; Grossman [1981]; Milgrom [1981]). Therefore, analyses on firm-specific effects may not be enough for assessing the need for financial reporting regulation.

firms from overinvesting in improving financial reporting quality. Though I do not empirically test the consequences of the externalities (i.e., either free-ride or over-investment), my study provides evidence consistent with the existence of a positive externality of financial information quality. The finding supports the positive externality based rationale for regulations that enforce high quality financial reporting.

Third, my study shows the cost of equity effects of peer firm earnings quality depend on a firm's relative profitability and multinational operations. Thus, these analyses contribute to well-developed prior research on the economic consequences of these factors by showing additional channels through which these factors can influence a firm's value.

The next section reviews the relevant theories and lays out the hypothesis. Section 3 presents the research design and sample selection. Section 4 discusses primary empirical findings and Section 5 explains additional findings. Finally, Section 6 concludes the paper.

CHAPTER II. THEORIES AND HYPOTHESIS DEVELOPMENT

Theories on the Firm-Specific Effects of Information Quality

Prior theoretical models provide several possible links between a firm's information quality and its own cost of equity. In the secondary exchange market, investors need to be compensated for the risks of adverse selection, illiquidity, and large bid-ask spreads, resulting in a higher expected return or ex ante cost of equity (e.g., Amihud and Mendelson [1986]; Verrecchia [2001]; Garleanu and Pedersen [2004]). For example, Easley and O'Hara (2004) suggest that high information asymmetry increases the probability for insiders to trade more profitably based on private information and thus imposes a risk on uninformed investors. This risk needs to be compensated in a form of increased cost of equity. One general feature of the models above is that they generally develop in a single-firm setting, and these firm-specific (idiosyncratic) risk factors are likely to be diversified in "large economies" where investors can form portfolios of many stocks (Hughes, Liu and Liu [2007]).

In a multi-securities setting, LLV identify both direct and indirect effects of information quality on the cost of equity. As discussed in more detail later, their model starts from a classical capital asset pricing model and builds on the information economics literature. Specifically, the direct effects exist because low information quality gives investors "a noisy signal of the realization of cash flows in the future" (LLV, 375). As the firm's information quality improves, investors' assessed covariances of a firm's cash flows with the cash flows of other firms decrease, reducing the firm's cost of equity through affecting the firm's perceived systematic risk. The indirect effect happens because the firm's earnings quality changes its real decisions and distributions of cash flows. LLV show that the effect of information quality on covariances is theoretically undiversifiable even in large economies.

Theories on the Externality of Information Quality

In the presence of externalities, firms only tradeoff the firm-specific benefits and costs of high quality financial reporting but not the social benefits or costs (Coase [1960]; Admati and Pfleiderer [2000]).[8] Then, regulations potentially improve the suboptimal social welfare caused by the externalities. Therefore, it is important to theoretically understand the externality of accounting information quality. Knowledge about the externality potentially sheds light on the social value of regulating corporate financial reports (Dye [1990]; Leuz and Wysocki [2008]; Beyer et al. [2011]).[9]

CAPM in LLV

LLV suggest their model sheds light on the externalities-based rationale for financial reporting regulations. In this section, I demonstrate the mechanisms of their model in detail. Under the assumptions of the standard capital asset pricing model, my analysis starts from the following equation adopted from LLV (p. 395). LLV show that firm j's expected return is an increasing function of the covariance of firm j's end-of-period cash flow (V_j) with the sum of all firms' end-of-period cash flows (V_k). Then, this expected return is further decomposed into two components: i) the firm's own

[8] Social benefit (cost) refers to the benefit (cost) to society as a whole from the production of certain goods. Private benefit (cost) refers to the benefit (cost) to the producer of the goods. If there is a negative (positive) externality, then social costs (benefits) will be greater than private costs (benefits).
[9] For example, as discussed earlier, if there is a positive externality, Admati and Pfleiderer (2000) suggest social values can be improved by regulations requiring a minimum level of financial reporting quality.

variance and ii) the firm's covariances with other firms.[10]

$$\mathrm{Cov}\left(\tilde{V}_j, \sum_{k=1}^{j} \tilde{V}_k\right) = \underbrace{\mathrm{Cov}\left(\tilde{V}_j, \tilde{V}_j\right)}_{\text{Variance}} + \underbrace{\mathrm{Cov}\left(\tilde{V}_j, \sum_{k \neq j} \tilde{V}_k\right)}_{\text{Covariance}} \quad \text{(LLV:U1)}$$

LLV suggest that firm j's information quality can directly affect the expected returns through both the firm's own variance and covariances with other firms. Similarly, as shown below, I also argue that peer firms' information quality can directly affect the expected returns through these two components.[11]

Direct Effects through the Variance of the Firm's Cash Flows

The first channel is that high peer firm earnings quality *directly* moves firm j's cost of equity to the risk free rate through reducing investors' assessed variance of firm j's cash flows. Following LLV, investors' posterior expectation for end-of-period cash flow has a normal distribution with mean

$$E\left(\tilde{V}_j \mid Z_{j1}.....Z_{jQ}\right) = \frac{\omega_j}{\omega_j + Q\gamma_j}\tilde{V}_{0j} + \frac{\gamma_j}{\omega_j + Q\gamma_j}\sum_{q=1}^{Q} Z_{jq} \quad \text{(LLV: U2)}$$

$$\text{and precision } \omega_j + Q\gamma_j$$

where V_{0j} and ω_j represent the ex ante expected value and ex ante precision of the end-of-period cash flow, respectively. Investors receive Q pieces of information Z_{j1}……. Z_{jq} , which have implications for understanding firm j's future cash flows. LLV suggest that firm j's own variance is a negative function of γ_j, which is the precision of the Q pieces of information received. Therefore, as the information quality improves, the

[10] LLV do not number this equation. I use LLV:U1 as the number for this unnumbered equation. Equation LLV:U2 below is another unnumbered equation from LLV. In addition, equations numbered with "LLV:" refer to equations from LLV.

[11] Different from LLV, the competition for price efficiency theory predicts that a firm's price efficiency can be reduced by peer firms' high earnings quality, possibly resulting in an increase in the firm's cost of equity (Fishman and Hagerty [1989]). This effect could be diversified away in a large economy.

variance reduces. As different firms' values are likely to be correlated, the financial information of peer firms is useful to investors in assessing the distribution of firm j's expected future cash flows (Dye [1990]; Admati and Pfleiderer [2000]). Therefore, these peer firms' earnings information should be included in the information set investors receive and use, and an increase in the precision (quality) of peer firms' earnings information should *reduce* firm j's own variance. However, LLV suggest that this firm-specific variance may be diversified away in large economies when both the number of securities and the number of investors are large.

Direct Effects through the Covariance with Other Firms' Cash Flows

Though the variance effect above is theoretically diversifiable in large economies, peer firms' earnings quality can also affect firm j's covariances with other firms. To simplify the analyses, LLV assume a market with two securities, k and j. Information about firm k's cash flows is Z_k, and information about firm j's cash flows is Z_j. These two firms are each other's peer firm. They show that, conditional on firm j's information (Z_j), the covariance of firm k's and firm j's expected future cash flows is

$$\mathrm{Cov}\left(\tilde{V}_j, \tilde{V}_k \mid Z_j\right) = \mathrm{Cov}\left(\tilde{V}_j, \tilde{V}_k\right) \frac{\mathrm{Var}\left(\tilde{\varepsilon}_j\right)}{\mathrm{Var}\left(\tilde{V}_j\right) + \mathrm{Var}\left(\tilde{\varepsilon}_j\right)} \qquad \text{(LLV: 6)}$$

Where ε_j is the error contained in firm j's information set, and therefore $\mathrm{Var}[\varepsilon_j]$ is an inverse measure of firm j's information quality. This equation shows that a reduction in $\mathrm{Var}[\varepsilon_j]$ moves $\mathrm{Cov}(V_j,V_k| Z_j)$ toward zero. However, as discussed in LLV (p. 400), whether the covariance is a positive or negative function of $\mathrm{Var}[\varepsilon_j]$ depends on the sign of $\mathrm{Cov}(V_j,V_k)$, the unconditional covariance. In other words, if the sign of

$Cov(V_j,V_k)$ is positive (negative), then a reduction in $Var[\varepsilon_j]$ decreases (increases) the conditional covariance to zero. Given the fact that the covariances of peer firms' expected future cash flows are on average positive (e.g., Samuelson [1967]; Foster [1981]), [12] I expect that an improvement in firm j's information quality, on average, decreases the firm k's covariance with firm j. Because j and k are each other's peer firm, the analyses above can be alternatively stated: as peer firm earnings quality increases, the assessed covariance of one firm with its peer firm decreases, reducing the firm's cost of equity. Also importantly, LLV suggest that this covariance effect is not diversifiable even in large economies.

Indirect Effects through Real Distributions of Expected Cash Flows

Peer firm earnings quality can also indirectly affect a firm's cost of equity in an un-diversifiable way by changing the real distributions of the firm's and peer firms' cash flows. For example, higher peer firm earnings quality may mitigate the agency problems in peer firms and thus increase peer firms' expected future cash flows. Higher peer firm earnings quality can also change the expectation of the firm's future cash flows by improving the firm's real decisions in the product market (Verrecchia [2001]; Durnev and Mangen [2009]). These changes in the firm's and peer firms' expected cash flows will possibly further alter the covariances assessed by investors, resulting in an indirect effect on the cost of equity. The direction of this indirect effect, however, is unclear. In addition, the changes in the cost of equity, as indicated in both the direct and

[12] Basically, no observation in my sample continuously has negative Betas, or, in other words, unconditionally has negative Betas.

indirect effects above, would naturally change the firm's optimal investment levels,[13] and the change in investment decisions could further have an indirect feedback effect on the cost of equity. This indirect feedback effect could lead to either lower cost of equity by reducing under-investment or higher cost of equity by increasing over-investment. Though the direction of theses indirect effects is uncertain, LLV suggest that the indirect effects are generally weaker than the direct ones. Therefore, the direct effect is expected to dominate, and, on average, a negative association between peer firm earnings quality and the cost of equity is predicted.

Related Empirical Studies

Industry-Level Stock Return Co-movement and Information Transfer

LLV rely on the assumption that firms' values are correlated. Prior finance studies (e.g., King [1966], Grinold, Rudd and Stefek [1989], Roll [1992]) suggest that industry captures a large portion of stock return co-movement. For example, Roll [1992] suggests that an industry factor can explain as high as 40 percent of stock-return volatility. Therefore, my study concentrates on the cost of equity effects of industry peer firm earnings quality. Further, prior literature on "information transfers" (Eckbo [1983]; Bowen et al. [1983]; Ohlson et al. [1985]; Baginski [1987]; Firth [1996]; Laux et al. [1998]) also indicates that peer firms' expected cash flows are significantly and, on average, positively correlated. Information transfer occurs when an information event for one firm changes the security prices of other peer firms. Early studies (e.g., Foster [1981]) find a firm's earnings announcement has a statistically significant impact

[13] When a firm makes investment decisions, the firm will weigh the expected returns and the cost of financing. Thus, lower cost of external financing will likely lead the firm's optimal investment level to be higher.

on the stock prices of other non-announcing industry peers, consistent with information transfer occurring.[14] Recent studies (Gleason et al. [2008]; Xu et al. [2006]) investigate information transfers around earnings restatements. They find that when a firm restates earnings, not only the firm but also peer firms face equity market penalties. Durnev and Mangen (2009) further find those non-restating firms that experience negative stock returns are those with low investment efficiency in the past. Therefore, they conclude that a firm's restatement helps investors to realize other non-restating firms' past investment inefficiency, resulting in revisions in those non-restating firms' expected future cash flows.[15] In sum, previous studies suggest that industry peer firms' values are correlated, and this is consistent with the major assumption of LLV.

Empirical Studies on Information Quality and the Cost of Equity

Another line of related literature is the association between a firm's information quality and its cost of equity. Though most of these studies do not directly employ the theoretical model developed by LLV, their findings have implications for understanding the model's validity.

Francis et al. (2004) study the relations between the implied cost of equity and a number of earnings attributes.[16] They find that Dechow and Dichev's (2002) earnings quality measure has the stronger association with the cost of equity. Similarly, Barone (2003) notes the cost of equity and the market's perceived quality of earnings are negatively associated. Francis et al. (2005) argue that firms with higher earnings quality

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[14] This information transfer occurs because of the industry-level information contained in peer firms.
[15] Similarly, Sidak (2003) studies the case of the Worldcom accounting fraud. He finds that WorldCom's fraudulent financial information led other industry peer firms to significantly overinvest.
[16] They use seven measures: earnings quality, persistence, predictability, smoothness, value relevance, timeliness, and conservatism.

have lower coefficients on Beta in the capital asset pricing model and thus also lower cost of equity. Ecker et al. (2006) further show that the correlation between an earnings quality factor and the contemporaneous return is affected by a variety of proxies for earnings quality. Barth et al. (2013) extends the investigation to earnings transparency and find that earnings transparency is significantly negatively correlated with the expected cost of equity.

The studies above indicate that earnings quality is negatively correlated with the cost of equity, but other studies provide mixed findings. Cohen (2003) finds no association between earnings quality and a proxy for the implied cost of equity after controlling for a number of other firm characteristics. Moreover, Core, Guay, and Verdi (2008) challenge Francis et al. (2005) by arguing that an association with contemporaneous returns (traditional asset-pricing model, e.g., Fama and French [1993]) and accruals quality measure cannot provide support to the argument that earnings quality is related to lower implied cost of equity.

Using accounting information quality measures other than earnings quality, prior studies also provide evidence that accounting information quality can mitigate the implied cost of equity. Botosan (1997), Richardson and Welker (2001) and Botosan and Plumlee (2002) note higher disclosure quality (measured based on the quantity of voluntary disclosures in 10k and AIMR scores) leads to lower the cost of equity. Botosan's (1997) findings are limited to firms with low analyst following. Botosan, Plumlee, and Xie (2004) extend Botosan (1997) to the precision of information. They find that higher public information precision lowers the cost of equity whereas more precise private information leads to higher implied cost of equity. Similarly, using data from the Swiss market, Hail (2002) notes a significantly negative effect of a firm's voluntary disclosure policy on its implied cost of equity. Another aspect considered in prior studies is the quality of accounting standards. Based on the conjecture that IAS or U.S. GAAP are higher quality standards than are German domestic accounting standards, Leuz and Verrecchia (2000) show that adoption of either IAS or U.S. GAAP reduces German firms' cost of equity. Some other studies also investigate information risk and uncertainty. For example, Easley et al. (2002) show that stocks with greater information asymmetry, measured by a higher probabilities of information-based inside trading, face higher cost of equity, measured by realized future return. However, Botosan and Plumlee (2013) suggest the findings in Easley et al. (2002) are sensitive to using measures of implied cost of equity.

Studies that specifically test the theoretical model of LLV provide mixed evidence. Using internal control weaknesses (ICWs) under both SOX section 302 and section 404 as a proxy for low information quality, Ashbaugh-Skaife et al. (2009) find evidence in favor of LLV. They find ICW firms have higher systematic risk, idiosyncratic risk and cost of equity, after controlling for several firm characteristics and determinants of internal control quality. Subsequent remediations of ICWs lower the cost of equity. In contrast, Ogneva et al. (2007) do not find similar results using ICW firms that file first-time Section 404 reports. Ashbaugh-Skaife et al. use an implied cost of equity measure derived from analyst forecast data from ValueLine data. Ogneva et al. find the ValueLine measure is negative correlated with realized future return. Using alternative implied cost of equity measures based on analyst forecasts from I/B/E/S, Ogneva et al. do not find a cost of equity effect of ICW. Based on these findings, Ogneva et al. attribute the findings of Ashbaugh-Skaife et al. to sample selection biases. In summary, empirical evidence provided by prior literature is mixed with respect to the prediction of LLV that high quality accounting information reduces the firm's cost of equity.

Hypothesis

As discussed earlier, the financial information of peer firms is useful to investors in assessing the covariance of the firm's cash flows with the cash flows of peer firms. Therefore, as the quality (or precision) of peers' financial information increases, investors' assessment of the firm's systematic risk decreases (e.g., Dye [1990]; Admati and Pfleiderer [2000]; LLV [2007]). I summarize this discussion into the following testable hypothesis related to the effects of peer firm earnings quality on the firm's cost of equity (stated in the alternative form):

H_1: Higher peer firm earnings quality lowers a firm's cost of equity.

CHAPTER III. RESEARCH DESIGN

Earnings Quality

Prior empirical literature (e.g., Biddle et al. [1995]; Liu et al. [2002]) shows that earnings is the main source of firm-specific accounting information, so my study uses earnings quality as a proxy for information quality. My earnings quality measure is based on the model in Francis et al. (2005) which uses a combination of the Jones model (Jones [1991]) and Dechow and Dichev's (2002) model.

$$\frac{TACC_{it}}{TA_{it}} = \varphi_0 + \varphi_1 \frac{1}{TA_{it}} + \varphi_2 \frac{\Delta REV_{it}}{TA_{it}} + \varphi_3 \frac{PPE_{it}}{TA_{it}} + \varphi_4 \frac{CFO_{it-1}}{TA_{it}} + \varphi_5 \frac{CFO_{it}}{TA_{it}} + \varphi_6 \frac{CFO_{it+1}}{TA_{it}} + e_{it} \quad (1)$$

Where:

$TACC_{it}$ = total accruals for firm i in year t, defined as the difference between net income before extraordinary items and operating cash flow,
ΔREV_{it} = change in revenue for firm i in year t,
PPE_{it} = gross property, plant and equipment for firm i in year t,
CFO_{it} = cash flow from operations in year t,
TA_{it} = average total assets for firm i in year t.

To estimate earnings quality, I first regress the model above by each industry-year. The residuals (abnormal accruals) reflect 1) estimation error in a firm's accruals and 2) intentional accrual manipulations by the firm's management. Therefore, this measure meets LLV's definition of information quality.[17] Because the magnitude of the residuals is an inverse indicator of earnings quality, I use the negative of (five-year) standard deviation of the residuals as my measure of earnings quality (*EQ*), so that higher values of *EQ* indicate higher earnings quality.

EQ = Earnings quality, measured by the negative of firm-specific five-year standard deviation of residuals estimated from model (1).

[17] Ng (2011) also use earnings quality measures as proxies for information quality defined in LLV.

Peer Firm Earnings Quality

Peer firm earnings quality (*P_EQ*) refers to the equally-weighted or market-share-weighted (revenue) average *EQ* of all the other firms in the industry (defined based on Fama-French 48 industry classification) except firm i.[18,19] Higher values of *P_EQ* indicate higher earnings quality of other firms in the industry.

P_EQew = Peer firm earnings quality based on equally-weighted *EQ* of all other firms in the same industry during the fiscal year.
P_EQmsw = Peer firm earnings quality based on market-share-weighted *EQ* of all other firms in the same industry during the fiscal year.

By giving the same weight to each observation, *P_EQew* more closely reflects the earnings quality of a typical or average industry peer, but this measure is more likely to be affected by small firms with less economic importance. *P_EQmsw* weighs large firms more heavily, and these industry "leaders" may be relatively more important for determining assessed covariances (Bratten, Payne, and Thomas [2013]).

Ex Ante Cost of Equity

I estimate the implied cost of equity using Easton's (2004) PEG method. Botosan and Plumlee (2005) and Botosan et al. (2011) examine several different cost of equity capital measures and find that Easton's (2004) measure correlates with all the previously known risk measures in theoretically consistent directions. Easton's (2004) implied cost of equity is imputed as follows:

[18] Chan et al. (2007) examine various methods to classify industry peer firms. Their results show that Fama-French industry classification consistently outperforms other methods in explaining firm-level return co-movement.
[19] Prior studies (e.g., Leary and Roberts [2014]) also use peer firms' average value as a measure of a peer firm variable, such as peer firm leverage.

$$ICoE_{j,t} = \sqrt{\frac{EPS_{j,t+2} - EPS_{j,t+1}}{P_{j,t}}} \quad (2)$$

where $EPS_{j,t+k}$ is the last mean consensus analyst earnings forecast for year t+k for firm j. $P_{j,t}$ is the stock price for firm j. To ensure that investors have impounded information in the firm's and other firms' annual reports for fiscal year t, following prior studies (e.g., Fama and French, [1992]), $P_{j,t}$ is measured on the last trading day of June in the calendar year t+1.[20]

Industry-Adjusted Earnings-Price Ratio

Following Francis et al. (2005), I use the industry-adjusted earnings-price ratio (*IndEP*) as a summary of a firm's comprehensive risk and an alternative indicator of the cost of equity. A lower earnings-price ratio implies a lower cost of equity, because "investors are willing to pay more for a given dollar of earnings" (Francis et al. [2005, page 311]). The earnings-price ratio is industry-adjusted, because Alford (1992) finds industry peers are a good matched portfolio in terms of operational risk and growth. To calculate industry-adjusted earnings-price ratios, I first calculate the earnings-price ratio for each firm with positive earnings, measured as the ratio of income before extraordinary items divided by the market value of equity.[21] Then, I calculate the median earnings-price ratio for each industry-year.[22] Finally, for all firms with positive

[20] I use stock price at the end of June (in the calendar year t+1) to make sure that all peer firms' earnings information (in fiscal year t) are available to firm j's information. Fama and French (1992) discussed the advantages and disadvantages of measuring stock prices at the end of June. This timing of stock price measurement may not be good for firms with non-calendar fiscal year ends or industries where most firms have non-calendar fiscal year ends. In untabulated tests, I also measure stock prices at the end of July, August, and September. My results are generally robust. My results are also not sensitive to using only observations with December fiscal year-ends.
[21] $P_{j,t}$ is measured at July 1st of the calendar year t+1 (Fama and French, [1992]) .
[22] To calculate the median earnings-price ratio, I only use observations with positive earnings.

earnings,[23] I calculate a firm's industry-adjusted earnings-price ratio (*IndEP*) as the difference between its earnings-price ratio and the median industry-year earnings-price ratio. This earnings-price ratio is a positive proxy for the cost of equity. This measure has the advantage of not relying on earnings forecast data to measure the cost of equity capital.

Market Risk Factor Test

As discussed above, the effect of peer firm earnings quality on the cost of equity should occur through the market risk. Therefore, my first test uses the four-factor model (3) to examine the effect of peer firm earnings quality on a firm's market beta, the loading on market return. The dependent variable in equation (3) is $EXRET_{i.m,t+1}$, a firm's monthly excess return in month m of fiscal year t+1. The independent variables include *MKTRF*, *SMB*, and *HML* which are the market risk factor, size factor, and value factor from Fama and French (1993). I also include *UMD* as a momentum risk factor, which is publicly available from Kenneth French's website.

$$\begin{aligned} EXRET_{i,m,t+1} = {} & \varphi_0 + \beta_1^{MKT} MKTRF_{i,m,t+1} \times H\_EQ_{i,t} + \beta_2^{MKT} MKTRF_{i,m,t+1} \times H\_P\_EQ_{i,t} \\ & + \sum_n \beta_n^{MKT} MKTRF_{i,m,t+1} \times ControlVariables_{i,t} + \beta^{MKT} MKTRF_{i,m,t+1} + \beta^{HML} HML_{i,m,t+1} \\ & + \beta^{SMB} SMB_{i,m,t+1} + \beta^{UMD} UMD_{i,m,t+1} + \varphi_1 H\_EQ_{i,t} + \varphi_2 H\_P\_EQ_{i,t} + \sum_n \varphi_n ControlVariables_{i,t} \end{aligned} \quad (3)$$

[23] The option-style valuation model (e.g.,Hayn [1995]; Burgstahler and Dichev [1997]) suggests loss firms and low-profit firms are valued based on their adaptation value (book value of equity) rather than recursion value (as a function of earnings). Thus, for firms with low profitability, earnings are a less important determinant of stock price.

In equation (3), *H_P_EQ* (*H_EQ*) is an indicator variable for observations with *P_EQ* (*EQ*) above the median.[24] LLV predict *non-linear* relations between peer firm earnings quality and the cost of equity and between earnings quality and the cost of equity (see section 5.1 for details). Thus, using indicator variables instead of continuous variables alleviates concerns related to non-linearity.[25]

To test the effect of peer firm earnings quality on market beta, I interact *H_P_EQ* (as well as *H_EQ* and other control variables) with *MKTRF*. The coefficient (β_2^{MKT}) on $MKTRF_{i,m,t+1} \times H\_P\_EQ_{i,t}$ refers to the effect of peer firm earnings quality on the market risk. My hypothesis predicts that peer firms' high earnings quality reduces the cost of equity via a firm's market risk. So, I predict a negative coefficient ($\beta_2^{MKT} < 0$) on $MKTRF_{i,m,t+1} \times H\_P\_EQ_{i,t}$ in the equation (3). In addition, LLV also predict a negative coefficient (β_1^{MKT}) on $MKTRF_{i,m,t+1} \times H\_EQ_{i,t}$.

To control for differences in firms' innate characteristics in equation (3), I also adopt several control variables from prior literature (see Beaver et al. [1970]; Ashbaugh-Skaife et al. [2009]), including *LnMV*, *BM*, *STDCFO*, *LEV*, and *CFO*, which are measured at the end of fiscal year t. I include these control variables and their *interactions* with *MKTRF*. *LnMV* is measured as the log of firm j's market value at the end of fiscal year t. Banz (1981) finds a significant effect of size (market value) on stock return, and large firms are less risky than small firms. Also, portfolio theory suggests large firms' stock prices are more widely held and therefore face a lower risk

[24] The Spearman correlation between *H_P_EQ* and *H_EQ* is 0.437. In additional tests, I take measures to deal with concerns related to this high correlation.
[25] Using indicator variables mitigates concerns about model misspecification because it does not force the cost of equity to be a cubic, quadratic or any other specific function of peer firm earnings quality. In additional tests, I also use other non-linear specifications, such as the square of *P_EQ*.

of mispricing (e.g., Beaver et al. [1970]; Klein and Bawa [1977]). *BM* is measured as the log of the ratio of firm j's book value to its market value at the end of fiscal year t.[26] Stattman (1980) finds BM significantly explains cross-sections of stock return. Fama and French (2003) further suggest *BM* reflects a firm's relative distress and future earnings prospects. Firms with poor earnings prospects, signaled by low market value and high *BM*, would be penalized by higher cost of equity. *LEV* is total debt divided by total assets at the end of fiscal year t. As a firm's leverage increases, the earnings stream of stockholders become more risky, thus leading to a higher cost of equity (Modigliani and Miller [1958]; Beaver et al. [1970]). *CFO* is cash flow from operations divided by average total assets, and *STDCFO* is the standard deviation of cash flow from operations divided by total assets calculated using the most recent five fiscal years. *CFO* is used to reflect a firm's operational performance, and *STDCFO* measures the volatility of operation. Ashbaugh-Skaife et al. (2009) suggest firms with better and less volatile operating performance are expected to be less risky. The appendix includes details on variable measurements.

Implied Cost of Equity Test

I also use the following equation as the second test of my hypothesis. The equation uses the cost of equity as a comprehensive measure of firm risk and tests how peer firm earnings quality affects the cost of equity.

[26] By taking the log of book to market ratio, firms with negative book equity are deleted. Firms with negative book equity are usually loss firms and thus expected to have poor future prospects. For firms with positive equity, a higher book to market ratio suggest a worse earnings prospect (Fama and French [2003]). If negative book equity firms are not deleted, book to market ratio will not be a monotonic measure of future earnings prospect. Therefore, following Fama and French (2003), firms with negative book equity are deleted.

$$ICoE_{i,t} = \delta_0 + \delta_1 H\_EQ_{i,t} + \delta_2 H\_P\_EQ_{i,t} + \sum_n \delta_n ControlVariables_{i,t} \quad (4)$$

The dependent variable in equation (4) is the implied cost of equity. The primary independent variables are *H_P_EQ* and *H_EQ*. H_1 suggests peer firms' high earnings quality reduces a firm's risk and cost of equity (i.e., $\delta_2 < 0$).[27] Also, according to LLV, a firm's own earnings quality should reduce its risk and cost of equity (i.e., $\delta_1 < 0$). I include all the control variables from equation (3).

The effect of earnings quality on cost of equity predicted by LLV should be captured by "an appropriately specified *forward-looking beta* and the expected return on the market as a whole" (p. 388). To test whether the effect of *H_P_EQ* on *ICoE* occurs through *Beta*, I first estimate equation (4) without controlling for *Beta*. Then, I re-estimate equation (4) after controlling for *Beta*. $Beta_{j,t}$ is estimated based on daily returns data over rolling two-year windows prior to the end of year t; the data to estimate *Beta* are from *CRSP*. Measuring *Beta* with ex post returns (instead of forward-looking information) indicates that measurement error may not allow *Beta* to fully control for the impact of *H_P_EQ* on *ICoE*. Therefore, I expect the coefficients δ_1 and δ_2 to be less negative after controlling for *Beta* (but not necessarily equal to zero as LLV would predict).

Industry-Adjusted Earnings-Price Ratio Test

I employ the following equation (5) to further test my hypothesis. The industry-adjusted earnings-price ratio (*IndEP*) is used as an indirect measure of the cost of equity.

[27] The interpretation of the coefficient on *H_P_EQ* (*H_EQ*) is the difference in the cost of equity between firms above versus below the median peer firm earnings quality (earnings quality).

$$IndEP_{i,t} = \alpha_0 + \alpha_1 H\_EQ_{i,t} + \alpha_2 H\_P\_EQ_{i,t} + \sum_n \alpha_n ControlVariables_{i,t} \quad (5)$$

Similar to the implied cost of equity test, I expect the coefficient (α_1) on *H_EQ* and the coefficient (α_2) on *H_P_EQ* to be negative. Also, I estimate question (5) both with and without controlling for *Beta*. In addition to all the controls variables from equation (4), equation (5) further includes *Growth*, the growth rate of revenue. This is because higher-growth firms tend to have smaller earnings-price ratios (Francis et al. 2005).

CHAPTER IV. EMPIRICAL ANALYSES

Sample Distribution and Descriptive Statistics

My sample includes U.S. firms in *Compustat*, *I/BE/S* and *CRSP* from 1994 to 2010.[28] I delete observations with missing data to estimate measurements of *EQ, P_EQ, LnMV*, *BM*, *LEV, Beta* and other variables. Further, I winsorize the sample at the 1% and 99% levels for all continuous variables, except *MKTRF*, *SMB*, *HML*, and *UMD*. I identify 593,728 firm-month observations for the test of equation (3), 23,017 firm-year observations for the test of equation (4), and 40,102 firm-year observations for the test of equation (5). Table 1 summarizes the sample selection process. The bottom rows of Table 1 decompose the sample distribution across the sample years. The number of observations generally increases for the implied cost of equity test from 1994 to 2010. For the earnings-price ratio test and the market risk factor test, the number of observations is relatively stable across the sample period.

Panels A, B, and C in Table 2 show the descriptive statistics along with Pearson correlations for the implied cost of equity test, the industry-adjusted earnings-price ratio test, and the market risk factor test. The mean *EXRET*, *ICoE* and *IndEP* are 0.009, 0.127 and 0.006, respectively. These statistics are comparable to prior studies.[29] The average monthly market risk premium (*MKTRF*) is 0.005, so the annual market risk premium is approximately 600 basis points ($=0.005^{12}$). As expected, the sample for the implied cost of equity test has higher average *LnMV* than the samples for the other two

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[28] My final sample starts from 1994 because less than 300 firms per year have data to estimate the cost of equity measure used in my paper before 1994. These firms do not cover a significant portion of the market capitalization.

[29] For example, statistics about implied cost of equity are comparable to Easton (2004). In 1995, the average implied cost of equity for my sample is 0.104, and Easton (2004) reports an average implied cost of equity of 0.107 for the year of 1995.

tests, because the estimation of *ICoE* requires data on earnings forecasts by analyst who are more likely to follow large firms. The two alternative measures for peer firm earnings quality, *P_EQew* and *P_EQmsw*, are highly correlated for all the three samples. Not surprisingly, *EQ* is also highly correlated with both *P_EQew* and *P_EQmsw*. Among others, the negative correlation between *LnMV* and *BM* in Panel C is the largest (−0.429). None of these correlations are high enough to induce any concerns about multi-collinearity. Most importantly, I observe significant and reasonably large negative correlations between earnings quality (*EQ* and *P_EQ*) and proxies for the firm's cost of equity (*EXRET, ICoE* and *IndEP*).

Further, I employ a variance decomposition method to analyze the time-series and cross-sectional variations of *ICoE* and *EQ* or *P_EQ*.[30] For *ICoE* (*EQ*) [*P_EQ*], I find 47%,48%,5% ;(65%,15%, 20%); [67% ,6%, 27%] of the total variation is from within-firm variation, cross-firm-within-industry variation, and cross-firm-cross-industry variation.

Table 3 shows the sample distribution and (mean) statistics across Fama-French 48 industries. The three largest industries (based on the number of observations in the implied cost of equity tests) are Business Services, Electronic Equipment, and Pharmaceutical. The bottom rows of Table 3 calculate (cross-industry) correlations between industry-average *EQ* (*P_EQmsw*) and the industry -average values of two

[30] First, for each firm i, I calculate the variances (Var1) of *ICoE* and *EQ* or *P_EQ* within this firm. Var1 is the within-firm variation for firm i. Then, I add up these Var1s to get the total within-firm variations (∑Var1).Second, for each industry j, I calculate the variances (Var2) of *ICoE* and *EQ* or *P_EQ* within this industry. Var2 is the within-industry variation for industry j. Then, I add up these Var2s to get the total within- industry variations (∑Var2). To get cross-firm-within-industry, I subtract off ∑Var1 from ∑Var2. Cross-firm-within-industry variation is denoted as ∑Var3= ∑Var2-∑Var1.Third, for the full sample, I calculate the total variances (∑Var4) of *ICoE* and *EQ* or *P_EQ*. ∑Var4 is the total variation for the sample. To get cross-firm-cross-industry variation, I subtract off ∑Var3 and ∑Var1 from ∑Var4. Cross-firm-cross-industry variation is denoted as ∑Var5= ∑Var4-∑Var3-∑Var1.

proxies for the cost of equity: *ICoE* and *IndEP*. *EQ* (*P_EQmsw*) is negatively correlated with *ICoE* and *IndEP*. All these findings are consistent with my hypothesis.[31]

Portfolios Using Sorts on EQ and P_EQ

In Panel A Table 4, I test differences in *ICoE*, *Beta*, and *IndEP* between equally-weighted portfolios using sorts based on *EQ* and *P_EQ.* In the first column, I sort observations based on *EQ (*measured at the end of year t) into quartiles. Then, I calculate the equally-weighted average *ICoE*, *Beta* and *IndEP* for year t. The first column shows the portfolio with low *EQ* (*EQ* in the bottom quartile). The second column shows the portfolio with high *EQ* (*EQ* in the top quartile). The third column tests the mean difference between the two portfolios using t-statistics. The high *EQ* portfolio has significantly lower *ICoE* (−0.043), *Beta* (−0.301)*,* and *IndEP* (−0.007). The second and third columns sort observations based on *P_EQ* (measured at the end of year t) into quartiles.[32] For both measures of *P_EQ*, I find the portfolio with high *P_EQ* (*P_EQ* in the top quartile) have significantly lower *ICoE*, *Beta,* and *IndEP*. For example, the portfolio with high *P_EQew* has a 0.029 lower *ICoE*, suggesting a 290 basis-point lower implied cost of equity.

Because *EQ* and *P_EQ* are highly correlated, I further provide residual sorts in Panel B to isolate the effects of *EQ* and *P_EQ*. To conduct the residual sorts, I first regress *ICoE*, *Beta,* and *IndEP* on *EQ*, separately.[33] Then, I obtain the residuals from these regressions. Further, for each of the portfolios formed based on *P_EQ*, I calculate

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[31] Results in table 3 are similar if I use *P_EQew* instead of *P_EQmsw*.
[32] The results are similar if the portfolios are constructed annually based on the rank of *P_EQ* in each year.
[33] Results are similar if I regress *ICoE*, *Beta,* and *IndEP* on the square or the cube of *EQ* in the first stage.

the equally-weighted average values of the regression residuals. All results remain consistent with expectation. Compared to multiple regressions, tests using sorts have the advantage that the relation between dependent variables and sort variables are not forced to be linear. Thus, results using sorts can complement the multiple regression tests later.

Market Risk Factor Test

The four factor regression is estimated with firm-clustered standard errors in Table 5. As in equation (3), the regression includes four common risk factors (market factor [*MKTRF*], size factor [*SMB*], value factor [*HML*], momentum factor [*UMD*]), several firm attributes, and their interactions. The first column in Table 5 estimates a base model. As expected, I find a significant negative correlation between *EXRET* and *H_EQ*×*MKTRF* (−0.229; *t*-statistics= −15.69), consistent with earnings quality reducing a firm's market risk (Ng [2011]). The second and third columns test the effects of peer firm earnings quality. I find significant negative coefficients on *H_P_EQ*×*MKTRF* for the two alternative measures of *H_P_EQ*. The coefficients on *H_EQ*×*MKTRF* are still significantly negative.

In columns (a4) to (a7), I split the sample based on whether the market excess return is positive or negative. As shown in section 2.2.3, equation (6) from LLV suggests the effect of earnings quality and that of peer firm earnings quality are greater when the unconditional covariance is greater. Interestingly, recent finance studies (e.g., Ang and Chen, [2002]; Hong, Tu and Zhou, [2007]) find most stock returns are more highly correlated when the market goes down. Therefore, I expect *H_EQ* and *H_P_EQ* to have greater impacts on beta when the market goes down. My results show that for market-level bad news, the coefficients on *H_EQ×MKTRF* and *H_P_EQ×MKTRF* are highly significant. However, none of these effects are significant for market-level good news. Also, using Z-statistics, the coefficient on *H_P_EQ×MKTRF* is significantly more negative for negative market returns at the 1% level (one tail test). In general, these findings are consistent with the theoretical framework of LLV. To further relive concerns about outliers, untabulated regressions delete penny stocks (with stock prices < $5), which are economically less important and also more likely to be affected by market micro-structure noises. My results remain robust. Overall, the findings support the hypothesis.

To further highlight the economic significance of my findings, I calculate the cost of equity effects of *H_P_EQ* via the market risk. Panel B details the calculation process. Based on section 4.1, the annual market risk premium is about 600 basis points. Results in the Panel A suggest that observations with *P_EQew* (*P_EQmsw*) above the median have a 17.5 (14.5) percent lower market beta. Thus, firms with *P_EQew* (*P_EQmsw*) above the median have, on average, 105 (87) basis-point lower cost of equity.

Implied Cost of Equity Test

Table 6 shows the estimation results of equation (4) with firm-clustered standard errors. To test the possible mediation role of *Beta*, I first estimate the model without controlling for *Beta* in Panel A, and then Panel B further controls for *Beta*. In the first column, a base model is estimated. Using *ICoE* as the dependent variable, the coefficient on *H_EQ* is −0.006 (*t*-statistics= −8.84), suggesting that earnings quality above median lowers the implied costs of equity by 60 basis points. This effect is consistent with prior studies (Francis et al. 2004) which find a negative effect of earnings quality on the cost of equity.

The second to seventh columns test my hypothesis using *H_P_EQ* as an independent variables. Before controlling for *Beta*, columns (2) and (5) show significant negative coefficients on *H_P_EQ* for the two alternative measures, consistent with expectations. These results suggest that peer firm earnings quality above the median lowers the implied costs of equity by 50 basis points. Interestingly, after including *Beta* as a predictor, coefficients on *H_P_EQ* reported in columns (2) and (5) become less negative and generally insignificant at the conventional level, suggesting that the effect of *H_P_EQ* on *ICoE* occurs through *Beta*. However, columns (3) and (6) further show the differences between coefficients on *H_P_EQ* before and after controlling for *Beta* are insignificant at the conventional level. For the other variables, *ICoE* is negatively correlated with *LnMV*, and *CFO* and positively correlated with *BM*, *STD_CFO* and *Lev*, all consistent with expectations.

I further use path analyses to test the mediation role of *Beta* in the relation between *H_P_EQ* and *ICoE*. I estimate a model with the paths shown in Panel A Figure III. The theory would predict the effects of earnings quality and peer earnings quality on the cost of equity via *Beta* to be negative. Consistent with the expectation, I find the effects of equally (market share) weighted peer earnings quality on the cost of equity via *Beta* to be −0.018 (−0.016) with p-value= −13.94 (−13.17). These results suggest significant mediation effect of *Beta*.[34]

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[34] Untabulated results also suggest a significant mediation role of *Beta* in the relation between *H_ EQ* and *ICoE*.

To further alleviate concerns related to biased analyst forecasts, untabualted additional tests delete observations with analyst forecast errors (based on either one-year-ahead earnings forecasts or two-year-ahead forecasts) in the top and bottom deciles. The findings remain robust. Also, my results are robust to further controlling for analyst forecast errors.

In summary, the above findings are consistent with negative effects of a firm's earnings quality and peer firm earnings quality on the implied cost of equity. The results are at least partially captured by a firm's systematic risk.

Industry-Adjusted Earnings-Price Ratio Test

Table 7 shows the estimation results of equation (5) with firm-clustered standard errors. The dependent variable is *IndEP*. Similar to Table 6, columns (1) estimates a base model. Consistent with expectation, *IndEP* is negatively correlated with *H_EQ* (−0.006, *t*-statistics= −11.40). Columns (2) and (5) estimate the model without controlling for *Beta*; columns (3) and (6) further controls for *Beta*. In columns (2) and (5), I find significant negative coefficients on *H_EQ* and *H_P_EQ*, suggesting observations with *P_EQ* (*EQ*) above median have 0.3 (0.4) percent lower industry-adjusted earnings-price ratios. In columns (3) and (6), all of the negative coefficients become less significant after controlling for *Beta*, though columns (4) and (7) suggests the changes in coefficients are insignificant. Collectively, these results are consistent with expectations.

As in the implied cost of equity test, I further use path analyses to test the mediation role of *Beta* in the relation between *H_P_EQ* and *IndEP*. I estimate a model with the paths shown in Panel B Figure III. The theory would predict the effects of earnings quality and peer earnings quality on the cost of equity via *Beta* to be negative. Consistent with the expectation, I think the effects of equally (market share) weighted peer earnings quality on the cost of equity via *Beta* to be −0.009 (−0.010) with p-value=−10.25 (−10.33). These results suggest significant mediation effect of *Beta*. [35]

In the primary analyses above, I deleted observations with negative earnings, because the (liquidation) option-style valuation model (e.g., Hayn [1995]; Burgstahler and Dichev [1997]) suggests low-profit firms are valued based on their adaptation value (book value of equity) rather than recursion value (as a function of earnings). Thus, for firms with low profitability, earnings are a less important determinant of stock price. As an untabualted additional test, I further deleted observations with profitability (measured by ROE) in the bottom decile. My findings remain robust.

[35] Untabulated results also suggest a significant mediation role of *Beta* in the relation between *H_ EQ* and *IndEP*.

CHAPTER VI. ADDITIONAL ANALYSES

Increasing Nonlinear Effect of Peer Firm Earnings Quality

In section 2.2.3, equation (6) from LLV details the direct effect of peer firm earnings quality. If we further differentiate equation (6) from LLV by peer firm earnings quality, we get the sensitivity of a firm's assessed covariance to peer firm earnings quality as in the equation (7).[36]

$$\partial \mathrm{Cov}\left(\tilde{V}_j, \tilde{V}_k \mid Z_j\right) \Big/ \partial \mathrm{Var}\left(\tilde{\varepsilon}_j\right) = \mathrm{Cov}\left(\tilde{V}_j, \tilde{V}_k\right) \frac{\mathrm{Var}\left(\tilde{V}_j\right)}{\left[\mathrm{Var}\left(\tilde{V}_j\right) + \mathrm{Var}\left(\tilde{\varepsilon}_j\right)\right]^2} \qquad (7)$$

In Equation (7), the denominator is a positive function of the variance of peer firm's earnings noise Var(ε_j). Thus, higher peer firm earnings quality (i.e., lower variance) would result in a smaller denominator. Consequently, the sensitivity of a firm's assessed covariance to peer firm earnings quality (as in equation 7) is greater for higher levels of peer firm earnings quality. In other words, peer firms' higher earnings quality should reduce a firm's cost of equity at an increasing marginal rate. In Figure II, I also provide a 3D plot of equation (6) from LLV. The figure also indicates the same non-linear effect as predicted by equation (7).

Table 8 Panel A and Panel B provide evidence consistent with this non-linear effect by using the two alternative measures of peer earnings quality, respectively. I split the sample into two subsamples based on *P_EQ*. Then, in each of the two subsamples, I re-estimate equations (3), (4), and (5).[37] For all three sets of tests, I find the coefficients on *H_P_EQ* are significantly more negative for the subsample with

[36] This equation is numbered equation (7) to avoid possible confusions with equation (6) from LLV.
[37] For the tests in the two subsamples, *H_P_EQ* is recoded as 1 when peer firm earnings quality is above median in the respective subsample.

higher *H_P_EQ* at 1% level (one tailed *Z*-test), consistent with expectation of a non-linear direct effect.

Moderating Effect of Unconditional Covariance

Based on equation (7), we can also see the sensitivity of a firm's assessed covariance to peer firm earnings quality is a positive function of the *unconditional* covariances of the firm's expected future cash flows with that of other firms $Cov(V_j,V_k)$. Panels C, D and E of Table 8 provide tests of the role of unconditional covariances. Panels C and D of Table 8 splits the sample into two subsamples based on whether a firm is a multinational firm or not. Multinational firms are geographically diversified and thus likely to have lower covariances with industry peers (i.e. $Cov(V_j,V_k)$). Therefore, I expect the effect to be mitigated by a firm's multinational operation. For all three sets of tests, I find the coefficients on *H_P_EQ* are generally less negative for multinational firms than for domestic firms. [38,39] These findings are consistent with the effect of peer firm earnings quality as expressed in Equation (7).

In Panel E of Table 8, I split the sample into two subsamples based on a firm's relative profitability, the rank of a firm's return on equity with-in an industry-year. Using both Cournot and Bertrand competition models, Hao et al. (2011) show a firm's profitability, relative to its industry peers, reduces its stock price covariances with its industry peers (i.e. $Cov(V_j,V_k)$). Therefore, I expect the direct effect to be mitigated by a firm's profitability (relative to industry peers). Panel C of Table 8 finds that the

[38] One exception is the implied cost of equity tests using *P_EQew*.
[39] Based on Z-statistics, the difference in the coefficients on *H_P_EQ* between multinational firms and domestic firms is significant at 10% level (one tail) for the market risk factor test and industry- adjusted-earnings-to-price ratio test.

coefficients on *H_P_EQ* are more negative for the subsample with lower relative profitability, supporting a moderating role of relative profitability.[40]

Other Additional Tests (Untabulated)

Alternative Implied Cost of Equity Measure

To mitigate concerns about biased analyst forecasts, I deleted observations with large analyst forecast errors in my primary tests. In this section, I further use $ICoE_{CS}$ as a second measure of implied cost of equity which does not use analyst forecasts as inputs. For the calculation of $ICoE_{CS}$, earnings forecasts are generated by a cross-sectional model adopted from Hou et al. (2012). Hou et al. (2012) find the cross-sectional-model-based implied cost of equity estimate is a reliable predictor of future returns. Specifically, for each year between 1994 to 2010, the following cross-sectional model is estimated using the previous ten years (t-10 to t-1) of data:

$$EARN_{it+k} = \phi_0 + \phi_1 TA_{it} + \phi_2 Div_{it} + \phi_3 DivDum_{it} + \phi_4 EARN_{it} + \phi_5 NegEARN_{it} + \phi_6 TACC_{it} + e_{it} \quad (8)$$

Where $EARN_{it+k}$ denotes the earnings of firm i in year t+k (k=0, 1 or 2), TA_{it} is the total assets, Div_{it} is the dividend payment, $DivDum_{it}$ is a dummy variable set to 1 for dividend payers and 0 otherwise, $NegEARN_{it}$ is a dummy variable set to 1 for firms with negative net income and 0 otherwise, $TACC_{it}$ is total accruals. All of these variables are measured on a per share basis (in raw dollar values).

For each year t during my sample period (1994 to 2010), I compute earnings forecasts for the future two years by multiplying the independent variables as of year t

[40] I did not perform the industry-adjusted-earnings-to price ratio test for subsamples split based on relative profitability, because as discussed above, the industry adjusted earnings to price ratio by itself is not a good proxy for the cost of equity for the subsample of low profitability.

with the coefficients from the pooled regression estimated using the previous ten years (t-10 to t-1) of data. This procedure ensures that earnings forecasts are out of sample.

During my sample year, I find 8,563 observations for tests using $ICoE_{CS}$, smaller than the sample in my primary tests.[41] The mean of $ICoE_{CS}$ is 0.137, higher than that of *ICoE.* In unreported tests, I still find significant negative coefficients on both *H_EQ* (−0.026, *t*-statistics=−8.32) and $H\_P\_EQ_{ew}$ (−0.027, *t*-statistics=−8.40) [$H\_P\_EQ_{msw}$ (−0.030,*t*-statistics=−9.96), significantly reducing concerns about biased analyst forecasts.[42]

Influential Peer versus Similar Peer Firms

The tests above use all the industry peers in measuring *P_EQ*. This section further asks whether influential peer firms or similar peer firms have greater effects on the cost of equity. For each industry-year, I first calculate the quartile rank of my sample firms based on market value. Then, a firm's similar peers refer to other peer firms in the same quartile, and influential peers are defined as peer firms in the top quartile (with the largest market value). I re-estimates equations (4), (5), and (6) by including two variables instead of *P_EQ*: the equally-weighted average earnings quality of influential peers ($P\_EQ_{influential}$) and that of similar peers ($P\_EQ_{similiar}$). For the market risk factor test [the industry-adjusted tests], the results suggest the coefficients on $H\_P\_EQ_{similiar} \times MKTRF$ [$H\_P\_EQ_{similiar}$] is significantly less negative than those on $H\_P\_EQ_{influential} \times MKTRF$ [$H\_P\_EQ_{influential}$] at the 5% level, suggesting that influential

[41] I keep this implied cost of equity measure in my additional test because the sample size is much smaller than the primary test sample.

[42] I did not use this measure in my primary tests, because Hou et al. (2012) find this measure is negatively correlated with beta, casting doubt on the reliability of this measure. Consistent with Hou et al., my tests also find a negative correlation between Hou et al. cost of equity measure and beta.

peers' earnings quality plays a more important role in determining the cost of equity. However, for the implied cost of equity test, the coefficients on $H\_P\_EQ_{similiar}$ (−0.005,*t*-statistics=−2.54) and $H\_P\_EQ_{influential}$ (−0.007,*t*-statistics=−3.49) are not statistically different.

Alternative Industry Classification

My primary industry definition is based on Fama-French 48 industry classification, because Fama-French industry classification consistently outperforms other methods in explaining firm-level return co-movement (Chan et al. 2007). This section further uses two-digit Standard Industrial Classification (SIC) codes. SIC codes are used by US government agencies (e.g. U.S. Securities and Exchange Commission) to classify industry areas. Untabulated results suggest my results are robust for all tests.

Robustness Tests

I examine the sensitivity of my findings to several measurement and econometrics concerns: variable specification, model specification, estimation procedure, and sample selection process. With respect to variable specification, I use alternative definitions of *H_P_EQ*. For example, *H_P_EQ* is alternatively defined as the top quartile of peer firm earnings quality. I find similar results for the implied cost of equity test and the market risk factor test. Also, I use the market-value-weighted average of peer firms' earnings quality. Further, I employ several other alternative earnings quality measure specifications (see the appendix II).[43] In addition, I also use two additional measures of earnings predictability (e.g., Dichev, and Tang, 2009): 1)

[43] All the results are robust to using these alternative measures, expect that the industry-adjusted-earnings-to-price ratio tests are not robust to using Jones and modified Jones models.

EarnPred which is the negative of the 10-year standard deviation residuals from a model which regress the current year's earnings onto prior year's earnings;[44] 2) *AFDisp*, which is the negative of the standard deviation of analyst earnings forecast scaled by stock price.[45] Results suggest the results are generally robust to using *AFDisp* as an alternative measure. For tests using *EarnPred* as the alternative measure, results are only significant for the implied cost of equity tests. With respect to estimation procedure and model specification, I repeat my tests by using standard errors clustered by firm and year. My results remain qualitatively similar. Further, I control for several additional variables: the number of firms in the industry (*#Peer*), the average *LnMV* for all other firms in the industry (*P_LnMV*), the average *BM* for all other firms in the industry (*P_BM),* the average *STDCFO* for all other firms in the industry (*P_STDCFO),* the average *LEV* for all other firms in the industry (*P_LEV),* and the average *CFO* for all other firms in the industry (*P_CFO).* Untabualted results suggest results are not sensitive to these additional control variables for the implied cost of equity tests and market risk factor tests.[46] Finally, I add three additional sample selection requirements: 1) I truncate the sample at the top and bottom 1% levels for all continuous firm-level variables; 2) I delete observations in three industries (i.e., Financial Banking, Insurance, and Investment Banking); 3) I delete observations in 2002 and 2008 when the stock market declines severely. My primary results are generally robust to these sample selection requirements.

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[44] I run the regression by firm over the last ten year.
[45] Arguably, if earnings are more predictable, the disagreement between analysts will be smaller. Therefore, *AFDisp* should be a measure of earnings predictability.
[46] Unfortunately, the results are insignificant for the industry-adjusted-earnings-to-price ratio test.

CHAPTER VI. CONCLUSIONS

First, using Lambert, Leuz, and Verrecchia (2007) as a theoretical basis, I predict and provide evidence on a negative association between a firm's cost of equity and industry peer firms' earnings quality. Second, I find that industry peers' higher earnings quality reduces the firm's cost of equity at an increasing marginal rate. Third, the cost of equity effect of industry peer firm earnings quality is mitigated by multinational operations and higher profitability (relative to industry peers). These findings are consistent with the theory that industry peer firms' earnings quality changes the cost of equity by affecting investors' assessed covariance of the firm's cash flows with that of other firms.

I acknowledge that my study has weaknesses, and I need to make several caveats. First, I acknowledge that my arguments rely on the validity of my proxies for earnings quality and peer firm earnings quality. My results are robust to using alternative measures. Second, like any other archival study, the current study cannot control for every potential confounding effect. However, as discussed earlier, testing the non-linear effect and the moderating roles of multinational operations or relative profitability makes it more difficult to propose alternative arguments and also mitigates problems of potential omitted variables (see Rajan and Zingales [1998]; Lang and Maffett [2010]). Third, LLV's theory is applicable to all the firms whose values are correlated. My study concentrates on industry peer firms because of the noted significant positive correlations between industry peer firms' values (e.g., Foster [1981]). Of course, a firm's expected cash flows can be correlated with non-industry-peer firms; rivals' expected cash flows can even be negatively correlated (Kim, Lagina and Park [2010]). I leave it for future research to examine the cost of equity effects of non-industry-peer firms' and rivals' information quality. Finally, Gao (2010) suggests the cost of capital may not move parallel with investor welfare. Therefore, in cases where the cost of capital moves in opposition to investors' welfare, readers should interpret these results with caution.

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APPENDIX I.
Variable Definitions

Variable	Definition
EXRET	= Monthly firm stock return minus the risk free return.
ICoE	= Analyst-based implied cost of equity, measured based on the Easton (2004)'s implied cost of equity model: $$ICoE_{j,\,t} = \sqrt{\frac{EPS_{j,\,t+2} - EPS_{j,t+1}}{P_{j,t}}},$$ where $EPS_{j,t+k}$ is the last mean consensus analyst earnings per share forecast for year t+k for firm j. $P_{j,t}$ is the ending stock price on the last trading day of June in the calendar year t+1. Analyst forecast data are from *IBES*.
IndEP	= Industry-adjusted earnings-price ratio, measured as the difference between the earnings-price ratio and the industry-year median earnings-price ratio.
EQ	= Earnings quality, measured as the negative of the 5-year standard deviation of residuals estimated from the Francis et al. (2005) model.
H_EQ	= High earnings quality, an indicator variable for observations with *EQ* above sample median.
P_EQew	= Peer firm earnings quality, measured as the equally-weighted average earnings quality of all other firms in the same industry during the fiscal year.
P_EQmsw	= Peer firm earnings quality, measured as the market-share-weighted average earnings quality of all other firms in the same industry during the fiscal year.
H_P_EQew	= High peer firm earnings quality, an indicator variable for observations with *P_EQew* above sample median.
H_P_EQmsw	= High peer firm earnings quality, an indicator variable for observations with *P_EQmsw* above sample median.
Beta	= Systematic risk at year t, measured by using the CAPM, estimated using daily returns data over rolling two-year windows; I require a minimum of 180 daily returns for the CAPM estimation.
MKTRF	= Market factor, monthly market excess return.
SMB	= Size factor, the performance of small stocks relative to big stocks.
HML	= Value factor, the performance of value stocks relative to growth stocks.
UMD	= Momentum factor, the performance of past winners relative to past losers.
CFO	= Cash flow from operations divided by average total assets.
STD_CFO	= Standard deviation of cash flows from operations divided by average total assets over the prior five fiscal years.
LnMV	= Firm size, measured as the natural log of the market value.

BM	=	The log of the ratio of book value to market value.
Lev	=	Leverage, measured as total debt divided by total asset.
Growth	=	Growth, measured as change in revenue divided by beginning revenue.

APPENDIX II.

Alternative Specifications of Earnings Quality Measure

In addition to the earnings quality measure based on Francis et al. (2005), I also use the following alternative earnings quality measures.

First, while my primary measure is the negative of the (five-year) standard deviation of the residual from the Francis et al. (2005) model, I also use the negative of the absolute value of the residuals from the Francis et al. (2005) model.

Second, I use the Jones model (A1) and modified Jones model (A2) to predict earnings quality. Earnings quality is the negative of the unsigned residual from the following model.

$$\frac{TACC_{it}}{TA_{it}} = \varphi_0 + \varphi_1 \frac{1}{TA_{it}} + \varphi_2 \frac{\Delta REV_{it}}{TA_{it}} + \varphi_3 \frac{PPE_{it}}{TA_{it}} + e_{it} \qquad \text{(A1)}$$

$$\frac{TACC_{it}}{TA_{it}} = \varphi_0 + \varphi_1 \frac{1}{TA_{it}} + \varphi_2 \frac{\Delta REV_{it} - \Delta REC_{it}}{TA_{it}} + \varphi_3 \frac{PPE_{it}}{TA_{it}} + e_{it} \qquad \text{(A2)}$$

Where, ΔREC_{it} = change in receivables for firm i in year t.

Third, I use an alternative measure of earnings quality based on Kothari et al. (2005). Kothari et al. develop a performance matched Jones model (A3) to predict earnings quality. Earnings quality is the negative of the residual from the following model.

$$\frac{TACC_{it}}{TA_{it}} = \varphi_0 + \varphi_1 \frac{1}{TA_{it}} + \varphi_2 \frac{\Delta REV_{it}}{TA_{it}} + \varphi_3 \frac{PPE_{it}}{TA_{it}} + \varphi_4 \frac{NI_{it}}{TA_{it}} + e_{it} \qquad \text{(A3)}$$

Where:

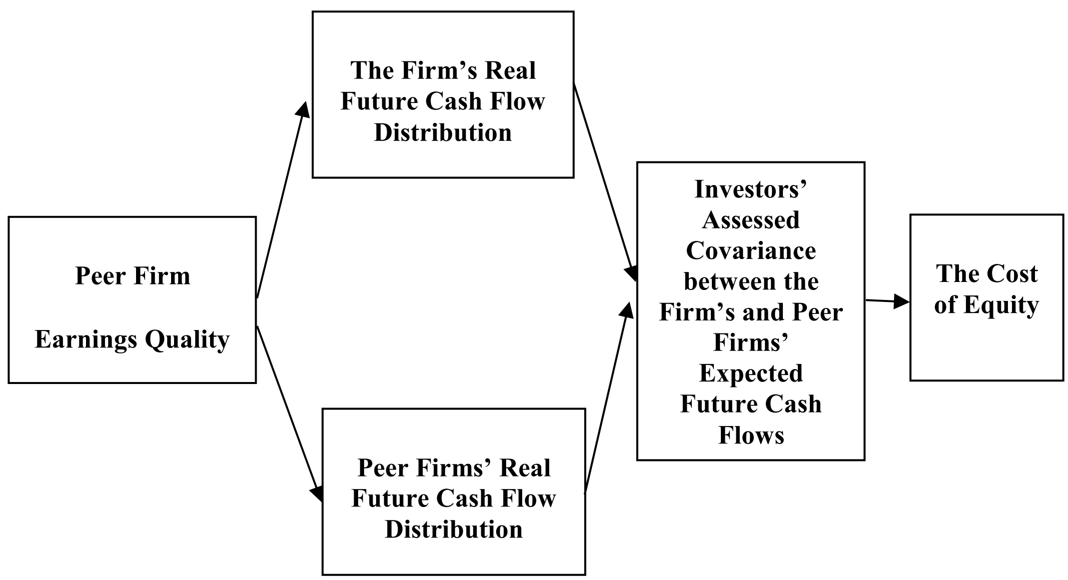
NI_{it} = net income before extraordinary items for firm i in year t

Other variables are defined as in the models above.

FIGURE I. SUMMARY OF ANALYSES FRAMEWORK

Panel A: Direct Effects

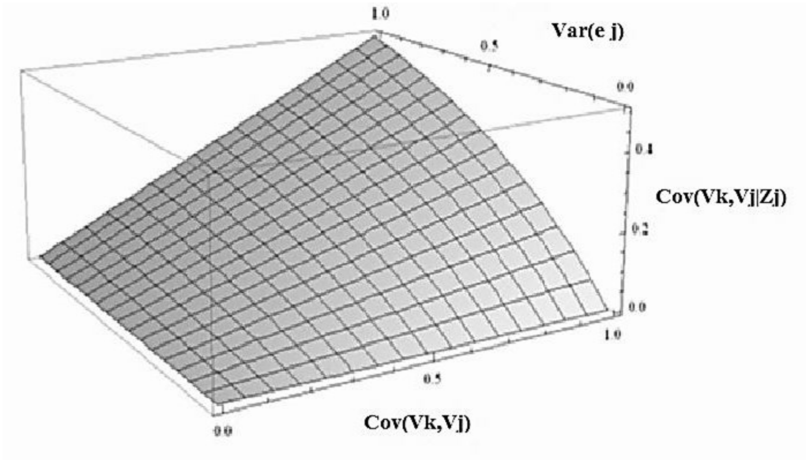
Panel B: Indirect Effects



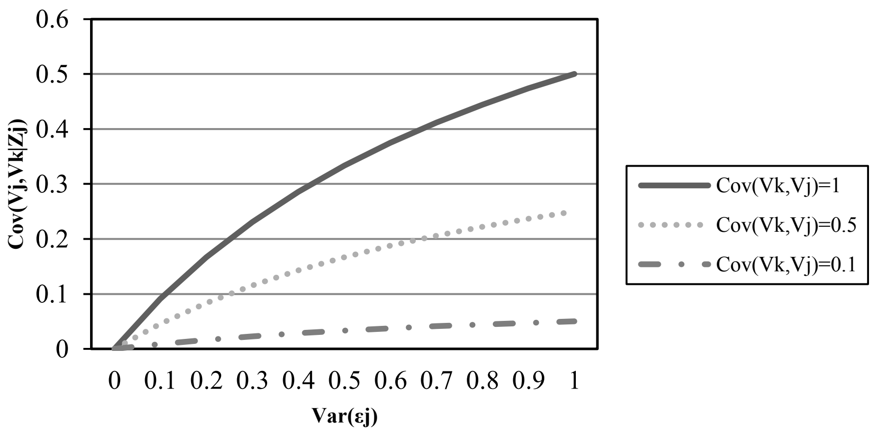
This figure summarizes the theoretical framework. Using Lambert Leuz and Verrecchia (2007) as the theoretical basis, I demonstrate the following direct and indirect channels through which a firm's cost of equity can be affected by peer firms' earnings quality. The direct effect suggests that peer firm earnings quality directly reduces investors' assessed covariance of the firm's expected future cash flows with other firms'. The indirect effect suggests that peer firm earnings quality affects the cost of equity by changing the real distribution of both the firm's and peer firms' expected future cash flows. The effects on covariance are theoretically non-diversifiable.

FIGURE II. THE DIRECT EFFECT OF PEER FIRM EARNINGS QUALITY

Panel A: 3D Plot for LLV Equation (6)



Panel B: The Slope of $Cov(V_j, V_k|Z_j)$ to $Var(\varepsilon_j)$ at Different Given Levels of $Cov(V_j, V_k)$



Based on equation (6) from LLV, this figure illustrates the covariance effects of peer firm earnings quality.

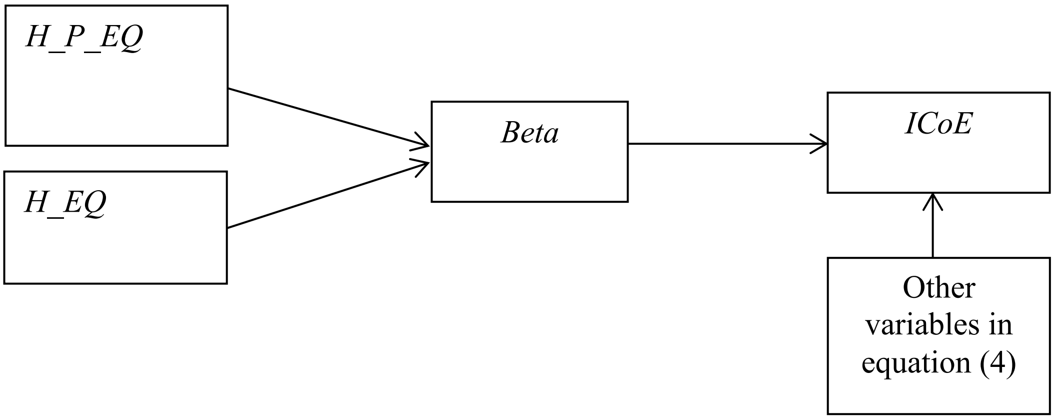
$$Cov\left(\tilde{V}_j, \tilde{V}_k \mid Z_j\right) = Cov\left(\tilde{V}_j, \tilde{V}_k\right) \frac{Var\left(\tilde{\varepsilon}_j\right)}{Var\left(\tilde{V}_j\right) + Var\left(\tilde{\varepsilon}_j\right)} \qquad \text{(LLV: 6)}$$

In this figure, $Var(\varepsilon_j)$ is an inverse measure of peer firm earnings quality. $Cov(V_j, V_k)$ is the unconditional covariance between firm j's and firm k's cash flows. $Cov(V_j, V_k|Zj)$ is the covariance between firm j's and firm k's cash flows conditional on peer firms' earnings information. Further, in the figure, I assume $Var(V_j)$ to be 1.

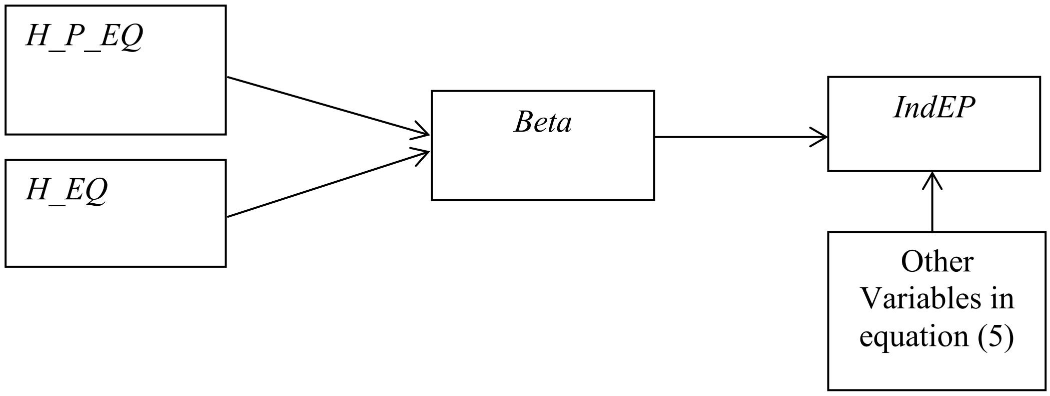
As we can see in panel A, holding $Cov(V_j, V_k)$ constant, as $Var(\varepsilon_j)$ decreases from 1 to 0, $Cov(V_j, V_k|Z_j)$ decreases at an increasing rate. Then, panel B further shows that the slope of $Cov(V_j, V_k|Z_j)$ to $Var(\varepsilon_j)$ is increasing in $Cov(V_j, V_k|Z_j)$.

FIGURE III. PATH ANALYSES FOR THE MODERATING ROEL OF BETA

Panel A: Path Analysis for the Effect of Peer Earnings Quality on the Implied Cost of Equity via Beta



Panel B: Path Analysis for the Effect of Peer Earnings Quality on the Industry–Adjusted-Earnings-to-Price ratio via Beta



This figure shows the structure of path analyses to test the role of Beta in moderating the relation between peer firm earnings quality and the implied cost of equity in Panel A (the industry-adjusted-earnings-to-price ratio in Panel B).

Table 1
Sample Selection

	Market Risk Factor Test (Firm-month)	Implied Cost of Equity Test (Firm-year)	Industry-Adjusted Earnings-Price Ratio Test (Firm-year)
Number of observations in *Compustat* from 1994 to 2010	2,364,624	197,052	197,052
Less: Observations with no one-year ahead stock return	1,386,076		
Observations with no data to calculate the implied cost of equity		166,983	
Observations with no data to calculate earnings-price ratio or losses			145,121
Observations with no data to calculate earnings quality and peer firm earnings quality	318,803	4,476	8,679
Observations with no data to calculate other variables	66,017	2,576	3,150
Final Sample	**593,728**	**23,017**	**40,102**
Sample Distribution By Year			
1994	35,931	741	2,532
1995	35,014	815	2,560
1996	38,943	923	2,543
1997	36,065	1,030	2,588
1998	34,108	1,053	2,430
1999	32,545	1,039	2,443
2000	33,568	1,016	2,509
2001	32,993	1,295	2,242
2002	32,751	1,350	2,325
2003	30,655	1,794	2,537
2004	35,635	1,877	2,725
2005	43,376	1,838	2,579
2006	40,858	1,860	2,454
2007	34,415	1,838	2,254
2008	36,248	1,583	1,798
2009	31,805	1,475	1,717
2010	28,818	1,490	1,866

Note: This table shows the sample selection process for the three tests. The bottom rows further show the sample distribution across the sample years. The first column shows the sample for the market factor test; the second column shows the sample for the implied cost of equity test; the third column shows the sample for the industry-adjusted earnings-price ratio test.

Table 2
Sample Description

Panel A: Sample for Market Risk Factor Test

	EXRET	*EQ*	*P_EQew*	*P_EQmsw*	*MKTRF*	*SMB*	*HML*	*UMD*	*Lev*	*LnMV*	*STD_CFO*	*CFO*	*BM*
N	593,728	593,728	593,728	593,728	593,728	593,728	593,728	593,728	593,728	593,728	593,728	593,728	593,728
MIN	−0.956	−1.651	−1.469	−1.130	−0.185	−0.166	−0.129	−0.348	0.056	1.182	0.004	−0.580	−3.113
MAX	9.497	−0.003	−0.009	−0.008	0.115	0.221	0.139	0.184	0.950	11.240	0.342	0.377	1.198
MEAN	0.009	−0.143	−0.153	−0.109	0.005	0.002	0.002	0.005	0.489	5.793	0.057	0.064	−0.695
STD.DEV.	0.176	0.250	0.231	0.179	0.047	0.036	0.034	0.056	0.220	2.295	0.058	0.142	0.810
Pearson Correlations													
EQ	−0.001	1.000											
P_EQew	−0.002	0.751	1.000										
P_EQmsw	−0.002	0.763	0.950	1.000									
MKTRF	0.294	0.013	0.018	0.019	1.000								
SMB	0.185	−0.009	−0.010	−0.012	0.250	1.000							
HML	−0.057	−0.001	0.001	0.002	−0.231	−0.355	1.000						
UMD	−0.132	0.014	0.014	0.016	−0.280	0.076	−0.150	1.000					
Lev	0.003	0.094	0.090	0.092	0.005	0.002	−0.001	0.002	1.000				
LnMV	−0.030	0.041	−0.063	−0.069	−0.027	0.000	−0.006	−0.007	0.182	1.000			
STD_CFO	0.003	−0.239	−0.079	−0.086	−0.002	0.001	0.006	0.005	−0.193	−0.338	1.000		
CFO	0.002	0.113	0.045	0.043	0.005	0.002	−0.006	−0.009	0.000	0.303	−0.321	1.000	
BM	0.037	0.108	0.080	0.081	0.020	0.031	0.001	−0.039	−0.071	−0.370	−0.155	0.009	1.000

Table 2 *(Cont'd)*

Panel B: Sample for Implied Cost of Equity Test

	ICoE	*Beta*	*EQ*	*P_EQew*	*P_EQmsw*	*LEV*	*LnMV*	*STD_CFO*	*CFO*	*BM*
N	23,017	23,017	23,017	23,017	23,017	23,017	23,017	23,017	23,017	23,017
MIN	0.019	0.093	−2.016	−1.855	−1.565	0.071	3.465	0.003	−0.498	−3.243
MAX	0.632	2.522	−0.003	−0.000	−0.011	0.952	11.673	0.287	0.368	0.763
MEAN	0.127	1.047	−0.172	−0.181	−0.148	0.498	7.199	0.048	0.086	−0.932
STD.DEV.	0.095	0.513	0.308	0.273	0.230	0.216	1.778	0.048	0.126	0.739
Pearson Correlations										
Beta	0.131	1.000								
EQ	−0.107	−0.107	1.000							
P_EQew	−0.050	−0.129	0.782	1.000						
P_EQmsw	−0.048	−0.125	0.769	0.966	1.000					
LEV	−0.023	−0.167	0.114	0.114	0.113	1.000				
LnMV	−0.376	0.060	0.085	0.018	0.008	0.252	1.000			
STD_CFO	0.288	0.150	−0.220	−0.124	−0.127	−0.270	−0.343	1.000		
CFO	−0.377	−0.034	0.090	0.061	0.060	−0.015	0.306	−0.287	1.000	
BM	0.162	−0.066	0.071	0.062	0.062	−0.006	−0.286	−0.192	−0.050	1.000

Table 2 *(Cont'd)*

Panel C: Sample for Industry−adjusted Earnings−Price Ratio Test

	IndEP	*EQ*	*P_EQew*	*P_EQmsw*	*LEV*	*LnMV*	*STD_CFO*	*CFO*	*BM*	*Grow*
N	40,102	40,102	40,102	40,102	40,102	40,102	40,102	40,102	40,102	40,102
MIN	−0.157	−1.527	−1.657	−1.208	0.065	1.656	0.003	−0.171	−2.825	0.003
MAX	0.247	−0.010	−0.003	−0.008	0.939	11.399	0.259	0.391	0.870	1.657
MEAN	0.006	−0.138	−0.148	0.118	0.485	6.264	0.048	0.104	−0.747	0.138
STD.DEV.	0.052	0.245	0.230	0.186	0.210	2.194	0.045	0.093	0.713	0.245
Pearson Correlations										
EQ	0.040	1.000								
P_EQew	−0.002	−0.759	1.000							
P_EQmsw	−0.002	−0.756	−0.977	1.000						
LEV	0.069	0.103	0.095	0.103	1.000					
LnMV	−0.018	0.011	−0.082	−0.087	0.221	1.000				
STD_CFO	0.057	−0.199	−0.068	−0.076	−0.225	−0.321	1.000			
CFO	0.016	−0.067	−0.052	−0.053	−0.170	0.215	0.035	1.000		
BM	0.108	0.081	0.077	0.086	−0.044	−0.429	−0.094	−0.301	1.000	
Grow	0.038	−0.038	−0.015	−0.022	−0.050	0.010	0.169	−0.088	−0.175	1.000

Note: This table shows the sample descriptive statistics and correlations between variables. Panel A shows the sample for the market risk factor test; Panel B shows the sample for the implied cost of equity test; Panel C shows the sample for the industry-adjusted earnings-price ratio test.

Table 3
Sample Description by Industry

		Sample for Market Risk Factor Test				Sample for Implied Cost of Equity Test				Sample for Earnings-Price Ratio Test		
Industry	N Firm-Month	*EXRET*	*EQ*	*P_EQmsw*	N Firm-Year	*ICoE*	*EQ*	*P_EQmsw*	N Firm-Year	*IndEP*	*EQ*	*P_EQmsw*
Agriculture	1,924	0.011	−0.040	−0.044	55	0.100	−0.046	−0.048	137	0.015	−0.040	−0.049
Food Products	10,970	0.008	−0.056	−0.042	403	0.095	−0.060	−0.053	853	0.003	−0.058	−0.046
Candy & Soda	1,688	0.014	−0.045	−0.031	64	0.093	−0.037	−0.034	138	0.005	−0.046	−0.035
Beer & Liquor	2,656	0.010	−0.035	−0.029	122	0.082	−0.038	−0.030	206	−0.001	−0.041	−0.034
Tobacco	784	0.015	−0.010	−0.013	53	0.086	−0.014	−0.018	67	0.006	−0.013	−0.024
Recreation	5,215	0.003	−0.173	−0.116	140	0.130	−0.210	−0.182	342	0.005	−0.235	−0.188
Entertainment	8,049	0.005	−0.181	−0.152	316	0.112	−0.219	−0.187	523	0.007	−0.186	−0.168
Publishing	5,523	0.006	−0.057	−0.047	195	0.093	−0.054	−0.053	398	−0.001	−0.053	−0.050
Consumer Good	10,950	0.005	−0.046	−0.030	336	0.109	−0.044	−0.031	793	0.003	−0.044	−0.031
Apparel	9,365	0.008	−0.058	−0.041	322	0.113	−0.066	−0.052	725	0.005	−0.062	−0.052
Healthcare	9,332	0.009	−0.070	−0.039	425	0.118	−0.062	−0.043	711	0.006	−0.068	−0.048
Medical Equip	21,226	0.011	−0.144	−0.094	859	0.135	−0.177	−0.121	1,270	0.007	−0.159	−0.116
Pharmaceutical	32,931	0.012	−0.295	−0.239	1,584	0.166	−0.335	−0.300	1,348	0.006	−0.297	−0.296
Chemicals	12,752	0.008	−0.065	−0.042	585	0.133	−0.064	−0.051	955	0.007	−0.066	−0.051
Rubber Plastic	5,592	0.006	−0.055	−0.042	120	0.126	−0.053	−0.043	393	0.004	−0.047	−0.040
Textiles	3,361	−0.005	−0.034	−0.032	74	0.154	−0.037	−0.040	198	−0.001	−0.035	−0.038
ConstruMaterial	12,206	0.008	−0.167	−0.121	377	0.125	−0.242	−0.167	917	0.003	−0.180	−0.130
Construction	6,321	0.007	−0.270	−0.263	233	0.161	−0.454	−0.425	438	0.003	−0.277	−0.302
Steel Works Etc	9,183	0.008	−0.055	−0.047	363	0.162	−0.071	−0.059	675	0.010	−0.060	−0.057
Fabric Products	2,393	0.010	−0.039	−0.034	32	0.137	−0.037	−0.039	166	−0.001	−0.041	−0.041
Machinery	22,946	0.011	−0.208	−0.165	840	0.129	−0.309	−0.242	1,654	0.004	−0.194	−0.168
ElectrEquipment	11,495	0.007	−0.329	−0.209	364	0.142	−0.314	−0.237	712	0.001	−0.190	−0.148
Automobiles	10,178	0.006	−0.080	−0.046	391	0.139	−0.086	−0.058	736	0.005	−0.074	−0.049
Aircraft	3,396	0.013	−0.062	−0.039	160	0.093	−0.058	−0.048	269	0.005	−0.069	−0.048
Shipbuilding	1,112	0.009	−0.013	−0.014	41	0.133	−0.015	−0.015	81	0.013	−0.014	−0.017
Defense	1,398	0.015	−0.033	−0.023	67	0.119	−0.031	−0.024	110	0.005	−0.033	−0.028

(Table 3 continues on the next page)

Table 3 *(Cont'd)*

		Sample for Market Risk Factor Test				Sample for Implied Cost of Equity Test				Sample for Earnings-Price Ratio Test		
Industry	N Firm-Month	*EXRET*	*EQ*	*P_EQmsw*	N Firm-Year	*ICoE*	*EQ*	*P_EQmsw*	N Firm-Year	*IndEP*	*EQ*	*P_EQmsw*
Metals	4,025	0.008	−0.194	−0.169	100	0.146	−0.267	−0.283	187	0.013	−0.319	−0.296
Mining	3,054	0.009	−0.099	−0.067	108	0.125	−0.082	−0.073	237	0.007	−0.096	−0.063
Coal	776	0.020	−0.036	−0.031	38	0.128	−0.036	−0.035	68	0.008	−0.034	−0.033
Petroleum	27,758	0.014	−0.215	−0.167	1,129	0.137	−0.147	−0.138	1,874	0.008	−0.146	−0.118
Utilities	25,465	0.009	−0.012	−0.011	1,108	0.077	−0.013	−0.013	2,093	0.003	−0.013	−0.012
Comm	17,121	0.007	−0.417	−0.347	833	0.127	−0.553	−0.535	1,185	0.008	−0.437	−0.405
Per Services	5,121	0.008	−0.053	−0.042	205	0.114	−0.051	−0.045	391	0.002	−0.049	−0.047
Bus Services	61,878	0.010	−0.221	−0.190	2,446	0.128	−0.309	−0.276	3,834	0.009	−0.282	−0.260
Computers	24,470	0.013	−0.111	−0.077	882	0.138	−0.103	−0.088	1,386	0.010	−0.105	−0.088
Electronic	40,526	0.011	−0.164	−0.131	1,657	0.145	−0.194	−0.177	2,429	0.009	−0.158	−0.140
Measuring	15,677	0.014	−0.130	−0.087	566	0.129	−0.129	−0.102	1,031	0.006	−0.109	−0.084
Bus Suppli	9,155	0.004	−0.033	−0.023	373	0.141	−0.028	−0.025	631	0.006	−0.032	−0.027
Container	1,867	0.006	−0.034	−0.035	112	0.122	−0.040	−0.044	153	0.002	−0.038	−0.045
Transport	16,232	0.008	−0.049	−0.042	789	0.126	−0.054	−0.049	1,291	0.011	−0.051	−0.046
Wholesale	22,837	0.009	−0.135	−0.080	717	0.125	−0.193	−0.154	1,667	0.009	−0.165	−0.126
Retail	31,345	0.009	−0.064	−0.037	1,419	0.110	−0.072	−0.043	2,389	0.006	−0.063	−0.042
Restaurant	10,829	0.006	−0.094	−0.057	410	0.104	−0.105	−0.082	793	−0.001	−0.095	−0.065
Banking	5,346	0.006	−0.052	−0.028	182	0.140	−0.042	−0.030	383	0.015	−0.045	−0.023
Insurance	17,966	0.007	−0.036	−0.025	785	0.106	−0.032	−0.024	1,317	0.002	−0.035	−0.025
Real Estate	4,736	0.005	−0.207	−0.164	25	0.134	−0.232	−0.229	278	0.001	−0.234	−0.186
Trading	18,309	0.011	−0.098	−0.053	403	0.113	−0.115	−0.076	1,279	0.008	−0.106	−0.090
Other	6,289	0.015	−0.145	−0.075	209	0.119	−0.168	−0.106	391	0.010	−0.141	−0.085
Total	593,728				23,017				40,102			
							EQ	*P_EQmsw*			*EQ*	*P_EQmsw*
Cross−Industry Correlation with *ICoE*							−0.438***	−0.439***				
Cross−Industry Correlation with *IndEP*											−0.156***	−0.155***

Note: This table shows the sample distribution and the mean of several variables across the Fama-French 48 industries. The bottom rows of the table show the cross-industry correlations between different variables. ***, **, and * refer to significance (two-tailed) at the 1%, 5%, and 10% level, respectively. Variable definitions are available in the appendix.

Table 4
Equally-weighted Portfolios Using Sorts

Panel A: Sorts on *EQ* and *P_EQ*

	EQ			*P_EQew*			*P_EQmsw*		
	(1): Bottom Quartile	(2): Top Quartile	(2)−(1):	(3): Bottom Quartile	(4): Top Quartile	(4)−(3):	(5): Bottom Quartile	(6): Top Quartile	(6)−(5):
ICoE	0.147	0.104	−0.043***	0.137	0.108	−0.029***	0.139	0.110	−0.029***
Beta	1.181	0.880	−0.301***	1.165	0.831	−0.334***	1.117	0.847	−0.270***
IndEP	0.010	0.003	−0.007***	0.007	0.003	−0.004***	0.007	0.004	−0.003***

Panel B: Residual Sorts on *P_EQ*

	Regression with *EQ* as explanatory variable			*P_EQew*			*P_EQmsw*		
	Intercept	Coefficient	*t*-statistics	(1): Bottom Quartile	(2): Top Quartile	(2)−(1):	(3): Bottom Quartile	(4): Top Quartile	(4)−(3):
ICoE	0.121	−0.003***	−16.60	0.001	−0.013	−0.014***	0.001	−0.013	−0.014***
Beta	1.019	−0.163***	−14.28	0.068	−0.193	−0.261***	0.075	−0.177	−0.252***
IndEP	0.005	−0.009***	−8.04	−0.001	−0.002	−0.001*	0.000	−0.001	−0.001*

Note: This table shows the equally weighted average values of *ICoE*, *Beta*, and *IndEP* across different portfolios. In Panel A, the portfolios are sorted based on *EQ* and *P_EQ*. In first column, the portfolios are formed based on sorts on *EQ*. In second and third columns, the portfolios are formed based on sorts on *P_EQew* and *P_EQmsw,* respectively. In Panel B, I provide residual sorts to isolate the effect of *P_EQ* from that of *EQ*. Specifically, I first regress *ICoE*, *Beta* and *IndEP* on *EQ*separately. Then, I obtain the residuals from these regressions. Further, for each of the portfolios formed based on *P_EQ*, I calculate the equally weighted average regression residuals. ***, ** and * refer to significance at the 1% level, 5% level and 10% level, two tails. Variable definitions are available in the appendix.

Table 5
Market Risk Factor Test

Panel A. Regression	(Dependent Variable= *EXRET*)			Good Market−Level News		Bad Market−Level News			
	(a1)	(a2)*P_EQew*	(a3)*P_EQmsw*	(a4)*P_EQew*	(a5) *P_EQmsw*	(a6)*P_EQew*	(a7) *P_EQmsw*	(a6)−(a4)	(a7)−(a5)
H_P_EQ×MKTRF		**−0.111*****	**−0.173*****	−0.091**	−0.015	−0.174***	−0.129***	−0.083***	−0.114***
		(−6.63)	**(−10.00)**	(−2.43)	(−0.42)	(−6.93)	(−5.30)	[2.60]	[3.73]
H_EQ×MKTRF	**−0.229*****	**−0.175*****	**−0.145*****	−0.132***	−0.170***	−0.140***	−0.163***		
	(−15.69)	**(−10.86)**	**(−9.13)**	(−3.63)	(−4.63)	(−5.77)	(−6.82)		
Lev×MKTRF	−0.040	−0.013	0.021	0.168**	0.136	0.181***	0.151***		
	(−1.01)	(−0.33)	(0.52)	(2.02)	(1.64)	(3.33)	(2.81)		
LnMV×MKTRF	−0.019*	−0.019*	−0.013	0.093***	0.089***	0.016	0.011		
	(−1.68)	(−1.74)	(−1.19)	(3.87)	(3.68)	(1.02)	(0.68)		
STD_CFO×MKTRF	0.031***	0.029***	0.028***	0.086***	0.087***	0.001	0.002		
	(7.24)	(6.58)	(6.35)	(10.16)	(10.28)	(0.14)	(0.31)		
CFO×MKTRF	1.735***	−0.849***	−0.820***	2.001***	1.991***	1.520***	1.544***		
	(10.14)	(−13.69)	(−13.30)	(5.25)	(5.24)	(6.21)	(6.28)		
BM×MKTRF	−0.859***	1.768***	1.752***	−0.899***	−0.923***	−0.551***	−0.586***		
	(−13.86)	(10.31)	(10.23)	(−6.02)	(−6.16)	(−6.26)	(−6.66)		
MKTRF	0.595***	0.567***	0.544***	0.132**	0.162**	0.728***	0.744***		
	(18.22)	(17.33)	(16.61)	(2.05)	(2.50)	(16.08)	(16.39)		
SMB	0.193***	0.183***	0.183***	0.158***	0.160***	0.168***	0.165***		
	(14.71)	(13.76)	(13.91)	(8.79)	(8.86)	(12.86)	(12.51)		
HML	0.680***	0.672***	0.672***	0.651***	0.652***	0.683***	0.683***		
	(56.99)	(56.06)	(56.53)	(46.99)	(46.40)	(48.76)	(48.77)		
UMD	−0.207***	−0.201***	−0.200***	−0.258***	−0.259***	−0.054***	−0.055***		
	(−30.06)	(−29.25)	(−29.24)	(−28.85)	(−28.92)	(−6.33)	(−6.39)		
H_EQ	−0.001**	0.001	0.001*	0.001	0.001	0.002	0.001		
	(−2.46)	(1.47)	(1.91)	(0.57)	(0.47)	(1.35)	(1.29)		
H_P_EQ		−0.004***	−0.004***	−0.007***	−0.007***	−0.003**	−0.003**		
		(−6.58)	(−7.92)	(−5.83)	(−5.46)	(−2.42)	(−2.34)		
Lev	0.004***	0.004***	0.004***	−0.001	−0.001	0.007***	0.007***		
	(12.23)	(12.03)	(12.47)	(−0.60)	(−0.87)	(8.96)	(8.84)		
LnMV	0.006***	0.007***	0.007***	−0.000	−0.001	0.018***	0.018***		
	(5.57)	(6.36)	(6.88)	(−0.14)	(−0.39)	(7.24)	(7.15)		
STD_CFO	−0.002***	−0.002***	−0.002***	−0.004***	−0.004***	−0.003***	−0.003***		
	(−13.47)	(−14.53)	(−14.63)	(−13.67)	(−13.64)	(−9.22)	(−9.23)		
CFO	0.011***	0.012***	0.012***	0.013**	0.012**	0.027***	0.026***		
	(5.43)	(5.57)	(5.76)	(2.32)	(2.23)	(5.77)	(5.65)		
BM	−0.004	−0.003	−0.004	−0.012	−0.011	−0.015	−0.014		
	(−0.67)	(−0.53)	(−0.65)	(−0.92)	(−0.79)	(−1.20)	(−1.16)		
Intercept	0.012***	0.011***	0.011***	0.027***	0.027***	0.015***	0.015***		
	(13.07)	(12.39)	(12.23)	(12.40)	(12.36)	(7.04)	(7.02)		
R-squared	0.1106	0.1108	0.1111	0.0465	0.0462	0.0892	0.0890		
N	593,728	593,728	593,728	365,255	365,255	228,473	228,473		

Table 5 *(Cont'd)*

Panel B. The Effect of *H_P_EQ* on the Cost of Equity via Market Risk

	(b1)Marginal Effect on Market Risk (Coefficients from Panel A)	(b2) Risk premium (in basis points) per unit of market risk	(b3) The effect on the cost of equity (in basis points) via market risk =(b1) × (b2)
H_EQ	−0.111	600	−66.6
H_P_EQew	−0.175	600	−105
H_P_EQmsw	−0.145	600	−87

Note: This table shows the multiple regression results for the market risk factor test. In Panel A, the first three columns use the full sample. For the last two columns, the sample are divided into two subsamples based on whether the market excess return (*MKTRF*) is positive (good news) or negative (bad news). Panel B shows the economic significances, the effect of *H_P_EQ* on the cost of equity via market risk. The marginal effects are the coefficients from Panel A. The average monthly market risk premium (*MKTRF*) is 0.005, so the annual market risk premium is 600 basis points ($=0.005^{12}$). *t*-statistics are reported in parentheses, and Z-statistics are reported in square brackets. Standard errors are clustered by firm. ***, **, and * refer to significance (two-tailed) at the 1%, 5%, and 10% level, respectively.

Table 6
Implied Cost of Equity Test

Panel A: Regressions (Dependent Variable= *ICoE*)

	(1)	(2) *P_EQew*	(3) *P_EQew*	(4)=(3)−(2)	(5) *P_EQmsw*	(6) *P_EQmsw*	(7)=(6)−(5)
H_P_EQ		−0.005***	−0.003	0.002	−0.005***	−0.003*	0.002
		(−2.98)	(−1.63)	[1.14]	(−3.15)	(−1.79)	[1.22]
H_EQ	−0.006***	−0.014***	−0.012***		−0.014***	−0.012***	
	(−11.40)	(−9.01)	(−8.07)		(−9.30)	(−8.25)	
Beta			0.024***			0.024***	
			(13.56)			(13.57)	
Lev	0.040***	0.041***	0.050***		0.041***	0.049***	
	(8.58)	(8.98)	(10.77)		(8.92)	(10.71)	
LnMV	−0.011***	−0.011***	−0.013***		−0.011***	−0.013***	
	(−19.69)	(−19.82)	(−22.15)		(−19.84)	(−22.15)	
STD_CFO	0.334***	0.333***	0.300***		0.334***	0.300***	
	(13.85)	(13.83)	(12.54)		(13.87)	(12.56)	
CFO	−0.189***	−0.188***	−0.184***		−0.188***	−0.184***	
	(−20.73)	(−20.54)	(−20.01)		(−20.56)	(−20.01)	
BM	0.017***	0.017***	0.017***		0.017***	0.017***	
	(12.94)	(13.13)	(13.01)		(13.07)	(12.96)	
Intercept	0.197***	0.196***	0.178***		0.196***	0.178***	
	(43.15)	(42.69)	(36.50)		(42.44)	(36.35)	
R-squared	0.2547	0.2552	0.2709		0.2552	0.2709	
N	23,017	23,017	23,017		23,017	23,017	

Panel B: Testing the moderating effect of Beta using path analyses

	Effect	t-statistics
H_P_EQew → *Beta* → *ICoE*	−0.018	−13.94***
H_P_EQmsw → *Beta* → *ICoE*	−0.016	−13.17***

Note: This table shows the multiple regression results for the implied cost of equity test. In Panel A, the regressions are estimated without controlling for *Beta*. In Panel B, the regressions are estimated before and after controlling for *Beta*. Panel B analyze the moderating effect of beta using path analyses. t-statistics are reported in parentheses, and Z-statistics are reported in square brackets. Standard errors are clustered by firm. ***, **, and * refer to significance (two-tailed) at the 1%, 5%, and 10% level, respectively. Variable definitions are available in the appendix.

Table 7
Industry-Adjusted Earnings-Price Ratio Test

Panel A: Regressions (Dependent Variable= *IndEP*)

	(1)	(2) *P_EQew*	(3) *P_EQew*	(4)=(3)−(2)	(5) *P_EQmsw*	(6) *P_EQmsw*	(7)=(6)−(5)
H_P_EQ		−0.003***	−0.002***	0.001	−0.003***	−0.002***	0.001
		(−3.60)	(−2.99)	[1.32]	(−3.53)	(−2.84)	[1.28]
H_EQ	−0.006***	−0.004***	−0.004***		−0.004***	−0.004***	
	(−8.84)	(−5.52)	(−5.17)		(−5.82)	(−5.47)	
Beta			0.005***			0.005***	
			(6.22)			(6.22)	
Lev	0.028***	0.029***	0.030***		0.029***	0.030***	
	(14.65)	(15.00)	(15.39)		(14.91)	(15.32)	
LnMV	0.001***	0.001***	0.001***		0.001***	0.001***	
	(5.61)	(5.22)	(2.89)		(5.23)	(2.90)	
STD_CFO	0.103***	0.103***	0.097***		0.103***	0.097***	
	(10.92)	(11.01)	(10.26)		(11.01)	(10.26)	
CFO	0.044***	0.044***	0.046***		0.044***	0.045***	
	(10.69)	(10.75)	(11.05)		(10.72)	(11.02)	
BM	0.013***	0.013***	0.014***		0.013***	0.014***	
	(21.91)	(22.02)	(22.31)		(22.00)	(22.30)	
Growth	0.012***	0.012***	0.011***		0.012***	0.011***	
	(9.07)	(9.06)	(8.67)		(9.04)	(8.65)	
Intercept	−0.019***	−0.020***	−0.020***		−0.019***	−0.020***	
	(−11.06)	(−11.38)	(−11.58)		(−11.32)	(−11.53)	
R-squared	0.0376	0.0381	0.0396		0.0380	0.0396	
N	40,102	40,102	40,102		40,102	40,102	

Panel B: Testing the moderating effect of Beta using path analyses

	Effect	t-statistics
H_P_EQew → *Beta* → *IndEP*	−0.009	−10.25***
H_P_EQmsw → *Beta* → *IndEP*	−0.010	−10.33***

Note: This table shows the multiple regression results for the industry-adjusted earnings-price ratio test. In Panel A, the regressions are estimated without controlling for *Beta*. In Panel B, the regressions are estimated before and after controlling for *Beta*. Panel B analyze the moderating effect of beta using path analyses. t-statistics are reported in parentheses, and Z-statistics are reported in square brackets. Standard errors are clustered by firm. ***, **, and * refer to significance (two-tailed) at the 1%, 5%, and 10% level, respectively. Variable definitions are available in the appendix.

Table 8
Variation in the Cost of Equity Effect of Peer Firm Earnings Quality

Panel A: Sample Split Based on Peer Firm Earnings Quality

Dep. Var.=	*EXRET*				*ICoE*			*IndEP*		
	(1)High *P_EQ*	(2) Low *P_EQ*	(2)−(1)		(3) High *P_EQ*	(4) Low *P_EQ*	(4)−(3)	(5) High *P_EQ*	(6) Low *P_EQ*	(6)−(5)
H_ P_EQew ×MKTRF	−0.161***	0.001	0.162	*H_ P_EQ*	−0.010***	−0.003	0.007	−0.004***	0.002**	0.006
	(−8.86)	(0.06)	[9.19]		(−5.45)	(−1.58)	[3.75]	(−3.98)	(2.05)	[6.06]
H_EQ×MKTRF	−0.151***	−0.115***		*H_ EQ*	−0.018***	−0.006***		−0.007***	−0.003***	
	(−6.45)	(−5.27)			(−7.40)	(−3.32)		(−5.21)	(−3.17)	
Lev×MKTRF	0.027	0.086		*BM*	0.019***	0.017***		0.014***	0.013***	
	(0.55)	(1.51)			(10.19)	(10.06)		(15.32)	(17.78)	
LnMV×MKTRF	0.029***	0.033***		*Lev*	0.050***	0.041***		0.028***	0.030***	
	(5.22)	(5.50)			(7.80)	(6.83)		(9.60)	(12.67)	
STD_CFO×MKTRF	1.863***	1.502***		*LnMV*	−0.011***	−0.012***		0.002***	0.000	
	(7.38)	(7.02)			(−14.07)	(−15.05)		(6.41)	(1.56)	
CFO×MKTRF	−0.789***	−0.886***		*STD_CFO*	0.351***	0.318***		0.080***	0.115***	
	(−8.91)	(−11.23)			(9.84)	(10.76)		(5.45)	(10.10)	
BM×MKTRF	0.018	−0.006		*CFO*	−0.148***	−0.201***		0.052***	0.041***	
	(1.22)	(−0.39)			(−9.82)	(−18.87)		(8.08)	(8.39)	
MKTRF	0.543***	0.652***		*Growth*				0.011***	0.013***	
	(12.76)	(14.04)						(5.56)	(7.44)	
H_EQ	0.001	−0.000		*Intercept*	0.178***	0.208***		−0.027***	−0.012***	
	(1.50)	(−0.14)			(28.11)	(33.62)		(−10.50)	(−5.40)	
H_ P_EQew	0.001**	0.001								
	(2.31)	(1.05)								
Other Variables	YES	YES								
R-square	0.0939	0.1311		R-square	0.2160	0.2756		0.0342	0.0465	
N	296,864	296,864		N	11,529	11,488		20,108	19,994	

Table 8 *(Cont'd)*

Panel B: Sample Split Based on Peer Firm Earnings Quality

Dep. Var.=	*EXRET*				*ICoE*			*IndEP*		
	(1)High *P_EQ*	(2) Low *P_EQ*	(2)−(1)		(3) High *P_EQ*	(4) Low *P_EQ*	(4)−(3)	(5) High *P_EQ*	(6) Low *P_EQ*	(6)−(5)
H_P_EQmsw×MKTRF	−0.130***	−0.011	0.119	*H_ P_EQ*	−0.010***	−0.001	0.009	−0.004***	0.000	0.004
	(−7.07)	(−0.56)	[8.51]		(−5.29)	(−0.69)	[5.43]	(−5.05)	(0.50)	[10.63]
H_EQ×MKTRF	−0.184***	−0.107***		*H_ EQ*	−0.017***	−0.008***		0.006***	0.003***	
	(−7.48)	(−4.89)			(−7.36)	(−4.03)		(5.25)	(2.85)	
Lev×MKTRF	−0.063	0.121**		*BM*	0.018***	0.018***		0.014***	0.014***	
	(−1.30)	(2.07)			(9.75)	(10.04)		(15.33)	(18.07)	
LnMV×MKTRF	0.028***	0.036***		*Lev*	0.047***	0.042***		0.029***	0.030***	
	(4.97)	(6.04)			(7.57)	(6.97)		(10.52)	(12.43)	
STD_CFO×MKTRF	1.630***	1.724***		*LnMV*	−0.011***	−0.012***		0.002***	0.000*	
	(6.72)	(7.70)			(−14.48)	(−15.25)		(6.32)	(1.80)	
CFO×MKTRF	−0.911***	−0.855***		*STD_CFO*	0.348***	0.322***		0.092***	0.109***	
	(−10.41)	(−10.53)			(10.49)	(10.74)		(6.32)	(9.34)	
BM×MKTRF	−0.018	0.007		*CFO*	−0.166***	−0.198***		0.058***	0.037***	
	(−1.21)	(0.44)			(−12.28)	(−18.20)		(8.99)	(7.36)	
MKTRF	0.593***	0.628***		*Growth*				0.010***	0.014***	
	(14.09)	(13.48)						(5.28)	(7.74)	
H_EQ	0.001*	0.001		*Intercept*	0.182***	0.207***		−0.028***	−0.012***	
	(1.67)	(1.51)			(28.81)	(35.08)		(−11.34)	(−5.29)	
H_ P_EQmsw	0.001*	0.002***								
	(1.73)	(2.73)								
Other Variables	YES	YES								
R-square	0.0903	0.1313		R-square	0.2302	0.2689		0.0352	0.0456	
N	296,864	296,864		N	11,529	11,488		20,108	19,994	

Table 8 *(Cont'd)*

Panel C: Sample Split Based on Multi-national Operations

Dep. Var.=	*EXRET*				*ICoE*			*IndEP*		
	(1) Multinational Firms	(2) Domestic Firms	(2)−(1)		(3) Multinational Firms	(4) Domestic Firms	(4)−(3)	(5) Multinational Firms	(6) Domestic Firms	(6)−(5)
H_P_EQew×MKTRF	−0.136***	−0.186***	-0.05	*H_ P_EQew*	−0.005**	−0.004	0.001	−0.001	−0.006***	−0.005
	(−5.26)	(−8.20)	[2.29]		(−2.37)	(−1.25)	[0.36]	(−1.10)	(−5.09)	[4.75]
H_EQ×MKTRF	−0.145***	−0.131***		*H_ EQ*	−0.009***	−0.018***		−0.003***	−0.006***	
	(−6.45)	(−6.11)			(−4.51)	(−6.24)		(−2.92)	(−5.74)	
Lev×MKTRF	0.126*	−0.007		*BM*	0.021***	0.013***		0.012***	0.015***	
	(1.80)	(−0.14)			(10.98)	(6.54)		(13.02)	(18.26)	
LnMV×MKTRF	0.022***	0.022***		*Lev*	0.054***	0.042***		0.029***	0.028***	
	(3.08)	(4.06)			(8.49)	(6.07)		(9.98)	(11.28)	
STD_CFO×MKTRF	1.890***	1.696***		*LnMV*	-0.010***	-0.014***		-0.000	0.002***	
	(5.98)	(8.48)			(-12.44)	(-15.89)		(-0.59)	(8.12)	
CFO×MKTRF	−0.793***	−0.838***		*STD_CFO*	0.337***	0.362***		0.079***	0.119***	
	(−6.44)	(−11.96)			(10.23)	(10.28)		(5.41)	(10.26)	
BM×MKTRF	0.038**	−0.039***		*CFO*	-0.132***	-0.191***		0.063***	0.035***	
	(1.99)	(−2.93)			(-8.72)	(-16.30)		(8.77)	(7.07)	
MKTRF	0.671***	0.521***		*Growth*				0.013***	0.011***	
	(11.43)	(13.48)						(6.52)	(6.38)	
H_EQ	−0.000	−0.001**		*Intercept*	0.178***	0.204***		-0.014***	-0.030***	
	(−0.17)	(−2.03)			(28.17)	(29.84)		(-4.63)	(-12.60)	
H_ P_EQew	0.003***	0.004***								
	(4.49)	(5.99)								
Other Variables	YES	YES								
R-square	0.09160	0.09160		R-square	0.2325	0.2796		0.04049	0.03869	
N	374,420	219,308		N	11,529	11,488		20,108	19,994	

Table 8 *(Cont'd)*

Panel D: Sample Split Based on Multi−national Operations

Dep. Var.=		*EXRET*				*ICoE*			*IndEP*	
	(1) Multinational Firms	(2) Domestic Firms	(2)−(1)		(3) Multinational Firms	(4) Domestic Firms	(4)−(3)	(5) Multinational Firms	(6) Domestic Firms	(6)−(5)
H_P_EQmsw×MKTRF	−0.106***	−0.159***	−0.05	*H_ P_EQmsw*	−0.001	−0.006**	−0.005	−0.001	−0.005***	−0.004
	(−4.21)	(−7.22)	[2.24]		(−0.59)	(−2.20)	[2.20]	(−1.10)	(−5.01)	[4.19]
H_EQ×MKTRF	−0.158***	−0.141***		*H_ EQ*	−0.011***	−0.017***		−0.003***	−0.006***	
	(−6.94)	(−6.59)			(−5.48)	(−6.05)		(−2.92)	(−6.06)	
Lev×MKTRF	0.107	−0.027		*BM*	0.021***	0.013***		0.012***	0.015***	
	(1.54)	(−0.56)			(10.96)	(6.51)		(13.02)	(18.19)	
LnMV×MKTRF	0.023***	0.022***		*Lev*	0.052***	0.043***		0.029***	0.028***	
	(3.13)	(4.09)			(8.32)	(6.13)		(9.98)	(11.28)	
STD_CFO×MKTRF	1.919***	1.718***		*LnMV*	−0.009***	−0.014***		−0.000	0.002***	
	(6.06)	(8.57)			(−12.35)	(−15.98)		(−0.59)	(8.09)	
CFO×MKTRF	−0.803***	−0.862***		*STD_CFO*	0.337***	0.363***		0.079***	0.119***	
	(−6.52)	(−12.20)			(10.24)	(10.31)		(5.41)	(10.30)	
BM×MKTRF	0.035*	−0.045***		*CFO*	−0.133***	−0.191***		0.063***	0.035***	
	(1.82)	(−3.34)			(−8.78)	(−16.38)		(8.77)	(7.13)	
MKTRF	0.686***	0.531***		*Growth*				0.013***	0.011***	
	(11.77)	(13.79)						(6.52)	(6.42)	
H_EQ	−0.000	−0.001*		*Intercept*	0.179***	0.203***		−0.014***	−0.030***	
	(−0.21)	(−1.81)			(28.56)	(29.74)		(−4.63)	(−12.46)	
H_ P_EQmsw	0.003***	0.004***								
	(4.14)	(5.07)								
Other Variables	YES	YES								
R-square	0.1600	0.09147		R-square	0.2319	0.2800		0.04049	0.03868	
N	374,420	219,308		N	9,683	10,519		15,415	24,956	

Table 8 *(Cont'd)*

Panel E: Sample Split Based on Relative Profitability

Dep. Var.=	*EXRET*							*ICoE*					
	(1) High Profitability	(2) Low Profitability	(2)−(1)	(3) High Profitability	(4) Low Profitability	(4)−(3)		(5) High Profitability	(6) Low Profitability	(6)−(5)	(7) High Profitability	(8) Low Profitability	(8)−(7)
	P_EQew			*P_EQmsw*				*P_EQew*			*P_EQmsw*		
H_P_EQ ×MKTRF	−0.158***	−0.198***	0.04	−0.125***	−0.198***	0.074	*H_ P_EQ*	0.000	−0.010***	0.01	−0.001	−0.010***	0.009
	(−8.30)	(−7.92)	[1.80]	(−6.60)	(−7.92)	[2.25]		(0.11)	(−4.03)	[3.88]	(−0.96)	(−3.96)	[4.65]
H_EQ ×MKTRF	−0.035**	−0.246***		−0.049***	−0.246***		*H_ EQ*	−0.007***	−0.017***		−0.007***	−0.017***	
	(−1.96)	(−10.17)		(−2.67)	(−10.17)			(−6.13)	(−6.65)		(−5.82)	(−6.89)	
Lev ×MKTRF	−0.221***	0.116**		−0.248***	0.116**		*BM*	0.011***	0.020***		0.011***	0.020***	
	(−4.67)	(2.14)		(−5.27)	(2.14)			(9.98)	(9.08)		(10.02)	(8.99)	
LnMV ×MKTRF	0.023***	0.056***		0.024***	0.056***		*Lev*	0.020***	0.070***		0.021***	0.070***	
	(4.57)	(9.20)		(4.75)	(9.20)			(5.80)	(10.16)		(5.91)	(10.06)	
STD_CFO ×MKTRF	1.944***	1.496***		1.966***	1.496***		*LnMV*	−0.004***	−0.017***		−0.004***	−0.017***	
	(7.95)	(6.83)		(8.02)	(6.83)			(−10.41)	(−18.31)		(−10.46)	(−18.36)	
CFO ×MKTRF	−0.880***	−0.577***		−0.907***	−0.577***		*STD_CFO*	0.231***	0.345***		0.231***	0.348***	
	(−9.11)	(−6.58)		(−9.37)	(−6.58)			(11.74)	(9.78)		(11.74)	(9.85)	
BM ×MKTRF	−0.086***	−0.040**		−0.089***	−0.040**		*CFO*	−0.042***	−0.201***		−0.041***	−0.202***	
	(−6.05)	(−2.54)		(−6.26)	(−2.54)			(−4.35)	(−15.56)		(−4.30)	(−15.62)	
MKTRF	0.669***	0.296***		0.685***	0.296***		*Intercept*	0.124***	0.226***		0.124***	0.227***	
	(16.86)	(6.63)		(17.30)	(6.63)			(33.00)	(32.30)		(32.83)	(32.09)	
H_EQ	−0.000	0.002**		−0.000	0.002**								
	(−0.51)	(2.29)		(−0.61)	(2.29)								
H_P_EQ	−0.003***	−0.004***		−0.002***	−0.004***								
	(−4.28)	(−5.23)		(−3.68)	(−5.23)								
Other Variables	YES	YES		YES	YES								
R-squared	0.1290	0.1087		0.1287	0.1087		R-square	0.1117	0.2356		0.1118	0.2356	
N	296,903	296,825		296,903	296,825		*N*	11,521	11.496		11,521	11.496	

Note: This table analyzes variations in the cost of equity effect of peer firm earnings quality. Panel A and Panel B test the non-linear increasing effects of peer firm earnings quality. The sample is split into two subsamples based on *P_EQew* and *P_EQmsw,* respectively. Panel C and Panel D test the moderating effects of multinational operation. The sample is split into two subsamples based on whether a firm is a multinational firm or not. Panel E tests the moderating effects of relative profitability. The sample is split into two subsamples based on relative profitability. The differences in coefficients are tested using Z-statistics. All the control variables and an intercept are included in each regression, but for brevity, some coefficients are not reported. t-statistics are reported in parentheses, and Z-statistics are reported in square brackets. Standard errors are clustered by firm. ***, **, and * refer to significance at the 1%, 5%, and 10% level, respectively. Variable definitions are available in the appendix