The Audit Committee, Insurer's Characteristics and Cost of Equity: Evidence from U.S. Property-Liability Insurance Companies

Abstract

This study examines the effects of audit committee and insurer characteristics on reducing the implied cost of equity in publicly traded property-liability insurance companies. We find that the audit committee size is significantly and positively related with the cost of equity, while the proportion of financial experts and the number of audit committee meeting each year are significantly and negatively related with the cost of equity. Among the insurer's characteristics, the reinsurance ratio is significantly and negatively related with the cost of equity, while the investment risk and underwriting risk are significantly and positively related with the cost of equity. Furthermore, during the financial crisis, the cost of equity increases significantly. The cost of equity decreases significantly after the implementation of SOX.

1. Introduction

The cost of equity is important to the insurance companies. Insurers need to minimize their costs to maintain the ability to repay. Controlling the cost of equity helps the insurer stay solvent. Furthermore, if the cost of equity is higher, the insurers will charge higher premium, so the firm may lose market shares to their competitors. Although there are many papers focus on the impact of corporate governance on the cost of equity, few of them study on the effect of audit committee characteristics on the cost of equity. The traditional view is that the cost of equity is affected by systematic risk not the unsystematic risk. But some unsystematic risks such as insurer's investment risk, underwriting risk are not fully diversifiable due to loss of management skills or unexpected volatility in insured losses. In the presence of such non-diversifiable risks, the required rate of return increases allow with the insurers' cost of equity. In one word, whether the audit committee characteristics and the insurer's characteristics have an effect on the cost of equity remains an open question.

In this paper, we test how the cost of equity is affected by the audit committee's characteristics. As internal corporate governance, the audit committee is essential for financial reporting quality and protection of the shareholders. The audit committee takes the responsibility for scrutiny of accounting and financial statements. Without such protections, manipulated financial reporting systems mislead the investors, who in turn will require a higher rate of return. In other words, without appropriate audit controls, the cost of equity increases.

The effectiveness of audit committees in decreasing the cost of equity has not been studied. We examine how the cost of equity varies with the size of the audit committee, the proportion of the financial experts on audit committee, and the number of audit committee meetings held each year. Furthermore, we study how the insurer's characteristics affects the cost of equity because insurers cannot fully diversify some risk. In particular, we estimate the effect of the reinsurance ratio, investment risk and underwriting risk, on the cost of equity.

There are several reasons that audit committee has an effect on the cost of equity. First, effective auditing activities reduce capital costs by lowering investor monitoring costs. If audit committees fail to monitor, outside investors spend extra resources to ensure an appropriate payoff from the firm. These external monitoring costs have to be compensated by a higher required rate of return (Lombardo and Pagano (2002)). Hence, the audit committee is delegated to be responsible for monitoring accounting and financial process, thereby reducing shareholders' extra monitoring cost, and thus reduce the cost of equity as well.

Secondly, Easley and O'Hara (2004) find that more private information—outside the purview of the auditing committee--induces a higher systematic risk, so that investors require a higher return to hold the company's stock. Private information increases the risk to uninformed investors who hold stock. Informed investors are better able to shift their portfolio weights to incorporate new information. Therefore, effective auditing decreases information asymmetry and accordingly reduces the cost of capital.

While several papers demonstrate how strong corporate governance decreases the cost of equity, they do not focus on audit committee activity. Theoretically, Jensen and Meckling (1976) show that firms with effective corporate governance should have higher valuation. Using the incidence of 24 governance rules and about 1500 large US firms during the 1990s, Gompers, Ishii, Metrick (2001) find that better corporate governance, and strong shareholder protection, lower the risk premium required by investors and thus reduce the cost of equity. Garmaise and Liu (2005) find that information asymmetry (mangers have private information) and agency problems (dishonest managers can hide private information), result in weak corporate governance that increases the firms' exposure to systematic risk and increase the cost of capital. Albuquerue and Wang (2008) generate a dynamic statistic general equilibrium model to study the impact of shareholder protection affects investment magnitude, firm value and cost of capital. Their paper calculates a dynamic stochastic general equilibrium that indicates weaker shareholder protection will lead to higher cost of capital.

Chen, Chen Wei (2009) estimate that firm-level corporate governance is negatively related with the cost of equity. Chen, Chen and Wei (2011) provide further evidence on the relation between corporate governance, agency problem and cost of capital: they find that G-index, as a proxy for shareholder protection, is significantly positive with the implied cost of equity, as measured by ex-ante cost of equity implied in stock price and analysts' earnings forecasts. They also find that the marginal effect of G-index on the cost of equity is stronger for firms with more severe agency problems.

Although such research demonstrates the impact of corporate governance on the cost of equity, it has not examined the effect of audit committee on the cost of equity, neither for the general problem of corporate governance nor specifically for the insurance industry. Indeed, all studies above exclude financial institutions, such as banking and insurance companies, from their sample due to the unique nature of those institutions.

This article examines the impact of audit committee and insurers' characteristics on the implied cost of equity, using a sample of 460 firm-year observation from 1996 to 2012. To do so, we use detailed measures of audit committees' activities (as well as insurers' characteristics) to investigate the association between corporate governance and cost of equity capital in the property-liability insurance industry. In addition, we investigate whether implementation of Sarbanes-Oxley

Act of 2002 (SOX) and the financial crisis affect the cost of equity through changes in audit committee characteristics and insurers' characteristics.

Our empirical results show that audit committee size is positively related with the cost of equity, while the proportion of financial experts and the number of audit committee meetings each year are negatively related with the cost of equity. Among the insurer's characteristics, the reinsurance ratio (the ratio of reinsurance ceded divided by the sum of direct premiums written plus reinsurance assumed) is negatively related with the cost of equity, while the investment risk and underwriting risk are significantly and positively related with the cost of equity. Furthermore, during the financial crisis, the cost of equity increases significantly, but decreased substantially after the implementation of SOX.

Hence, not only is the first study to document impact of audit committee and insurer characteristics on the cost of equity, this paper explores whether financial crisis and the implementation of SOX have effects on cost of equity. Our results have important policy implications. For example, evidence of a linkage between audit committee characteristics and the cost of equity could enable regulators to decide whether or not to improve the existing governance mechanisms that affect publicly traded property-liability insurers.

The next section develops our hypotheses. The third section describes the data and research design. The fourth section describes model specification and empirical results. The fifth part concludes the article.

2. Hypothesis

2.1 Audit Committee characteristics impact on the cost of capital

Financial expertise on the audit committee. Because of the recurring financial scandals, more financial experts are required to be on the board. Financial experts understand accepted accounting practices and financial statements. The SEC implementation of SOX requires all public companies to disclose the number of audit committee members with such financial expertise. If the firms' audit committee does not have an independent financial expert, the company has to explain why one is not included. The purpose of this rule is to mitigate agency problems, and assure shareholders of effective auditing and financial reporting quality (Huang et al., 2011). A professional audit committee would monitor financial reporting process more fully and thus mitigate the agency problem between managers and shareholders (Davidson et al., 2004). Agrawal et al. (2005) find when boards or audit committees have an independent director with financial expertise, the probability of restating financial results is lower. Their findings indicate that independent directors with financial expertise provide a better oversight of firms' financial reporting practices.

Several papers demonstrate that financial experts on audit committee help reduce the management of earnings ('earnings management' occurs when generally accepted accounting practices are employed to present an 'enhanced' picture of a company's financial health). Xie et al. (2003) examine the role of audit committee on preventing earnings management. They find that audit committee directors with financial background will lead the firm to have smaller discretionary current accruals. Their conclusion demonstrates that the audit committee members' financial sophistication is important factors in constraining company directors from engaging in earnings management. Carcello et al. (2006) find that both accounting expertise, and certain types of non-accounting financial expertise, reduce the managers' propensity to engage in earnings management when firms have weak alternative corporate governance. Independent audit committee members with financial expertise are most effective in reducing earnings management which in turn reduce monitoring cost. In that case, investors require lower rate of return so that the cost of the equity decreases.

Davidson et al. (2004) find significantly positive stock price reaction when new directors with financial expertise are assigned to the audit committee. Defund et al. (2005) find positive and significant cumulative abnormal returns around the appointment of accounting financial experts to the audit committee, but not around the appointment of non-accounting financial experts (and directors without financial expertise). Furthermore, these positive reactions only accrue when the appointing firms have strong corporate governance before the appointment of the new directors. These findings indicate financial expertise on audit committees improve corporate governance, and that strong corporate governance helps establish the financial expertise on audit committees that enhance shareholder value.[1]

Overall, the proportion of financial experts on the audit committee will improve the accuracy of the financial reports and enhance the shareholder value which will in turn increase the market value of the firm. Hence the implied cost of equity should fall, as proposed in the following hypothesis:

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[1] In contrast, Güner et al. (2008) find that financial experts significantly affect corporate decisions, but mainly in the interest of their own institution (rather than the interests of institutional shareholders). The result suggests that financial experts may not benefit shareholders when potential conflicting interests are neglected. Huang et al. (2011) find that the proportion of financial experts on the audit committee is negatively related to firm efficiency, implying that having too many financial experts in the audit committee is harmful to audit committee effectiveness.

H1: There is a negative relation between the proportion of directors with financial expertise on the audit committee and cost of equity in the U.S. publicly traded property liability insurance firms.

Audit committee size. Agency problems can be alleviated by effective financial disclosure and by diminishing the information asymmetry between managers and shareholders. Poor financial disclosure tends to lead, therefore, to financial scandals which hurt the shareholders' value. Disclosure is shown to be negatively related to the cost of capital (Diamond and Verrecchia, 1991; Welker, 1995; Botosan, 1997; and Leuz and Verrecchia, 2000). The audit committee plays a key role in monitoring financial reporting practice.

However, the effect of audit committee size on monitoring financial report is ambiguous. On the one hand, larger audit committees collectively have wider knowledge; on the other hand, when audit committees get too large they are subject to increasing coordination and agency costs. Karamanou et al. (2005) find in their sample that larger audit committees are associated with less information asymmetry between management and shareholders. However, when it came to forecasting earnings, larger audit committees tended to provide less precision in their forecasts, though the means were usually better. Their explanation for this result is that well-governed firms are more mindful of their obligation not to mislead shareholders. The danger of misleading shareholders is greater when a firm performs worse than expected, and issuing more vague forecasts reduces this danger. Because there is not consistent conclusion on the effect of the audit committee size, we have the following hypothesis:

H2: There is a negative relation between audit committee size and the cost of equity in the publicly traded property liability insurance firms.

Frequency of audit committee (board) meetings. More audit committee meetings allow the audit directors more time to devote to monitoring activities, and hence, control the quality of financial information more effectively for their shareholders. Karamanou et al. (2005) find that a positive correlation between the number of firm forecasts and the number of their audit committee meetings, suggesting more meetings mitigate information asymmetry between shareholders and managers. Xie et al. (2003) find that the number of audit committee meetings has a significantly negative partial correlation on the level of discretionary current accruals, implying high frequency audit meetings limit earnings management. More audit committee meeting improves financial management which determines the credit-worthiness to outsiders. Furthermore, from an agency-theory perspective, high frequency of audit committee meetings decrease the cost of monitoring management, which in turn increases the market value of the firm (Jensen and Meckling (1976)). From the measurement of implied cost of equity, the higher market value of the firm, the lower cost of equity. Hence, our next hypothesis follows:

H3: There is a negative relation between average numbers of audit committee meeting per year and the cost of equity in the U.S. publicly traded property liability insurance firms.

2.2 Insurer Characteristics and the Cost of Equity

Reinsurance ratio. The reinsurance ratio is measured as the ratio of reinsurance ceded divided by the sum of direct premiums written plus reinsurance assumed (Yu et al, 2005). Higher reinsurance ratio implies that the insurers distribute the risk to other companies, so the insurers have less risk. Because the lower risk of the insurers, the lower required rate of return from the investors, leading to the following hypothesis:

H4: there is a negative relation between reinsurance ratio and the cost of equity in the U.S. publicly traded property liability insurance firms.

Following the paper by Ho, Lai and Li (2013), we also control for two types of risks in our empirical models: underwriting risk and investment risk. Underwriting risk is measured by the standard deviation of the company's loss ratio. Investment risk is measured by the standard deviation of return on investment. Since the higher the firm's risks, the higher rate of return required by the investors. So we have the following hypothesis:

H5: Underwriting risk has positive impact on the cost of equity in the U.S. publicly traded property liability insurance firms.

H6: Investment risk has positive impact on the cost of equity in the U.S. publicly traded property liability insurance firms.

3. Data and Research Design

3.1 Sample Selection and Data Sources

We first match the initial sample from Institutional Brokers' Estimate System (IBES) to COMPUSTAT and CRSP to obtain the book value of equity per share and the stock price at 4th month after the fiscal year-end. We keep firms in property-liability industry (SIC codes 6331 and 6330 or SIG codes 010503) in the sample. In order to mitigate measurement errors, we use the implied cost of equity and delete firm-year observations that do not contain all four cost of equity estimates. Then we match these firms to National Association of Insurance Commissioners (NAIC) to obtain insurer's characteristic variables, and RiskMetrics to obtain corporate governance variables. We manually collect missing values of corporate governance variables from the Electronic Data Gathering, Analysis, and Retrieval database (EDGAR) of the US Securities and Exchange Commission. Finally, we eliminate observations with missing control variables as well as deleting firms only observed for a single year in the sample. This selection process results in a final sample of 460 firm-year observations (69 firms) from 1996 to 2012. Table 1 gives the sample selection process.

3.2 Dependent Variable and Independent Variables

3.2.1 Dependent Variable

The dependent variable is the excess cost of equity, which is the implied cost of equity minus the risk-free rate (R_f). We follow Chen, Chen and Wei (2011) to estimate the implied cost of equity, as introduced in four alternative measures employed in the literature: Gebhardt, Lee and Swaminathan (2001), Claus and Thomas (2001), Easton (2004) and Ohlson and Juettner-Nauroth (2005). The cost of equity, i.e., implied cost of capital, is the discount rate (R_I, where *I=GLS, CT, E,* or *OJ* depending upon the assumed approach given below) that equates current stock price (*P*) to the current book value of equity (*B*) plus present value of future expected abnormal earnings. Using the following notation:

P_t^* = Implied market price of a firm's common stock at time t. We use the price at month +4 after the latest fiscal year-end to computeP_t^*.

B_t = Book value of equity from the most recent available financial statements at time t.

$FEPS_{t+i}$ = Median forecasted earnings per share (EPS) from IBES or derived EPS forecasts for the next ith year at time t.

POUT = Forecasted dividends payout ratio. We use the ratio of the indicated annual dividends from IBES and FEPSt+1 to measure the forecasted payout ratio.

Our four alternative methods for calculating the cost of equity (*Ri*) follows:

Gebhardt, Lee and Swaminathan (2001):

$$P_t^* = B_t + \sum_{i=1}^{T-1} \frac{[FROE_{t+i} - R_{GLS}] \times B_{t+i-1}}{(1+R_{GLS})^i} + \frac{[FROE_{t+T} - R_{GLS}] \times B_{t+T-1}}{(1+R_{GLS})^{T-1} R_{GLS}} \quad (1)$$

We use IBES analysts' forecasts to proxy for the market expectation of the firm's earnings for the next 3 years. Thereafter, we measure expectations for market earnings by assuming that the future return on equity (FROE) declines linearly to an equilibrium return on equity (ROE) from the 4th year to the T_{th} year. This equilibrium ROE is measured by a historical, 10-year, industry-specific median ROE. The ROE is calculated as income available for common shareholders scaled by the lagged total book value of equity. The future book value of equity is estimated by assuming the clean surplus relation ($B_{t+1} = B_t + EPS_{t+1} - DPS_{t+1}$). The future dividend, DPS_{t+i} is calculated by multiplying EPS_{t+i} by POUT, assuming that T= 12. We numerically solve for that R_{GLS} that equates the right- and left-hand sides of equation (1) within a difference of $0.001. Since we estimate the cost of equity at month +4, to account for the partial year discounting, we adjust the stock price at month +4 by using $P_t^* = P_t/(1 + R_{GLS})^{4/12}$. A similar adjustment is also applied to other cost of equity models.

Claus and Thomas (2001):

$$P_t^* = B_t + \sum_{i=1}^{5} \frac{[FEPS_{t+i} - R_{CT} \times B_{t+i-1}]}{(1+R_{CT})^i} + \frac{[FEPS_{t+5} - R_{CT} \times B_{t+4}] \times (1+g_{lt})}{(R_{CT} - g_{lt})(1+R_{CT})^5} \quad (2)$$

We use IBES earnings forecasts to estimate the abnormal earnings for the next 5 years. Earnings forecasts for the future 4th and 5th years are derived from earnings forecasts for the 3rd year and the long-term earnings growth rate. If the long-term earnings growth rate is missing from IBES, an implied earnings growth rate from EPS_{t+2} and EPS_{t+3} is used. The long-term abnormal earnings growth rate is calculated using the contemporaneous risk-free rate (the yield on 10-year Treasury bonds) minus 3%. The future book value of equity is also estimated by assuming the clean surplus relation. The future dividend,DPS_{t+i} is calculated by multiplying EPS_{t+i} by the payout ratio, POUT. Again, R_{CT} was numerically solved by equating the right- and left-hand sides of equation (2) within a difference of $0.001.

Easton (2004):

$$P_t^* = \frac{E_t(EPS_{t+1})}{R_E} + \frac{E_t(EPS_{t+1})E_t[g_{st} - R_E \times (1 - POUT)]}{R_E^2} \quad (3)$$

Where g_{st} is the average of the short-term earnings growth rate implied in EPS_{t+1} and EPS_{t+2} and the analysts' forecasted long-term growth rate. The implementation of this model requires that $E_t(EPS_{t+1}) \geq 0$ and $E_t(EPS_{t+2}) \geq 0$. R_E is numerically solved by equating the right- and left-hand sides of equation (3) within a difference of $0.001..

Ohlson and Juettner-Nauroth (2005):

$$P_t^* = \frac{E_t(EPS_{t+1})}{R_{OJ}} + \frac{E_t(EPS_{t+1})E_t[g_{st} - R_{OJ} \times (1 - POUT)]}{R_{OJ}(R_{OJ} - g_{lt})} \quad (4)$$

The implementation of this model requires that $EPS_{t+1} > 0$ and $EPS_{t+2} > 0$. g_{lt} is calculated using the contemporaneous risk-free rate (the yield on 10-year Treasury bonds) minus 3%. R_{OJ} is numerically solved by equating the right- and left-hand sides of equation (4) within a difference of $0.001.

Since there is no census on the best way to estimate the implied cost of equity, we use the median of the estimates from the four models as the measure of the cost of equity. Table 2 presents the summary statistics and simple correlations for the estimates of the implied cost of equity. To summarize, R_GLS, R_CT, R_EASTON and R_OJ are the estimates of the implied cost of equity by Gebhardt, Lee and Swaminathan (2001), Claus and Thomas (2001), Easton (2004) and Ohlson and Juettner-Nauroth (2005). R_median is the median of these four estimates. All of the cost of the equity measures are estimated at the 4th month after the fiscal year-end. R_f is the yield on 10-year treasury bill. Panel A gives the summary statistics and panel B gives the Pearson correlation (below the diagonal) and the Spearman (above the diagonal) correlations between the estimates of the implied cost of equity. The P-values are in the parentheses.

As seen in Panel A of Table 2, R_EASTON generates the highest average estimated excess cost of equity, with a mean of -0.020 and a median 0.006, whereas R_GLS, R_CT and R_OJ produces the negative average estimated excess of equity, with means of -0.077, -0.111 and -0.100 over our sample period, respectively. As seen in Panel B of Table 2, the four estimates are positively correlated with each other.

Table 2

3.2.2 Independent Variables

Main variables of interests.

As mentioned above**,** the major independent variables related to audit committee characteristics and insurers characteristics are as followed. ACsize is the total number of directors on the audit committee. %ACaudit is the proportion of financial expert seats on the audit committee. ACmeet is the number of audit committee meetings each year. Reinsurance is the ratio of reinsurance ceded divided by the sum of direct premiums written plus reinsurance assumed. STD3_lossratio is standard deviation of loss ratio within 3 years. STD3_roi is standard deviation of return on investment within 3 years.

Other control variables.

Audit Committee Block shareholding. The arguments regarding how block shareholding impacts firm's performance are ambiguous. Based on agency theory, large block shareholders have both the incentive and influence to align the interests of officers and directors with that of shareholders (Bethel and Liebeskind, 1993). Shleifer and Vishny (1997) demonstrate that large investors play a more effective monitoring role when they invest in the firm. Firms perform better because of lower agency cost caused by more block shareholding. This view implies a negative relation between block shareholding and cost of equity (Jensen and Meckling (1976)).

However, in order to maximize their own wealth, block shareholders may act to the detriment of other investors' interest (Shleifer and Vishny, 1997). The private benefits of block shareholding increase with the accumulation of control rights, and could have a negative impact on firm performance (Lehmann et al., 2004). Hence, block shareholding impact on corporate performance is ambiguous. Agency theory suggests large block shareholders decrease agency cost by aligning the interests of officers and directors with that of shareholders, which in turn increase the market value of the firm (Jensen and Meckling (1976)). We predict that there is a negative relation between audit committee block holding and the excess implied cost of equity.

Board size. Board size may systematically impact board decision-making and thus, the effectiveness of a board (Dwivedi and Jain, 2005). Sah and Stiglitz (1986, 1991) suggest a large board is more likely to reject risky projects because it is harder for larger boards to reach consensus on risky projects. Jensen (1993) argues that as board size increases, agency costs overwhelm the potential advantages of having more directors and expertise to draw on, leading to a lower level of risk. Cheng (2008) provides empirical evidence that larger board size takes more time to reach consensus, and decisions of larger boards are less extreme and lead to less variable corporate performance. Therefore, larger boards are likely to be associated with fewer risk-taking behaviors. Indeed, Lai and Lin (2008) show that asset risk is negatively related to board size.

On the other hand, larger boards tend to be less flexible and less efficient. Lipton and Lorsch (1992) and Jensen (1993) suggest that larger boards could be less effective than smaller boards because of coordination problem and free-riding. Yermack (1996) and Eisenberg, Sundgren, and Wells (1998) provide evidence that smaller boards are associated with higher firm values. Also, a large board may induce greater risk taking. Lai and Lin (2008) show that total equity risk and systematic risk are positively related to board size. The higher risk of the firm, the higher rate of return required by the shareholders. So there is no consensus in the literature on the relation between risk taking and board size.

Board independence. Outside directors are independent from managers and supposed to protect shareholder interests. Many firms were required to increase the number of outside directors by regulations adopted between 1999 and 2003. NYSE and NASDAQ regulations adopted in 1999 require audit committees to include independent directors, and these came under the regulation of SOX in 2002. In 2003 NYSE and NASDAQ passed another rule requiring boards to be comprised of a majority of independent directors. Klein (2002) examined whether audit committee and board characteristics are related to earnings management by the firm and find that independent boards monitor the corporate financial process more effectively as they become more independent of the CEO. Duchin, Matsusaka and Ozbas (2010) find that the effectiveness of the outside directors depends on the cost of acquiring information about the firm. When the cost of acquiring information is low, the firms will have better performance when outside directors are assigned to the board. When the cost of acquiring information is high, the firms will have worse performance when outside directors are appointed to the board. From an agency-theory perspective, independent directors help monitor the corporate financial process more effectively and decrease agency costs, which in turn increases the market value. So there is a negative relationship between proportion of independent directors and the cost of equity in the publicly traded property liability insurance firms.

Busy board directors. There is no theoretical nor empirical consensus on the effect of multi-tasking board directors (directors serving on many different company boards) on firm performance. Fama (1980) argued that the competition and opportunities from the market force outside directors to develop reputations as monitoring specialists. Ferris et al. (2003) find no evidence busy directors shirk their responsibility to serve on board committees and they do not find evidence that busy boards have a greater likelihood of securities fraud litigation.

Contrary to this specialization argument, time constraints work in the opposite direction: directors with too many directorships likely diminish the quality of corporate governance, simply because they do not had enough time. Fich and Shivdasani (2006) find that firms with busy boards have lower market-to-book ratio, weaker profitability and lower sensitivity of CEO turnover to firm performance. Core et al. (1999) examined a sample of 205 U.S. publicly traded firms over 1982–1984 and find that firms with busier boards performed worse. Overall, the effect of the average number of directorships on firm performance is unclear.

CEO/chairperson of the board duality. A single officer will have more power if he or she holds both CEO and chairperson positions of the board. A CEO/chairperson is able to direct board meetings and may act in his or her self-interest when there is no different chairperson that independently looks out for shareholders. A powerful CEO/chairperson would therefore generally weaken the oversight power that boards hold (Huang et al. 2011).

Adams, Alemida, and Ferreira (2005) find in firms where decisions are made by a powerful CEO who also holds the position of board chairperson, exhibit considerable risk-taking behavior (risk taking as measured by stock return volatility). That is, there is more likelihood of either very good or very bad decisions in a firm whose CEO has more power to influence decisions than in a firm whose CEO has less such power. Adams, Alemida, and Ferreira also find that there is a positive relation between CEO/chairperson of the board duality and risk taking.

On the other hand, such a powerful manager may be more conservative and want to protect his or her job (Belkhir, 2006). It is also reasonable to expect that a CEO would be inherently cautious because he/she has invest his/her human capital in the company, which could be lost if a risky project fails and the CEO gets dismissed. Moreover, the CEO may not get the rewards if the risky project fails, especially, if he/she has little ownership in the company. Bebchuk, Cremers, and Peyer (2009) show that a CEO playing a dominant role in a firm's decision making may play it safe and make more risk-averse decisions. Pathan (2009) shows that CEOs have more power to influence board decision and take lower risk because managers have undiversifiable wealth including human capital and a comparatively fixed salary. As these dominant manager vs. residual claimant views lead to opposing predictions, the relation between CEO/chairperson of the board duality and risk taking cannot be predicted a priori.

Board tenure (board age). There is no consistent conclusion on whether the length of director's tenure has an effect on board performance. The expertise hypothesis suggests that longer tenure of directors will lead to more experience, commitment, and competence, because it provides a director with important firm-specific knowledge and its business environment (Vance, 2003). Vance (1983) argued that forcing directors to retire leads to a waste of talent and experience. Beasley (1996) tested the relation between the board of director composition and financial statement fraud and find that as the outside director tenure on the board increased, the likelihood of financial statement fraud decreased. If longer tenure of the directors will be associated with more firm-specific expertise and more effective monitor, then there should be a positive relation between board tenure and cost of capital.

In contrast, Katz (1982) finds that extended tenure reduces intragroup communication and isolates groups from key information sources. Vein (2003) proposed the management friendliness hypothesis that seasoned directors are more likely to befriend rather than monitor managers. Mason and Wallace (1987) reported that directors with excessive tenure may become increasingly complacent toward management, thus tolerating poor performance. Although the above literature focuses on the length of tenure on board effectiveness, the logic can be also applied to the average age of board directors. Vein (2003) also find that director age is highly correlated with director tenure. Both the expertise and management friendliness hypothesis are reasonable, so there is no consensus about the relation between board tenure/age and the implied cost of equity.

Board meeting frequency. From an agency-theory perspective, high frequency audit meetings decrease monitoring costs, which in turn should increase the market value of the firm (Jensen and Meckling (1976)). There should be a negative relation between frequency of board meeting and the implied cost of equity.

Board ownership. Ownership structure helps to align the interest of mangers and shareholders. Jensen and Merckling (1976) provide a theory that managerial ownership helps alleviate the agency problem and decrease the costs of deviation from value-maximization decreases. As the manager's ownership rises, they pay larger share of these costs and are more likely to treasure corporate wealth. And there are several papers demonstrating this empirically. Morck, Shleifer and Vishny (1988) find that firm's market valuation rises as board ownership rises from 0% to 5%, falls as ownership rises further to 25%, and then continues to rise, although much more slowly, as board ownership rises beyond 25%. The increase of firms' market valuation reflect the convergence-of-interest hypothesis, while the decrease of firms' market valuation reflect the entrenchment hypothesis. McConnell and Servaes (1990) find a significant curvilinear relation between firms' market valuation and corporate insider ownership. The firm's market valuation first increased, then decreased as ownership become concentrated in the hands of managers and board directors. From the method of calculating the implied cost of equity, when market value increases, the implied cost of equity decreases. From the agency perspective, higher ownership aligns the interest of manger with shareholders and decreases the agency cost, which in turn increases the firms' market value (Jensen and Merckling (1976)). Hence, there is a negative relationship between board ownership and the cost of equity in the publicly traded property liability insurance firms.

Insurer's Characteristics and the cost of equity capital.

Riskiness. We use several measurement of insurers' riskiness in addition to investing risk and underwriting risk. *Growth premium* is the growth rate of the premium. The higher growth rate of premium, the riskier of the insurers. *Financial weakness* is an indicator variable which is equal to one if the insurer has four or more unusual IRIS (Insurance Regulatory Information System) ratios, and zero otherwise. *Pplr* is the percentage of personal long-tail lines divided by total net written premiums. The higher the percentage of personal long-tail lines, the higher the risk of the insurers. *Leverage* is the 1 minus the surplus-to-assets ratio which is a measurement of the leverage risk. We predict that there is negative relation between the above variables and the excess cost of equity.

Herfindahl index. From the traditional point of view, the corporate diversification may help reduce the idiosyncratic risk but should not have an effect on systematic risk, so it does not affect the cost of capital. However, Hann et al. (2013) find that diversified firms have a lower cost of capital than comparable portfolios of stand-alone firms. Their argument is that countercyclical deadweight losses increase the systematic risk of firms. The imperfect correlation of business units' cash flows allow resources in diversified firms to be transferred from cash-rich units to cash poor units, avoiding countercyclical deadweight losses that cannot be avoided by stand-alone firms. This is called coinsurance effect. Furthermore, a diversified firm with less correlated business would have greater coinsurance effect and so less systematic risk overall.

Business line herfindahl index measures the line concentration, and indicates the levels of firm risk by the preceding arguments (Hill, Hitt and Hoskisson, 1992). Ho, Lai and Lee (2013) used U.S. property casualty insurance companies with net admitted assets of more than US$100 million from 1996 to 2007 to examine the impact the determinants of risk taking. They observed that the *Business line herfindahl* index were negatively correlated with total risk, or that a higher concentration in the *Business Herfindahl* index tends to increase total risk. The same logic applies to *Geographic Herfindahl* index, which measures geographic concentration of business (Cole and McCullough, 2006). We hypothesize that there is a positive relation between (Business) Geographic *Herfindahl* index and excess implied cost of equity in the publicly traded property liability insurance firms. Business Line Herfindahl Index is defined as $\sum(\mathrm{PW_i}/\mathrm{TPW})^2$ where $\mathrm{PW_i}$ is the value of net written premiums in line i (i=1, 2, …, 34) and TPW is the insurer's total net written premiums. Geographic Herfindahl Index is defined as $\sum(\mathrm{PW_i}/\mathrm{TPW})^2$ where $\mathrm{PW_i}$ is the value of net written premiums in state i and TPW is the insurer's total net written premiums.

Other Control Variables

Firm size is measured as the natural logarithm of net admitted assets (*ln(na)*). Book-to-market equity (log(BM)) is calculated as the logarithm of the ratio of the book value of equity to the market value of equity. Market beta (*Beta*) is estimated by regressing the previous 60 monthly individual stock returns on the contemporaneous and lagged market returns, and then summing those coefficients. Idiosyncratic risk (*IVOL*) is measured by the standard deviation of the residuals in the market model regression. *Group* is a dummy variable which is equal to one if the insurer is group company and zero otherwise. Table 3 provides all the definitions for all the variables. Table 4 reports the descriptive statistics for the sample.

4. Model specification and Empirical Results

4.1 Model specification

The Hausman test on our panel data set indicate that the firm effects can be treated as random. Hausman and Taylor (1981) suggest an instrument-variable estimator for such random-effects models, which also addresses endogeneity, heterogeneity, auto-correlation problems.

Table 6 to table 10 shows the empirical results. In each table, there are four alternative specifications with the excess cost of equity as the dependent variable. The first model includes all the variables in the relevant set of variables. Other specifications in the Tables indicate robustness of results to variable inclusion: in particular, since ACsize and BDsizse are highly correlated with other variables, we exclude ACsize in model 2, exclude BDsize in model 3, and exclude both of ACsize and BDsize in model 4. The results are consistent across the 4 models for the remaining variables. Table 7 includes SOX; Table 8, SOX and its interactions with audit committee characteristics, and insurer risk characteristics same auditing and insurer risk characteristics in Table 8. Table 9 includes financial crisis to highlight its effect on the cost of equity; Table 10 includes Fcrisis and its interaction terms with the same auditing and insurer risk characteristics in Table 8.

The second to last two row of each Table contain the joint significance of the three auditing committee variables in the respective model; the very last row, the joint significance of the three insurer risk variables in the respective model. These audit and insurer risk variables have been treated as endogenous variable in all these specifications (using Hausman-Taylor estimators). In all specifications, they are jointly statistically significant.

4.2 The effect of audit committee characteristics on the excess cost of equity

From table 6 to table 10, *ACsize* is significantly and positively related with excess cost of equity with a very large magnitude: for each additional member on the audit committee, the cost of equity increases by about 4 percentage points (.041), which translates into an elasticity of about 6 when calculated at the medians. The *%ACaudit* (the percentage of directors who are financial experts in the audit committee) is significantly and negatively related with excess cost of equity: a ten percent increase in the relative number of financial experts results in a decrease of about 2.5 percentage points in the cost of equity (with an elasticity of about .22). Each additional audit committee meeting (*ACmeet*) results in a 1.0 percentage point decline in the cost of equity.

4.3 The effect of insurer's risk characteristics on the excess cost of equity

The reinsurance ratio is significantly and negatively related with the excess cost of equity, As reinsurance increase by 10 percentage points, the excess cost of equity falls by .015. In table 6, 8 and 10, the STD3_roi (standard deviation of return on investment within 3 years) is significantly and positively related with the excess cost of equity: a .01 increase in the standard deviation on the rate of return, results in the cost of equity increasing by a 3.56 percentage point increase in the price of equity (with an implied elasticity of about 1). STD3_lossratio is not significant in any of our results (Tables 6 through 10).

4.4 The effect of SOX on the excess cost of equity

In table 7, the enactment of SOX reduced the cost of equity by 12 percentage points. In table 8, among all the interaction terms, only SOX*Acsize are significantly and positively significant: after the enactment of SOX, the deleterious impact of additional members on the audit committee is higher post SOX (about a 6 percentage point increase in the equity cost of capital) than it was for the whole period, without allowing for the shift in equity costs associated with SOX (the overall effect is a 4 percentage point increase for each additional audit member). Note, however, that in the interactive model, there is now no ACsize main effect in the model—strongly suggesting that the equity cost penalty for additional audit committee members is a post SOX phenomenon.

4.5 The effect of financial crisis on the excess cost of equity

Table 9 indicates that the financial crisis increased the cost of equity by about 28 percentage points, though the results in Table 10 indicated that none of the interaction terms with Fcrisis were individually or jointly significant—so that neither auditing characteristics nor insurer risk characteristics differentially affected this large increase.

4.6 The effect of other control variables on the excess cost of equity

The book to market ratio (BM) is significantly and positively related with the excess cost of equity. The Beta is significantly and positively related with the excess cost, implying that higher systematic risk increases the excess cost of equity consistent with standard results in finance. In table 7 and 8, idiosyncratic risk (IVOL) is also significantly and positively related with the excess cost of equity, meaning that the higher idiosyncratic risk the higher the excess cost of equity, also explainable by standard models in finance.

4.7 Robustness Checks. We also regressed each individual excess cost of equity measure (instead of the median of all four alternative measures) on the variable list on the left hand side specifications of Tables 6 through 10. We find that none of our major conclusions are affected by a particular choice of the cost of equity measure. Specifications with only the basic auditing variables (ACsize, %ACaudit, and ACmeet) and insurer risk variables (reinsurance, STD3_roi, STD_lossratio), yielded the same signs, magnitudes, and levels of statistical significance as those reported in Tables 6 through 10.

Conclusions

This paper investigates the effect of audit committee characteristics and insurer's characteristics on the implied cost of equity capital. We find that the proportion of financial experts on the audit committee and the number of audit committee meeting each year decreases the excess cost of equity significantly, but the audit committee size increases the excess cost of equity. Furthermore, reinsurance ratio decrease the excess cost of equity significantly, while the standard deviation of return on investment and standard deviation of loss ratio increase the excess cost of equity significantly. Finally, we look into the effect of financial crisis and SOX on the excess cost of equity. We find that the excess cost of equity increases 28% during the financial crisis and decreases significantly after the implementation of the SOX.

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TABLE 1

Sample Selection Process

Sample Selection Process	Firm-Year Observation
Analyst earning forecasts and five-year growth forecast at the 4th month after the fiscal year-end of all publicly traded firms from 1977 to 2012.	67191
Match to COMOUSTAT to obtain the book value of equity per share and match to CRSP to obtain the stock price at 4th month after the fiscal year-end.	65790
Match to ten year risk free rate from 1985 to 2012.	60146
Keep firms in property-liability insurance industry (SIC codes 6331 and 6330 or SIG codes 010503).	1451
Delete firm-year observation without all four cost of equity estimates.	1334
Check the firm's information in EDGAR to confirm its specialization and delete the firms which are not in the property-liability insurance industry.	1033
Match to NAIC to obtain insurer's characteristic variables.	551
Match to RiskMetrics to obtain corporate governance variables and manually collect missing value from EDGAR.	551
Delete firm-year observation without control variables.	467
Delete firms with only one-year observation	460
Final Sample	460

Note: Table 1 presents the sample selection process. The initial sample consists of all firms with analyst earning forecasts and five-year growth forecast from 1977 to 2012. We first match the initial sample from IBES to COMPUSTAT and CRSP to obtain the book value of equity per share and the stock price at 4th month after the fiscal year-end. We keep firms in property-liability industry (SIC codes 6331 and 6330 or SIG codes 010503) from the sample. In order to mitigate measurement errors, we use the median of four estimates of the cost of equity and delete firm-year observation without all four cost of equity estimates. Then we match these firms to NAIC to obtain insurer's characteristic variables and RiskMetrics to obtain corporate governance variables. We manually collect missing value of corporate governance variables from EDGAR. Finally, we eliminate observations with missing control variables and then delete firms with only one-year observation. This selection process results in a final sample of 460 firm-year observations (69 firms) from 1996 to 2012.

Table 2

Summary Statistics and Correlation for the Implied Cost of Equity

Panel A: Summary Statistics of the Excess Cost of Equity Estimates

Variable	Mean	Std. Dev.	Min.	Percentile					Max.	N
				1%	25%	50%	75%	99%		
R_MEDIAN-Rf	-0.060	0.375	-1.020	-0.995	-0.020	0.032	0.071	0.657	1.006	460
R_GLS-Rf	-0.077	0.351	-1.006	-0.974	0.007	0.034	0.062	0.455	1.041	460
R_CT-Rf	-0.111	0.401	-1.206	-1.186	-0.100	-0.007	0.069	0.646	1.118	460
R_OJ-Rf	-0.100	0.423	-2.050	-1.017	-0.129	-0.009	0.067	0.979	0.979	460
R_EASTON-Rf	-0.020	0.397	-0.998	-0.982	0.006	0.045	0.085	0.979	0.979	460

Panel B: Correlation between the Excess Cost of Equity Estimates

Variable	R_MEDIAN-Rf	R_GLS-Rf	R_CT-Rf	R_OJ-Rf	R_EASTON-Rf
R_MEDIAN-Rf		0.812	0.886	0.693	0.909
		(<.0001)	(<.0001)	(<.0001)	(<.0001)
R_GLS-Rf	0.969		0.835	0.419	0.731
	(<.0001)		(<.0001)	(<.0001)	(<.0001)
R_CT-Rf	0.965	0.974		0.516	0.784
	(<.0001)	(<.0001)		(<.0001)	(<.0001)
R_OJ-Rf	0.891	0.817	0.790		0.565
	(<.0001)	(<.0001)	(<.0001)		(<.0001)
R_EASTON-Rf	0.973	0.901	0.902	0.897	
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	

Note: Table 2 presents the summary statistics and simple correlations for the estimates of the implied cost of equity. The excess implied cost of equity is the implied cost of equity minus the risk-free rate (Rf). R_GLS, R_CT, R_OJ and R_EASTON are the estimates of the implied cost of equity by Gebhardt, Lee and Swaminathan (2001), Claus and Thomas (2001), Ohlson and Juettner-Nauroth (2005) implemented by Gode and Mohanram (2003) and Easton(2004). R_median is the median of these four estimates. All of the cost of the equity measures are estimated at 4th month after the fiscal year-end. Rf is the yield on 10-year treasury bill. Panel A gives the summary statistics and panel B gives the Pearson correlation (below the diagonal) and the Spearman (above the diagonal) correlations between the estimates of the implied cost of equity. The P-values are in the parentheses. The sample size is 460 for all of the variables.

Table 3
Variable Definitions

	Definition
Implied cost of equity	
R_GLS	Implied cost of equity by Gebhardt, Lee and Swaminathan (2001)
R_CT	Implied cost of equity by Claus and Thomas (2001)
R_OJ	Implied cost of equity by Ohlson and Juettner-Nauroth (2005) and implemented by Gode and Mohanram (2003)
R_EASTON	Implied cost of equity by Easton(2004)
R_MEDIAN	The median of R_GLS, R_CT, R_OJ and R_EASTON.
Audit committee	
ACsize	Total number of directors on the audit committee
%ACaudit	The proportion of financial expert seats on the audit committee
ACmeet	The number of audit committee meetings each year
Insurer's Characteristics	
Reinsurance	The ratio of reinsurance ceded divided by the sum of direct premiums written plus reinsurance assumed
STD3_lossratio	Standard deviation of loss ratio within 3 years
STD3_roi	Standard deviation of return on investment within 3 years
Control Variables	
BM	Book to market ratio
Beta	The sum of the coefficients on the current and lagged market returns
IVOL	Idiosyncratic risk is measured by the standard deviation of the residuals in the market model regression
AC%block	A dummy variable, which is equal to one if firm has at least one outside blockholder on the audit committee, where block is defined at the 5% ownership lever
BDsize	Total number of directors on the board
BDout	The proportion of outside directors on the board
BDoutdirectorship	The average number of directorships that board directors serve in other firms' board concurrently
CEO/chair	A dummy variable, which is equal to one if CEO is the chairman of the board and zero otherwise
BDage	The average age of directors on the board
Bdtenure	The average number of years the directors have been on the board
BDmeet	The number of board meetings each year
BDown	the proportion of shares hold by all directors and executives officers
Growthpremium	Growth rate the premium

Weak	Financial weakness, which is an indicator variable. It is equal to one if the insurer has four or more unusual IRIS (Insurance Regulatory Information System) ratios and zero otherwise
Pplr	Percentage of personal long-tail lines, is the percentage of personal long-tail lines divided by total net written premiums
Herfindahl	Business line concentration
Geoherfindahl	Geographic concentration
Leverage	1 minus the surplus-to-assets ratio
MV	Market value
ln(na)	Natural logarithm of net admitted assets
Group	Dummy variable. It is equal to one if the insurer is group company and zero otherwise
Fcrisis	A dummy variable which is equal to one when it is during financial crisis (2008-2009) and zero otherwise
Sox	A dummy variable which is equal to one when it is after 2003 and zero otherwise

Table 4

Summary Statistics of Corporate Governance, Insurer's Characteristics and Control Variables

Variables	Mean	Median	Std. Dev	Minimum	Maximum	N
ACsize	3.974	4.000	1.263	1.000	9.000	460
%ACaudit	0.320	0.250	0.348	0.000	1.000	460
ACmeet	6.583	6.000	3.409	0.000	26.000	460
AC%block	0.012	0.000	0.105	0.000	1.000	460
Reinsurance	0.327	0.297	2.429	-31.732	41.010	460
STD3_lossratio	4.810	0.049	35.257	0.004	386.189	460
STD3_roi	0.012	0.008	0.014	0.000	0.118	460
BM	0.001	0.001	0.001	0.000	0.008	460
ln(BM)	-7.074	-7.116	0.578	-8.613	-4.848	460
Beta	0.672	0.610	0.504	-0.505	3.337	460
IVOL	0.079	0.075	0.031	0.036	0.389	460
AC%block	0.012	0.000	0.105	0.000	1.000	460
BDsize	10.435	10.000	2.736	4.000	21.000	460
BDout	0.696	0.733	0.175	0.143	0.923	460
BDoutdirectorship	0.999	0.750	0.790	0.000	4.333	460
BDage	61.836	61.721	4.390	49.231	72.889	460
BDtenure	10.340	9.515	5.248	0.444	27.267	460
BDmeet	5.954	5.000	2.668	1.000	27.267	460
BDown	0.150	0.082	0.166	0.000	0.915	460
CEO/chair	0.593	1.000	0.492	0.000	1.000	460
Growthpremium	-55.750	0.042	1193.282	-25592.980	18.193	460
Weak	0.064	0.000	0.224	0.000	1.000	460
pplr	0.205	0.113	0.220	-0.006	0.700	460
Herfindahl	0.327	0.303	0.205	0.089	1.000	460
Geoherfindahl	0.229	0.097	0.254	0.037	1.000	460
Leverage	0.627	0.658	0.124	0.277	0.966	460
log(MV)	14.269	14.069	1.810	10.361	19.246	460
ln(na)	21.970	21.735	1.549	17.203	26.670	460
Group	0.989	1.000	0.104	0.000	1.000	460

Note: Sample of 460 U.S. stock property-liability insurers firm-year observations during 1996-2012. See Table 3 for variable definition.

Table 5
Pearson Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. ACsize	1.000																			
2. %ACaudit	-0.033	1.000																		
	(-0.473)																			
3. ACmeet	-0.019	0.469	1.000																	
	(-0.676)	(<0.001)																		
4. Reinsurance	-0.001	-0.086	0.011	1.000																
	(-0.981)	(0.062)	(0.817)																	
5. STD3_lossratio	-0.001	0.090	-0.008	-0.972	1.000															
	(-0.976)	(0.051)	(0.857)	(<0.001)																
6. STD3_roi	0.094	0.022	0.071	-0.179	0.209	1.000														
	(-0.043)	(0.636)	(0.125)	(<0.001)	(<0.001)															
7. BM	-0.036	0.080	-0.032	0.004	-0.001	-0.039	1.000													
	(-0.44)	(0.085)	(0.486)	(0.938)	(0.976)	(0.396)														
8. Beta	-0.011	0.054	0.069	-0.047	0.044	0.079	0.020	1.000												
	(0.804)	(0.243)	(0.135)	(0.312)	(0.339)	(0.088)	(0.673)													
9. IVOL	-0.052	-0.087	0.084	-0.038	0.030	-0.004	0.082	0.166	1.000											
	(0.266)	(0.06)	(0.07)	(0.413)	(0.523)	(0.94)	(0.078)	(<0.001)												
10. AC%block	0.134	-0.087	-0.061	0.006	-0.006	-0.026	0.065	0.048	-0.002	1.000										
	(0.004)	(0.059)	(0.186)	(0.898)	(0.903)	(0.57)	(0.159)	(0.305)	(0.962)											
11. BDsize	0.309	-0.059	0.050	0.060	-0.059	0.092	0.051	0.009	-0.114	-0.044	1.000									
	(<0.001)	(0.203)	(0.281)	(0.197)	(0.207)	(0.048)	(0.274)	(0.851)	(0.013)	(0.344)										
12. BDout	(0.176)	0.310	0.317	-0.005	0.005	-0.022	0.019	0.000	0.071	-0.096	-0.026	1.000								
	(<0.001)	(<0.001)	(<0.001)	(0.909)	(0.912)	(0.629)	(0.683)	(0.995)	(0.126)	(0.038)	(0.57)									
13. BDoutdirectorship	0.123	0.003	0.109	0.031	-0.031	0.059	-0.120	0.075	-0.048	-0.095	-0.027	0.184	1.000							
	(0.008)	(0.949)	(0.019)	(0.506)	(0.506)	(0.202)	(0.01)	(0.104)	(0.3)	(0.041)	(0.563)	(<0.001)								
14. BDage	-0.032	0.195	0.057	0.050	-0.050	-0.030	0.177	-0.012	-0.211	-0.117	0.073	0.109	-0.190	1.000						

	(0.488)	(<0.001)	(0.22)	(0.283)	(0.283)	(0.513)	(<0.001)	(0.794)	(<0.001)	(0.011)	(0.115)	(0.019)	(<0.001)							
15. BDtenure																				
	-0.151	0.040	-0.082	0.046	-0.045	-0.073	0.123	-0.145	-0.200	-0.021	0.234	-0.293	-0.205	0.478	1.000					
	(0.001)	(0.394)	(0.078)	(0.316)	(0.332)	(0.117)	(0.008)	(0.002)	(<0.001)	(0.644)	(<0.001)	(<0.001)	(<0.001)	(<0.001)						
16. BDmeet																				
	0.122	0.254	0.344	0.004	-0.019	0.001	0.040	0.286	0.294	0.045	-0.044	0.284	0.075	-0.081	-0.259	1.000				
	(0.008)	(<0.001)	(<0.001)	(0.925)	(0.683)	(0.978)	(0.389)	(<0.001)	(<0.001)	(0.331)	(0.347)	(<0.001)	(0.106)	(0.079)	(<0.001)					
17. BDown																				
	-0.281	-0.209	-0.128	-0.018	0.025	0.116	0.145	-0.012	0.071	0.011	0.096	-0.276	-0.135	-0.023	0.306	-0.283	1.000			
	(<0.001)	(<0.001)	(0.006)	(0.696)	(0.591)	(0.012)	(0.002)	(0.796)	(0.128)	(0.805)	(0.038)	(<0.001)	(0.003)	(0.615)	(<0.001)	(<0.001)				
18. CEO/chair																				
	0.004	-0.219	-0.223	0.053	-0.054	0.005	0.016	-0.020	-0.092	-0.027	0.008	-0.212	0.168	-0.048	0.106	-0.207	-0.025	1.000		
	(0.923)	(<0.001)	(<0.001)	(0.254)	(0.247)	(0.916)	(0.734)	(0.665)	(0.047)	(0.555)	(0.868)	(<0.001)	(<0.001)	(0.299)	(0.022)	(<0.001)	(0.589)			
19. Growthpremium																				
	0.036	0.002	-0.074	-0.002	0.001	-0.011	-0.030	0.017	0.033	0.005	-0.027	0.008	-0.020	-0.092	-0.040	-0.001	0.000	-0.039	1.000	
	(0.438)	(0.963)	(0.109)	(0.969)	(0.974)	(0.807)	(0.511)	(0.712)	(0.475)	(0.907)	(0.566)	(0.868)	(0.664)	(0.046)	(0.386)	(0.988)	(0.995)	(0.406)		
20. Weak																				
	0.088	-0.168	-0.075	-0.025	0.028	0.038	-0.009	0.021	0.127	0.238	0.029	-0.062	0.079	(-0.074)	-0.070	-0.014	-0.069	0.110	-0.009	1.000
	(0.059)	(<0.001)	(0.104)	(0.596)	(0.553)	(0.418)	(0.854)	(0.652)	(0.006)	(<0.001)	(0.536)	(0.179)	(0.09)	(0.112)	(0.131)	(0.764)	(0.135)	(0.017)	(0.846)	
21. pplr	0.073	-0.223	0.013	0.032	-0.044	0.026	-0.047	-0.011	-0.005	-0.032	-0.041	0.177	0.175	0.124	0.027	0.103	-0.075	0.025	0.025	-0.095
	(0.115)	(<0.001)	(0.781)	(0.485)	(0.341)	(0.571)	(0.314)	(0.816)	(0.909)	(0.494)	(0.376)	(<0.001)	(<0.001)	(0.007)	(0.558)	(0.026)	(0.104)	(0.584)	(0.595)	(0.041)
22. Herfindahl																				
	-0.114	-0.036	-0.122	-0.065	0.069	-0.021	0.017	-0.017	0.014	-0.012	-0.001	0.039	-0.292	0.307	0.094	-0.074	0.149	-0.049	-0.064	-0.016
	(0.014)	(0.441)	(0.008)	(0.158)	(0.134)	(0.657)	(0.713)	(0.715)	(0.768)	(0.79)	(0.987)	(0.404)	(<0.001)	(<0.001)	(0.041)	(0.112)	(0.001)	(0.292)	(0.164)	(0.734)
23. Geoherfindahl																				
	-0.246	-0.090	-0.204	-0.112	0.114	-0.037	0.018	-0.029	0.027	-0.033	-0.118	-0.028	-0.229	0.380	0.304	-0.123	0.147	-0.037	-0.01	-0.024
	(<0.001)	(0.052)	(<0.001)	(0.015)	(0.013)	(0.427)	(0.702)	(0.526)	(0.555)	(0.481)	(0.011)	(0.546)	(<0.001)	(<0.001)	(<0.001)	(0.008)	(0.001)	(0.421)	(0.829)	(0.612)
24. Leverage																				
	0.100	-0.006	0.210	0.016	-0.026	-0.014	-0.302	0.069	0.157	0.017	0.013	0.041	0.184	-0.261	-0.246	0.173	-0.284	0.026	0.085	0.153
	(0.031)	(0.89)	(<0.001)	(0.736)	(0.576)	(0.755)	(<0.001)	(0.138)	(0.001)	(0.713)	(0.778)	(0.378)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.582)	(0.066)	(0.001)
25. MV																				
	0.203	0.142	0.254	0.006	0.002	0.183	-0.424	0.064	-0.249	-0.081	0.274	0.090	0.400	0.125	0.018	0.049	-0.206	0.223	-0.11	-0.032
	(<0.001)	(0.002)	(<0.001)	(0.896)	(0.972)	(<0.001)	(<0.001)	(0.166)	(<0.001)	(0.081)	(<0.001)	(0.052)	(<0.001)	(0.007)	(0.696)	(0.292)	(<0.001)	(<0.001)	(0.017)	(0.493)
26. ln(na)																				
	0.188	0.173	0.204	0.029	-0.023	0.210	-0.144	0.059	-0.178	-0.087	0.248	0.057	0.385	0.236	0.118	0.045	-0.134	0.287	-0.138	-0.027
	(<0.001)	(<0.001)	(<0.001)	(0.529)	(0.626)	(<0.001)	(0.002)	(0.204)	(<0.001)	(0.061)	(<0.001)	(0.221)	(<0.001)	(<0.001)	(0.011)	(0.33)	(0.004)	(<0.001)	(0.003)	(0.559)
27. Group	0.097	0.015	-0.106	-0.003	0.005	-0.028	-0.004	-0.089	-0.164	0.012	0.154	0.083	0.039	-0.016	0.032	-0.111	0.007	-0.002	-0.005	0.030
	((0.037))	(0.74)	(0.023)	(0.941)	(0.913)	(0.545)	(0.925)	(0.054)	(<0.001)	(0.793)	(0.001)	(0.075)	(0.406)	(0.73)	(0.492)	(0.016)	(0.888)	(0.969)	(0.917)	(0.512)

Table 6

Basic Excess Cost of Equity Regressions

$$Dep\,Var = R\_(MEDi,t) - R\_(f,t)$$
$$= f(ACsize_{i,t},\ \%ACaudit_{\ i,t},\ ACmeet_{i,t},\ Reinsurance_{i,t},\ STD3_{roi_{i,t}},\ STD3_{lossratio_{i,t}},\ BM_{i,t},$$
$$Beta_{i,t},\ IVOL_{i,t},\ AC\%block_{\ i,t},\ BDsize_{i,t},\ BDout_{i,t},\ BDoutdirectorship_{i,t},\ \frac{CEO}{chair_{i,t}},$$
$$BDage_{i,t},\ BDtenure_{i,t},\ BDmeet_{i,t},\ BDown_{i,t},\ Growthpremium_{i,t},\ Weak_{i,t}, Pplr_{i,t},$$
$$Herfindahl_{i,t},\ Geoherfindahl_{i,t},\ Leverage_{i,t},\ ln(na)_{i,t},\ Group_{i,t})$$

Independent Variables	Model 1	Model 2	Model 3	Model 4
Intercept	-0.075	-0.064	-0.151	-0.069
	(-0.08)	(-0.06)	(-0.15)	(-0.07)
ACsize	0.041**		0.038*	
	(1.97)		(1.89)	
%ACaudit	-0.248***	-0.260***	-0.251***	-0.260***
	(-3.26)	(-3.42)	(-3.32)	(-3.44)
ACmeet	-0.010	-0.012	-0.010	-0.012
	(-1.3)	(-1.52)	(-1.28)	(-1.53)
Reinsurance	-0.015**	-0.015**	-0.015**	-0.015**
	(-2.28)	(-2.25)	(-2.28)	(-2.25)
STD3_roi	3.558**	3.700**	3.477**	3.694**
	(2.42)	(2.52)	(2.38)	(2.53)
STD3_lossratio	-0.000	-0.000	-0.000	-0.000
	(-0.53)	(-0.67)	(-0.56)	(-0.67)
BM	147.846***	152.957***	147.764***	152.671***
	(4.08)	(4.17)	(4.07)	(4.18)
Beta	0.109**	0.103**	0.111**	0.103**
	(2.5)	(2.35)	(2.53)	(2.36)
IVOL	0.262	0.225	0.303	0.228
	(0.38)	(0.32)	(0.44)	(0.33)
AC%block	-0.123	-0.054	-0.115	-0.053
	(-0.65)	(-0.29)	(-0.61)	(-0.29)
BDsize	-0.008	-0.000		
	(-0.54)	(-0.03)		
BDout	0.140	0.164	0.146	0.164
	(0.85)	(1)	(0.89)	(1)
BDoutdirectorship	-0.010	-0.004	-0.008	-0.004
	(-0.29)	(-0.14)	(-0.24)	(-0.13)
CEO/chair	0.111**	0.114**	0.110**	0.114**
	(2.24)	(2.3)	(2.22)	(2.31)
BDage	0.006	0.009	0.008	0.009
	(0.76)	(1.08)	(0.92)	(1.11)

BDtenure	0.002	0.002	0.001	0.002
	(0.25)	(0.23)	(0.13)	(0.23)
BDmeet	0.008	0.009	0.008	0.009
	(0.93)	(1.03)	(0.94)	(1.03)
BDown	-0.098	-0.121	-0.095	-0.121
	(-0.54)	(-0.67)	(-0.53)	(-0.67)
Growthpremium	-0.000	0.000	0.000	0.000
	(-0.05)	(0.05)	(0.01)	(0.05)
Weak	0.030	0.031	0.024	0.031
	(0.35)	(0.36)	(0.29)	(0.36)
Pplr	-0.003	-0.027	-0.002	-0.026
	(-0.01)	(-0.08)	(-0.01)	(-0.07)
Herfindahl	-0.089	-0.135	-0.082	-0.133
	(-0.37)	(-0.56)	(-0.34)	(-0.55)
Geoherfindahl	-0.257	-0.313	-0.268	-0.313
	(-1.05)	(-1.28)	(-1.1)	(-1.28)
Leverage	0.003	-0.005	0.010	-0.004
	(0.01)	(-0.01)	(0.03)	(-0.01)
ln(na)	-0.031	-0.032	-0.033	-0.032
	(-0.84)	(-0.86)	(-0.91)	(-0.87)
Group	-0.022	-0.053	-0.038	-0.053
	(-0.07)	(-0.16)	(-0.12)	(-0.17)

Note: Sample of 460 U.S. stock property-liability insurers firm-year observation during 1996-2012. The z-statistics are in parentheses. See table 3 for variable definitions. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 7

Excess Cost of Equity Regressions and Enactment of SOX

$$Dep\,Var = R\_(MEDi,t) - R\_(f,t)$$
$$= f(ACsize_{i,t},\ \%ACaudit_{\ i,t},\ ACmeet_{i,t},\ Reinsurance_{i,t},\ STD3_{roi\,i,t},\ STD3_{lossratio\,i,t},\ BM_{i,t},$$
$$Beta_{i,t},\ IVOL_{i,t},\ AC\%block_{\ i,t},\ BDsize_{i,t},\ BDout_{i,t},\ BDoutdirectorship_{i,t},\ \frac{CEO}{chair}_{i,t},$$
$$BDage_{i,t},\ BDtenure_{i,t},\ BDmeet_{i,t},\ BDown_{i,t},\ Growthpremium_{i,t},\ Weak_{i,t}, Pplr_{i,t},$$
$$Herfindahl_{i,t},\ Geoherfindahl_{i,t},\ Leverage_{i,t},\ Ln(na)_{i,t},\ Group_{i,t},\ SOX_{i,t})$$

Independent Variables	Model 1	Model 2	Model 3	Model 4
Intercept	-0.318	-0.301	-0.392	-0.291
	(-0.31)	(-0.29)	(-0.39)	(-0.28)
ACsize	0.043**		0.041**	
	(2.09)		(2.03)	
%ACaudit	-0.167*	-0.188**	-0.169*	-0.188**
	(-1.9)	(-2.15)	(-1.93)	(-2.15)
ACmeet	-0.005	-0.007	-0.004	-0.007
	(-0.55)	(-0.83)	(-0.52)	(-0.85)
Reinsurance	-0.016**	-0.015**	-0.016**	-0.015**
	(-2.34)	(-2.31)	(-2.34)	(-2.31)
STD3_roi	3.853***	3.977***	3.781***	3.983***
	(2.63)	(2.7)	(2.59)	(2.73)
STD3_lossratio	0.000	-0.001	0.000	-0.001
	(-0.56)	(-0.7)	(-0.59)	(-0.7)
BM	160.798***	165.715***	160.621***	164.893***
	(4.35)	(4.44)	(4.35)	(4.43)
Beta	0.101**	0.096**	0.103**	0.096**
	(2.3)	(2.16)	(2.34)	(2.17)
IVOL	0.106	0.084	0.142	0.082
	(0.15)	(0.12)	(0.21)	(0.12)
AC%block	-0.133	-0.06	-0.127	-0.06
	(-0.71)	(-0.32)	(-0.68)	(-0.32)
BDsize	-0.007	0.001		
	(-0.5)	(0.05)		
BDout	0.142	0.167	0.148	0.167
	(0.87)	(1.02)	(0.91)	(1.02)
BDoutdirectorship	-0.007	-0.002	-0.005	-0.002
	(-0.21)	(-0.06)	(-0.17)	(-0.06)
CEO/chair	0.103**	0.108**	0.103**	0.108**
	(2.09)	(2.18)	(2.07)	(2.19)
BDage	0.008	0.011	0.009	0.011

	(0.99)	(1.3)	(1.14)	(1.32)
BDtenure	0	0	-0.001	0
	(0.04)	(0.05)	(-0.07)	(0.06)
BDmeet	0.008	0.009	0.008	0.009
	(0.9)	(0.99)	(0.9)	(1)
BDown	-0.114	-0.135	-0.111	-0.136
	(-0.63)	(-0.74)	(-0.61)	(-0.75)
Growthpremium	0.000	0.000	0.000	0.000
	(0.02)	(0.12)	(0.08)	(0.11)
Weak	0.024	0.027	0.019	0.027
	(0.29)	(0.31)	(0.22)	(0.32)
Pplr	-0.115	-0.13	-0.115	-0.129
	(-0.32)	(-0.36)	(-0.32)	(-0.36)
Herfindahl	-0.109	-0.159	-0.102	-0.158
	(-0.46)	(-0.66)	(-0.43)	(-0.66)
Geoherfindahl	-0.232	-0.291	-0.243	-0.29
	(-0.94)	(-1.17)	(-0.99)	(-1.17)
Leverage	-0.004	-0.016	0.006	-0.015
	(-0.01)	(-0.05)	(0.02)	(-0.04)
Ln(na)	-0.022	-0.023	-0.023	-0.023
	(-0.56)	(-0.58)	(-0.61)	(-0.58)
Group	-0.058	-0.088	-0.073	-0.085
	(-0.17)	(-0.26)	(-0.22)	(-0.25)
SOX	-0.119*	-0.108	-0.12*	-0.108
	(-1.81)	(-1.64)	(-1.83)	(-1.64)

Note: Sample of 460 U.S. stock property-liability insurers firm-year observation during 1996-2012. The Z-statistics are in parentheses. See table 3 for variable definitions. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 8
Excess Cost of Equity and SOX Interaction with Auditing and Insurer Risk Taking Activity

$$Dep\,Var = R\_(MEDi,t) - R\_(f,t) = f(ACsize_{i,t},\ \%ACaudit_{\ i,t},\ ACmeet_{i,t},\ Reinsurance_{i,t},\ STD3_{roi_{i,t}},\ STD3_{lossratio_{i,t}},\ BM_{i,t}, Beta_{i,t},\ IVOL_{i,t},\ AC\%block_{\ i,t},\ BDsize_{i,t},\ BDout_{i,t},\ BDoutdirectorship_{i,t},\ \frac{CEO}{chair_{i,t}}, BDage_{i,t},\ BDtenure_{i,t},\ BDmeet_{i,t},\ BDown_{i,t},\ Growthpremium_{i,t},\ Weak_{i,t}, Pplr_{i,t}, Herfindahl_{i,t},\ Geoherfindahl_{i,t},\ Leverage_{i,t},\ ln(na)_{i,t},\ Group_{i,t},\ SOX_{i,t}, SOX * ACsize_{i,t},\ SOX * \%ACaudit_{i,t},\ SOX * Acmeet_{i,t})$$

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Intercept	-0.226	-0.237	-0.315	-0.303	-0.397	-0.388	-0.471	-0.363
	(-0.22)	(-0.23)	(-0.31)	(-0.30)	(-0.40)	(-0.38)	(-0.48)	(-0.37)
ACsize	0.017		0.012		0.043**		0.041**	
	(0.69)		(0.53)		(2.07)		(2.04)	
%ACaudit	0.367	0.357	0.401	0.385	-0.178**	-0.197**	-0.181**	-0.197**
	(0.34)	(0.33)	(0.38)	(0.36)	(-1.97)	(-2.19)	(-2.02)	(-2.19)
ACmeet	0.008	0.007	0.007	0.007	-0.005	-0.007	-0.004	-0.007
	(0.51)	(0.46)	(0.44)	(0.42)	(-0.55)	(-0.83)	(-0.53)	(-0.84)
Reinsurance	-0.015**	-0.015**	-0.015**	-0.015**	-0.049	-0.042	-0.055	-0.039
	(-2.33)	(-2.32)	(-2.33)	(-2.32)	(-0.28)	(-0.24)	(-0.32)	(-0.23)
STD3_roi	3.553**	3.520**	3.457**	3.453**	3.088	2.994	3.118	2.984
	(2.42)	(2.40)	(2.37)	(2.37)	(0.86)	(0.83)	(0.87)	(0.83)
STD3_lossratio	0	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000
	(-0.48)	(-0.52)	(-0.51)	(-0.54)	(0.06)	(-0.05)	(0.07)	(-0.05)
BM	168.577***	170.597***	168.367***	170.036***	161.849***	167.320***	161.379***	166.530***
	(4.46)	(4.51)	(4.46)	(4.50)	(4.37)	(4.46)	(4.36)	(4.46)
Beta	0.107**	0.104**	0.108**	0.105**	0.103**	0.097**	0.105**	0.097**
	(2.32)	(2.26)	(2.33)	(2.28)	(2.27)	(2.12)	(2.32)	(2.13)

IVOL	-0.194	-0.228	-0.142	-0.181	0.093	0.078	0.121	0.071
	(-0.28)	(-0.33)	(-0.20)	(-0.26)	(0.13)	(0.11)	(0.18)	(0.10)
AC%block	-0.097	-0.075	-0.089	-0.072	-0.126	-0.053	-0.120	-0.053
	(-0.52)	(-0.41)	(-0.48)	(-0.40)	(-0.67)	(-0.29)	(-0.64)	(-0.29)
BDsize	-0.009	-0.006			-0.006	0.002		
	(-0.66)	(-0.48)			(-0.40)	(0.12)		
BDout	0.101	0.104	0.106	0.107	0.162	0.187	0.169	0.185
	(0.62)	(0.64)	(0.65)	(0.66)	(0.98)	(1.13)	(1.03)	(1.12)
BDoutdirectorship	0.002	0.003	0.003	0.004	-0.004	0.000	-0.003	0.000
	(0.05)	(0.09)	(0.08)	(0.11)	(-0.13)	(0.01)	(-0.10)	(0.00)
CEO/chair	0.102**	0.102**	0.102**	0.102**	0.105**	0.110**	0.105**	0.110**
	(2.06)	(2.06)	(2.06)	(2.06)	(2.12)	(2.21)	(2.11)	(2.22)
BDage	0.009	0.010	0.010	0.010	0.009	0.011	0.010	0.011
	(1.05)	(1.14)	(1.23)	(1.27)	(1.03)	(1.33)	(1.16)	(1.34)
BDtenure	0.002	0.002	0.000	0.001	-0.000	0.000	-0.001	0.000
	(0.20)	(0.22)	(0.06)	(0.11)	(0.00)	(0.02)	(-0.09)	(0.04)
BDmeet	0.010	0.010	0.010	0.010	0.008	0.009	0.008	0.009
	(1.11)	(1.19)	(1.13)	(1.19)	(0.88)	(0.98)	(0.89)	(0.98)
BDown	-0.108	-0.111	-0.104	-0.107	-0.106	-0.125	-0.104	-0.127
	(-0.59)	(-0.60)	(-0.57)	(-0.58)	(-0.58)	(-0.68)	(-0.57)	(-0.69)
Growthpremium	0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000
	(-0.09)	(-0.06)	(-0.02)	(-0.01)	(-0.02)	(0.08)	(0.02)	(0.07)
Weak	0.032	0.035	0.026	0.030	0.022	0.026	0.018	0.027
	(0.37)	(0.41)	(0.31)	(0.36)	(0.26)	(0.30)	(0.21)	(0.32)
Pplr	-0.253	-0.277	-0.262	-0.279	-0.191	-0.193	-0.189	-0.195
	(-0.79)	(-0.86)	(-0.81)	(-0.87)	(-0.61)	(-0.60)	(-0.60)	(-0.61)
Herfindahl	-0.126	-0.139	-0.115	-0.129	-0.098	-0.147	-0.089	-0.149
	(-0.53)	(-0.59)	(-0.49)	(-0.55)	(-0.44)	(-0.65)	(-0.40)	(-0.67)
Geoherfindahl	-0.209	-0.218	-0.221	-0.226	-0.185	-0.245	-0.188	-0.245
	(-0.85)	(-0.89)	(-0.90)	(-0.92)	(-0.75)	(-0.99)	(-0.77)	(-0.99)
Leverage	-0.046	-0.052	-0.033	-0.041	-0.012	-0.026	-0.005	-0.025

	(-0.13)	(-0.15)	(-0.09)	(-0.11)	(-0.03)	(-0.07)	(-0.01)	(-0.07)
ln(na)	-0.019	-0.017	-0.021	-0.019	-0.021	-0.021	-0.022	-0.021
	(-0.46)	(-0.42)	(-0.51)	(-0.47)	(-0.54)	(-0.55)	(-0.58)	(-0.55)
Group	-0.100	-0.114	-0.121	-0.128	-0.035	-0.064	-0.042	-0.062
	(-0.28)	(-0.32)	(-0.35)	(-0.36)	(-0.11)	(-0.19)	(-0.13)	(-0.19)
SOX	-0.261	-0.306**	-0.274*	-0.307**	-0.131	-0.122	-0.132	-0.121
	(-1.57)	(-1.99)	(-1.66)	(-2.00)	(-1.49)	(-1.39)	(-1.50)	(-1.38)
SOX*Acsize	0.057*	0.068***	0.057*	0.066***				
	(1.87)	(2.65)	(1.90)	(2.61)				
SOX*%Acaudit	-0.546	-0.542	-0.582	-0.570				
	(-0.51)	(-0.51)	(-0.54)	(-0.53)				
SOX*Acmeet	-0.017	-0.016	-0.015	-0.015				
	(-0.99)	(-0.98)	(-0.91)	(-0.92)				
SOX*Reinsurance					0.034	0.028	0.041	0.025
					(0.20)	(0.16)	(0.24)	(0.14)
SOX*STD3_lossratio					-0.001	-0.001	-0.001	-0.001
					(-0.50)	(-0.46)	(-0.55)	(-0.45)
SOX*STD3_roi					0.581	0.861	0.490	0.883
					(0.16)	(0.23)	(0.13)	(0.24)

Note: Sample of 460 U.S. stock property-liability insurers firm-year observation during 1996-2012. The z-statistics are in parentheses. See table 3 for variable definitions. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 9

Excess Cost of Equity Regressions and the Financial Crisis Impact

$$R\_(MEDi,t) - R\_(f,t) = f(ACsize_{i,t},\ \%ACaudit_{\ i,t},\ ACmeet_{i,t},\ Reinsurance_{i,t},\ STD3_{roi\,i,t},\ STD3_{lossratio\,i,t},\ BM_{i,t},\ Beta_{i,t},\ IVOL_{i,t},\ AC\%block_{\ i,t},\ BDsize_{i,t},\ BDout_{i,t},\ BDoutdirectorship_{i,t},\ \frac{CEO}{chair}_{i,t},\ BDage_{i,t},\ BDtenure_{i,t},\ BDmeet_{i,t},\ BDown_{i,t},\ Growthpremium_{i,t},\ Weak_{i,t}, Pplr_{i,t},\ Herfindahl_{i,t},\ Geoherfindahl_{i,t},\ Leverage_{i,t},\ ln(na)_{i,t},\ Group_{i,t},\ fcrisis_{i,t})$$

Independent Variables	Model 1	Model 2	Model 3	Model 4
Intercept	-0.299	-0.289	-0.355	-0.275
	(-0.31)	(-0.3)	(-0.37)	(-0.29)
ACsize	0.036*		0.034*	
	(1.8)		(1.76)	
%ACaudit	-0.276***	-0.288***	-0.279***	-0.287***
	(-3.77)	(-3.92)	(-3.81)	(-3.93)
ACmeet	-0.012	-0.013*	-0.012	-0.013*
	(-1.6)	(-1.81)	(-1.59)	(-1.82)
Reinsurance	-0.014**	-0.014**	-0.014**	-0.014**
	(-2.2)	(-2.17)	(-2.2)	(-2.18)
STD3_roi	1.834	1.939	1.763	1.958
	(1.26)	(1.33)	(1.23)	(1.36)
STD3_lossratio	0	0	0	0
	(-0.51)	(-0.64)	(-0.53)	(-0.63)
BM	146.634***	150.821***	146.52***	150.785***
	(4.18)	(4.26)	(4.18)	(4.27)
Beta	0.076*	0.07	0.077*	0.07
	(1.77)	(1.63)	(1.8)	(1.63)
IVOL	1.073	1.054	1.103	1.047

	(1.57)	(1.54)	(1.62)	(1.54)
AC%block	-0.099	-0.037	-0.095	-0.037
	(-0.55)	(-0.21)	(-0.52)	(-0.21)
BDsize	-0.005	0.001		
	(-0.4)	(0.1)		
BDout	0.084	0.105	0.087	0.105
	(0.53)	(0.67)	(0.55)	(0.66)
BDoutdirectorship	-0.012	-0.008	-0.011	-0.008
	(-0.38)	(-0.24)	(-0.34)	(-0.25)
CEO/chair	0.117**	0.12**	0.117**	0.12**
	(2.45)	(2.51)	(2.44)	(2.51)
BDage	0.006	0.008	0.007	0.008
	(0.73)	(1.02)	(0.85)	(1.02)
BDtenure	0.002	0.002	0.001	0.002
	(0.27)	(0.26)	(0.19)	(0.28)
BDmeet	-0.001	0	0	0
	(-0.06)	(0.01)	(-0.06)	(0.01)
BDown	-0.152	-0.174	-0.15	-0.175
	(-0.87)	(-0.99)	(-0.86)	(-1)
Growthpremium	0	0	0	0
	(-0.21)	(-0.12)	(-0.17)	(-0.13)
Weak	0.039	0.04	0.035	0.041
	(0.47)	(0.48)	(0.43)	(0.5)
Pplr	0.083	0.066	0.081	0.066
	(0.24)	(0.19)	(0.24)	(0.19)
Herfindahl	-0.04	-0.08	-0.035	-0.082
	(-0.17)	(-0.34)	(-0.15)	(-0.35)
Geoherfindahl	-0.223	-0.271	-0.229	-0.27
	(-0.94)	(-1.15)	(-0.97)	(-1.15)
Leverage	0.119	0.111	0.13	0.109
	(0.34)	(0.32)	(0.38)	(0.31)

ln(na)	-0.024	-0.025	-0.026	-0.025
	(-0.67)	(-0.69)	(-0.72)	(-0.68)
Group	0.013	-0.013	0.003	-0.011
	(0.04)	(-0.04)	(0.01)	(-0.03)
Fcrisis	0.275***	0.278***	0.276***	0.278***
	(5.55)	(5.61)	(5.6)	5.62

Note: Sample of 460 U.S. stock property-liability insurers firm-year observation during 1996-2012. The z-statistics are in parentheses. See table 3 for variable definitions. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 10
Excess Cost of Equity Regression and the Financial Crisis Impact Interactions

$$Dep\,Var = R\_(MEDi,t) - R\_(f,t)$$
$$= f(ACsize_{i,t},\ \%ACaudit_{\ i,t},\ ACmeet_{i,t},\ Reinsurance_{i,t},\ STD3_{roi_{i,t}},\ STD3_{lossratio_{i,t}},\ BM_{i,t},\ Beta_{i,t},\ IVOL_{i,t},\ AC\%block_{\ i,t},\ BDsize_{i,t},$$
$$BDout_{i,t},\ BDoutdirectorship_{i,t},\ \frac{CEO}{chair_{i,t}},\ BDage_{i,t},\ BDtenure_{i,t},\ BDmeet_{i,t},\ BDown_{i,t},\ Growthpremium_{i,t},\ Weak_{i,t}, Pplr_{i,t},$$
$$Herfindahl_{i,t},\ Geoherfindahl_{i,t},\ Leverage_{i,t},\ \ln(na)_{i,t},\ Group_{i,t},\ fcrisis_{i,t},\ Fcrisis * ACsize_{i,t},\ Fcrisis * \%ACaudit_{i,t},$$
$$Fcrisis * Acmeet_{i,t},\ Fcrisis * Reinsurance_{i,t},\ Fcrisis * STD3\_roit_{i,t},\ Fcrisis * STD3\_lossratio_{i,t})$$

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model5	Model 6	Model 7	Model 8
Intercept	-0.097	-0.090	-0.168	-0.085	-0.364	-0.340	-0.439	-0.328
	(-0.1)	(-0.09)	(-0.18)	(-0.09)	(-0.39)	(-0.36)	(-0.48)	(-0.35)
ACsize	0.037*		0.034*		0.036*		0.034*	
	(1.83)		(1.75)		(1.81)		(1.76)	
%ACaudit	-0.288***	-0.300***	-0.290***	-0.299***	-0.284***	-0.294***	-0.286***	-0.294***
	(-3.84)	(-3.97)	(-3.87)	(-3.98)	(-3.86)	(-3.99)	(-3.9)	(-4)
ACmeet	-0.012*	-0.014*	-0.012	-0.014*	-0.012*	-0.014*	-0.012*	-0.014*
	(-1.65)	(-1.88)	(-1.65)	(-1.89)	(-1.67)	(-1.89)	(-1.66)	(-1.9)
Reinsurance	-0.015**	-0.014**	-0.015**	-0.014**	-0.014**	-0.014**	-0.014**	-0.014**
	(-2.28)	(-2.24)	(-2.27)	(-2.24)	(-2.16)	(-2.12)	(-2.16)	(-2.12)
STD3_roi	2.282	2.307	2.187	2.313	2.575	2.683*	2.506	2.695*
	(1.56)	(1.58)	(1.51)	(1.59)	(1.64)	(1.71)	(1.61)	(1.73)
STD3_lossratio	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001	-0.001	-0.001
	(-0.45)	(-0.58)	(-0.48)	(-0.58)	(-0.63)	(-0.79)	(-0.64)	(-0.79)
BM	142.785***	147.396***	142.673***	147.284***	144.827***	149.031***	144.690***	148.940***
	(4.1)	(4.19)	(4.1)	(4.19)	(4.13)	(4.21)	(4.13)	(4.21)
Beta	0.078*	0.070	0.079*	0.070	0.082*	0.076*	0.083*	0.076*
	(1.81)	(1.63)	(1.83)	(1.64)	(1.91)	(1.76)	(1.93)	(1.76)

IVOL	1.141*	1.122	1.179*	1.119	1.040	1.024	1.075	1.018
	(1.66)	(1.63)	(1.73)	(1.64)	(1.53)	(1.5)	(1.59)	(1.5)
AC%block	-0.098	-0.036	-0.091	-0.036	-0.099	-0.036	-0.094	-0.036
	(-0.54)	(-0.2)	(-0.5)	(-0.2)	(-0.54)	(-0.2)	(-0.52)	(-0.2)
BDsize	-0.007	0.000			-0.006	0.001		
	(-0.53)	(0.03)			(-0.43)	(0.07)		
BDout	0.052	0.077	0.056	0.077	0.062	0.082	0.066	0.082
	(-0.08)	(0.49)	(0.35)	(0.49)	(0.39)	(0.52)	(0.42)	(0.52)
BDoutdirectorship	-0.018	-0.014	-0.017	-0.014	-0.013	-0.008	-0.012	-0.008
	(-0.59)	(-0.45)	(-0.55)	(-0.45)	(-0.41)	(-0.25)	(-0.37)	(-0.26)
CEO/chair	0.119**	0.121**	0.118**	0.121**	0.115**	0.118**	0.114**	0.118**
	(2.5)	(2.53)	(2.49)	(2.54)	(2.4)	(2.46)	(2.39)	(2.46)
BDage	0.007	0.009	0.008	0.009	0.007	0.009	0.008	0.009
	(0.87)	(1.15)	(1.02)	(1.17)	(0.85)	(1.14)	(0.98)	(1.15)
BDtenure	0.001	0.001	-0.000	0.001	0.002	0.001	0.001	0.002
	(0.11)	(0.08)	(-0.01)	(0.09)	(0.22)	(0.21)	(0.13)	(0.23)
BDmeet	-0.005	-0.005	-0.005	-0.005	-0.000	0.000	-0.000	0.000
	(-0.6)	(-0.56)	(-0.59)	(-0.56)	(-0.02)	(0.05)	(-0.02)	(0.05)
BDown	-0.187	-0.212	-0.186	-0.212	-0.152	-0.176	-0.151	-0.177
	(-1.07)	(-1.2)	(-1.06)	(-1.21)	(-0.87)	(-1)	(-0.86)	(-1)
Growthp+24:43remium	0	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-0.28)	(-0.18)	(-0.23)	(-0.18)	(-0.26)	(-0.17)	(-0.22)	(-0.18)
Weak	0.042	0.043	0.037	0.044	0.039	0.040	0.035	0.041
	(0.51)	(0.52)	(0.45)	(0.53)	(0.48)	(0.49)	(0.43)	(0.5)
Pplr	-0.14	-0.152	-0.141	-0.152	-0.034	-0.053	-0.031	-0.054
	(-0.5)	(-0.53)	(-0.51)	(-0.54)	(-0.11)	(-0.17)	(-0.1)	(-0.17)
Herfindahl	-0.087	-0.121	-0.081	-0.121	-0.105	-0.146	-0.096	-0.148
	(-0.38)	(-0.53)	(-0.36)	(-0.53)	(-0.48)	(-0.67)	(-0.44)	(-0.69)
Geoherfindahl	-0.216	-0.261	-0.221	-0.261	-0.165	-0.216	-0.169	-0.216
	(-0.99)	(-1.19)	(-1.01)	(-1.19)	(-0.73)	(-0.95)	(-0.75)	(-0.95)
Leverage	0.108	0.098	0.121	0.098	0.062	0.050	0.073	0.049

	(0.31)	(0.28)	(0.35)	(0.28)	(0.18)	(0.15)	(0.21)	(0.14)
ln(na)	-0.029	-0.029	-0.031	-0.029	-0.021	-0.022	-0.022	-0.022
	(-0.8)	(-0.81)	(-0.86)	(-0.81)	(-0.59)	(-0.63)	(-0.63)	(-0.63)
Group	-0.010	-0.039	-0.023	-0.038	0.031	0.006	0.023	0.007
	(-0.03)	(-0.12)	(-0.08)	(-0.12)	(0.1)	(0.02)	(0.08)	(0.02)
Fcrisis	0.046	-0.011	0.039	-0.011	0.332***	0.344***	0.335***	0.343***
	(0.2)	(-0.05)	(0.17)	(-0.05)	(3.18)	(3.29)	(3.22)	(3.3)
Fcrisis*ACsize	-0.013	0.003	-0.011	0.003				
	(-0.27)	(0.06)	(-0.22)	(0.06)				
Fcrisis*%ACaudit	0.249	0.241	0.247	0.241				
	(1.65)	(1.59)	(1.63)	(1.59)				
Fcrisis*ACmeet	0.020	0.020	0.020	0.020				
	(1.23)	(1.25)	(1.24)	(1.25)				
Fcrisis*Reinsurance					0.022	-0.0047772	0.021	-0.0049799
					(0.11)	(-0.02)	(0.1)	(-0.02)
Fcrisis*STD3_roi					0.000	0.0005599	0.000	0.0005633
					(0.46)	(0.55)	(0.45)	(0.56)
Fcrisis*STD3_lossratio					-4.344	-4.370204	-4.405	-4.36183
					(-1.22)	(-1.23)	(-1.24)	(-1.23)

Note: Sample of 460 U.S. stock property-liability insurers firm-year observation during 1996-2012. The z-statistics are in parentheses. See table 3 for variable definitions. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.