Are CEOs Rewarded for Luck?
- Evidence from the US Property-Liability Insurance Industry -

Gyu Dong Kim

July 15, 2015

Ph.D. Student
Department of Risk, Insurance, & Healthcare Management
Fox School of Business
Temple University
Alter Hall, 601k
1801 Liacouras Walk
Philadelphia, PA 19122

gyudong.kim@temple.edu

Are CEOs Rewarded for Luck?
- Evidence from the US Property-Liability Insurance Industry -

Abstract

This study examines whether CEOs are rewarded for luck or skill in the US property-liability (P/L) insurance industry and investigates the sensitivity of pay for luck and pay for skill to governance. CEO salaries are significantly related only with performance by skill, whereas the effect of performance by luck is stronger on bonuses. Performance by luck, performance by skill, and performance by firm characteristics are positively and significantly related with total compensation. Performance by skill has a stronger impact on total compensation than performance by luck. The effect of governance is not clear in the US P/L insurance industry, while the effect of performance by skill is consistently more prominent than the effect of performance by luck. This suggests that a contracting view is more prevalent in the US P/L insurance industry than a skimming view.

JEL Classification: G22, G39, J33

Keywords: Executive compensation, Performance, Pay for luck, Pay for skill, Property-Liability insurance, Underwriting cycle, Loss ratio

1. Introduction

CEO compensation is determined by shareholders through the board or compensation committee in such a way that agency costs are minimized. From the perspective of a contracting model, shareholders use the compensation package in order to increase the CEO's incentive to maximize firm value or minimize moral hazards. Therefore, if compensation packages operate well for these purposes, CEOs should not be rewarded for observable luck unless the luck increases the CEO's outside options. According to the skimming view, separation of ownership and control allows many CEOs to access the compensation setting process and set their own compensation. However, they constrain their own pay level in order to avoid the shareholders' attention and interference. Because good performance is more likely to release this constraint and make shareholders less concerned or aware about high compensation, pay for performance and pay for luck arise in the skimming view (Bertrand & Mullainathan, 2001).

In the extant literature on the relation between CEO compensation and luck in non-financial industries, luck is represented by oil prices, industry-specific exchange rates, and year-to-year differences in mean industry performance. No researchers have tested the effect of luck on pay in financial industries even though property-liability (P/L) insurance has an unique feature that represents luck: the underwriting cycle. The underwriting cycle is a cyclical trend of underwriting profits in an insurance industry. Individual insurance firms cannot control the industry-wide underwriting cycle even though industry-wide underwriting profits are determined by the sum of the underwriting profits of individual insurance firms. An underwriting cycle arises from second-order autoregression in underwriting profits and is affected by external events (Venezian, 1985; Cummins & Outreville, 1987).

Figure 1 shows the relation between industry-wide underwriting profit ratios and average

CEO compensation in public firms in the US P/L insurance industry from 1997 to 2012.[1] They have a similar trend even though they are not perfectly correlated.[2] The underwriting profit ratios show approximately a nine- to ten-year cycle. Because an industry-wide underwriting cycle is a type of observable luck, CEOs should not be rewarded by industry underwriting profits if the contracting view is prevalent.

< Figure 1 is here>

However, if CEOs predict the future market trends correctly and change the business portfolio of the firms toward more profitable lines of business based on their predictions, or if they realize more underwriting profits than others in the firm's line of business, the CEOs may be rewarded for their skills, not for their luck. CEOs' skills are not measured in extant studies, though these skills can be measured in the P/L insurance industry by the differences between industry-wide underwriting profits and individual firms' underwriting profits. From the perspective of a skimming view, a CEO will be compensated less for luck if the firm is well governed and more compensated for luck if the firm is poorly governed. Starting from this point of view, a CEO may be more compensated for skill if the firm is well governed, and the CEO may be less compensated for skill if the firm is poorly governed.

This study will examine whether CEOs are rewarded for luck in the US P/L insurance industry in terms of their compensation types, such as salaries, bonuses, and total compensation including stock options or stock granted. I will test the effect of CEOs' skills on compensation as well. Garvey and Milbourn (2006) measured CEOs' skills as the part of firms' performance which is not explained by luck. However, strictly speaking, the unexplained parts of firms'

[1] A profit ratio is generally defined as 1 minus a combined ratio which is the sum of a loss ratio, an expense ratio, and a dividend ratio. However, it is defined as 1 minus a loss ratio in this paper because this study focuses on an underwriting cycle and a loss ratio is the main component driving underwriting cycles.
2 The correlation coefficient between the profit ratios and the averages of CEO compensations is 0.29.

performance are unobserved parts, not CEOs' skills. I will measure CEOs' skills by the differences between an industry loss ratio and the firm's loss ratio in each year. I will also measure the sensitivities of pay for luck or pay for skill to governance to test whether the skimming view or the contracting view is more prevalent in CEO compensation in the US P/L insurance industry.[3] I will modify the model of Bertrand and Mullainathan (2001) to reflect the characteristics of the US P/L insurance industry that are different from those of non-financial industries.

An underwriting profit ratio is expressed by one minus a combined ratio equaling the sum of a loss ratio, an expense ratio, and a dividend ratio. A loss ratio is the ratio of the sum of losses incurred and loss adjustment expenses to premiums earned, and an expense ratio is the ratio of underwriting expenses to premiums written. A dividend ratio is the ratio of policyholder's dividend to premiums earned. Even though an expense ratio and a dividend ratio are included in an underwriting profit ratio, I will include only loss ratios in the model because an underwriting cycle is mainly driven by loss ratios.

In section 2, I will review the literature on CEO compensation and corporate governance. In section 3, I will explain important measures in the study like loss ratios and interest rates for luck and skill. I will discuss hypotheses in section 4 and explain data used in the study in section 5. In sections 6 and 7, I will explain empirical models and results. In section 8, I will offer concluding remarks.

2. Literature Review

Brickley and James (1987) demonstrate the negative relation between salaries and the

[3] Bertrand and Mullainathan (2001) adopted the number of block holders who have 5% or more shares as a proxy of good governance.

proportion of outside directors. Core, Holthausen and Larcker (1999) examine the consecutive effect of corporate governance on firm performance via excess CEO compensation and demonstrate that CEO compensation is higher when governance is weaker and that weaker corporate governance structure creates agency problems, extracts greater compensations, and leads to worse performance. In the literature, CEO as board chair, larger board size, outside director appointed by CEO, and gray or busy outside director are used as proxies of poor governance, while ownership of CEO, non-CEO insider block holder, and outside block holder are used as proxies of good governance.

Bertrand and Mullainathan (2001) find that CEOs are rewarded for luck in the oil industry. Moreover, using the number of block holders as a proxy of corporate governance, they demonstrate that the sensitivity of pay for luck is stronger in poorly governed firms, and the effect of governance is more prominent with the increase in CEO tenure, supporting the skimming view. Garvey and Milbourn (2006) develop a model of the relation between CEO compensation and luck and find an asymmetric relation between CEO compensations and luck such that CEOs are rewarded for good luck but not penalized for bad luck.

In terms of an underwriting cycle, Venezian (1985) suggests that the pattern of underwriting profits resembles a cosine wave and arises from second-order autoregression in underwriting profits. Cummins and Outreville (1987) suggest that an underwriting cycle does not exist in a perfect and competitive market. Market equilibrium insurance price is decided in the competitive market and the subjective expectation of future loss is equal to the objective expectation, conditional on all information being available at the time of rating. However, the estimation of actual losses is not accurate because data collection lags, regulatory lags, and policy renewal lags distort the expected values. Therefore, an underwriting cycle is observed.

In terms of the relation between the diversification of business lines and firm performance in publically traded insurance companies, Hoyt and Trieschmann (1991) demonstrate that the performance of insurers that specialize in life or property-liability insurance is better than that of insurers that are diversified in life and property-liability insurance. Using data envelopment analysis (DEA), Cummins et al. (2010) find that more specialized insurers are more efficient than more diversified insurers. In a study on the relation between corporate governance and firm performance in insurance industries, Huang et al. (2011) find a significant relation between corporate governance and efficiency in the U.S. property-liability insurance industry. However, He and Sommer (2010) explain that the relation between corporate governance and firm performance is hard to interpret because board structure is endogenous, referring to numerous studies with mixed and contradictory findings about the relationship between outside director representation and firm performance.

3. Important measures in the model

4-1. Industry-wide loss ratios

The most typical luck component in the P/L insurance industry is the industry-wide underwriting cycle. This cycle is not affected by a CEO's skill, but as shown in Figure 1, the cycle has a similar pattern as CEO compensation. Underwriting results are measured by combined ratios. Because an underwriting cycle is mainly driven by loss ratios as explained in section 2, I will use an industry-wide loss ratio as the first proxy for luck to measure industry underwriting profits instead of combined ratios.

4-2. Interest rates

In the period of high interest rates, insurers increase underwriting capacity to increase interest gains even if they may have underwriting losses or low underwriting profits. On the

other hand, insurers underwrite more strictly and decrease underwriting capacity in the period of low interest rates because interest gains are low and the interest gains are not as much as underwriting losses that result from increasing underwriting capacity. That is, loss ratios increase during a high interest rate period because of the cash flow underwriting and decrease during a low interest rate period. Therefore, interest rates affect the performance of P/L insurers directly or via underwriting profits. Because market interest rates are not controlled by CEOs of individual insurance firms, they are another luck component in the P/L insurance industry. Therefore, I will use 1-year T-bill yield curve rates as the second proxy for luck.

4-3. Difference between industry loss ratios and individual firm's loss ratios

An industry-wide loss ratio is a weighted average of individual firms' loss ratio. A firm-specific loss ratio is higher or lower than the industry-wide loss ratio depending on the firm's underwriting skills, claim settlement, business portfolios, and other managerial skills. If an insurer's underwriting skill is better than the industry underwriting skill in a line of business, the loss ratio of the insurer will be lower than the industry loss ratio in that line of business. If a CEO predicts underwriting cycles in different lines of business, the CEO may decrease new businesses in the line where loss ratio is expected to increase and increase new business in the line where loss ratio is expected to decrease. The CEO may change the product portfolio towards more profitable lines of business, and the insurer's loss ratio will be lower than the industry-wide loss ratio. In the process of claim settlements, insurers may decrease the chance of insurance fraud, moral hazard, or other types of unnecessary claim payments depending on managerial skills.

In these ways, if a CEO's skill is better than the industry average, the firm's loss ratio will be lower than the industry-wide loss ratio and vice versa. Therefore, I will employ the difference between industry-wide loss ratios and a firm's loss ratio as a proxy of a CEO's skills. This

variable measures not only underwriting skills but also the CEO's general managerial skills.

4. Hypotheses

In this study, I follow the findings of Bertrand and Mullainathan (2001). Hypotheses 1, 2, and 3 are consistent with their findings. If hypothesis 3 is supported by empirical results, the skimming view is prevalent in the US P/L insurance industry.

Hypothesis 1: *CEOs of P/L insurance companies are rewarded for performance.*

Hypothesis 2*: CEOs of P/L insurance companies are rewarded for luck.*

Hypothesis 3: *The sensitivity of compensation for luck is stronger in poorly governed companies.*

Because the difference between industry-wide loss ratios and insurer-specific loss ratios is interpreted as CEO's skill for the purpose of this study, if firm performances which are explained by CEO's skill are positively related with CEO's compensation, CEOs are rewarded for skill. Because shareholders incentivize CEOs in order to maximize firm value, CEOs of P/L insurance companies should be rewarded for skill if their compensation packages operate properly. This suggests the contracting view. Therefore, hypothesis 4 is as follows:

Hypothesis 4: *CEOs of P/L insurance companies are rewarded for skill.*

In contrast to hypothesis 3, CEOs may be more rewarded for their skill in well governed insurers than in poorly governed insurers. Therefore, hypothesis 5 is as follows:

Hypothesis 5: *The sensitivity of compensation for skill is stronger in well governed companies.*

5. Data

The data source for CEO compensation of P/L insurance companies is Compustat Execucomp. The SIC code for P/L insurance companies is 6331. Compensation categories used

in the study are salary, bonus, and TDC1.[4] All accounting data of individual P/L insurance companies or insurance groups are obtained from the National Association of Insurance Commissioners (NAIC) annual statements. I match NAIC data with Compustat Execucomp data by CUSIP code. Because NAIC annual statements do not provide CUSIP code, I obtained the code from SNL data. Because some companies or groups matched by CUSIP code do not have a NAIC company code or group code but their annual statements are available from SNL data, I extract annual statement data for those companies from the SNL data. The sample period for the Compustat Execucomp data and the NAIC data is 1996 - 2013.

Other data about corporate governance such as CEO's tenure, director as a CEO, and CEO in the compensation committee are available from the Compustat Execucomp data, but block holder data and independent director data are available from Blockholders and ISS.[5] The available companies from the Blockholders data and the ISS data are matched by CUSIP code or TICKER code, but all companies in the Compustat Execucomp database are not available at Blockholders or ISS, and the sample period of the Blockholders data is only until 2001. As a result, there are fewer observations for the test of sensitivity of pay to governance than there are for the test of pay for luck and skill.

Loss ratios are calculated from (a) losses and loss expenses incurred and (b) premiums earned in the NAIC annual statement schedule P, part 1. I will exclude P/L insurers that have non-positive net premium written, non-positive total assets, and/or non-positive loss reserves. The data source for the loss ratio of the US total P/L insurance industry is "Aggregate & Averages" published by A.M. Best Company. One-year T-bill yield curve rates are obtained from

[4] TDC1 includes salary, bonus, other annual compensation, restricted stock grants, long-term incentive plan (LTIP) payouts, value of options granted, and all other types of compensation.

[5] Blockholders is a data source available at Wharton Research Data Services (WRDS). ISS stands for Institutional Shareholder Services, formerly RiskMetrics.

http://www.treasury.gov. The descriptive statistics are tabulated in Table 1.

<Table 1 is here>

6. Empirical Modeling

The basic empirical model to estimate the effect of luck and skill on CEO's compensation is based on Bertrand and Mullainathan (2001). The model is adjusted to be appropriately applied to the US P/L insurance industry and is composed of two stages.

7-1. First stage

In the first stage, firm performance is measured by luck and CEO's skill with the equation:

$$\mathrm{Perf}_{k,t} = \alpha + \beta' \times \mathrm{Luck}_t + \gamma' \times \mathrm{Skill}_{k,t} + \beta'_X \times \mathrm{X}_{k,t} + \mathrm{F}_k + \mathrm{e}_{k,t} \quad 1)$$

where $\mathrm{Perf}_{k,t}$ is the performance of insurer k at time t represented by earnings before income tax and policyholder's dividend (EBITAD) scaled by net admitted assets. Luck_t is the luck component at time t represented by industry-wide loss ratio (ILR_t) at time t and 1-year T-bill yield curve rate at time t ($\mathrm{int\_rate}_t$). Because lower loss ratios are better luck for the P/L insurance industry, I will apply industry-wide profit ratio (IPR_t), represented by one minus IPR_t, instead of industry-wide loss ratio. $\mathrm{Skill}_{k,t}$ is CEO's skill of insurer k at time t. The component of skill is the difference of loss ratios ($\mathrm{Ratio\_Diff}_{k,t}$) between the industry-wide loss ratio (ILR_t) and the insurer's loss ratio ($\mathrm{LR}_{k,t}$). A positive $\mathrm{Ratio\_Diff}_{k,t}$ means a lower loss ratio of the insurer than the industry-wide loss ratio. The formulas of the variables are as follows:

$$\mathrm{Perf}_{k,t} = \mathrm{EBITAD}_{k,t} / \mathrm{Asset}_{k,t} \quad 2)$$

$$\mathrm{Ratio\_Diff}_{k,t} = \mathrm{ILR}_t - \mathrm{LR}_{k,t} \quad 3)$$

In equation 1), $\mathrm{X}_{k,t}$ is the firm characteristic of insurer k at time t and F_k is a firm fixed effect. Because an industry-wide loss ratio at time t is applied to all insurers in the year, I

will not employ year fixed effect regressions so that the effect of the industry-wide loss ratio does not disappear.

From the regression, performance by luck and performance by skill are defined as follows:

$$\widehat{\text{Perf\_luck}}_{k,t} = \alpha + \hat{\beta}' \times \text{luck}_{k,t} \quad 4)$$

$$\widehat{\text{Perf\_skill}}_{k,t} = \hat{\gamma}' \times \text{skill}_{k,t}. \quad 5)$$

I also define the residual of the first stage regression as performance which is determined by firm characteristics rather than luck or skill as follows:

$$\widehat{\text{Perf\_firm}}_{k,t} = \text{Perf}_{k,t} - \widehat{\text{Perf\_luck}}_{k,t} - \widehat{\text{Perf\_skill}}_{k,t} \quad 6)$$

7-2. Second stage

In the second stage, CEO's compensation is estimated by the following equation:

$$\text{Comp}_{k,t} = \beta_{\text{Luck}} \times \widehat{\text{Perf}_{\text{luck}}}_{k,t} + \beta_{\text{Skill}} \times \widehat{\text{Perf}_{\text{skill}}}_{k,t} + \beta_{\text{Firm}} \times \widehat{\text{Perf}_{\text{firm}}}_{k,t}$$

$$+\beta'_{X} \times X_{k,t} + \varepsilon_{k,t} \quad 7)$$

where $\text{Comp}_{k,t}$ is CEO's compensation of insurer k at time t and $X_{k,t}$ is firm characteristic of insurer k at time t.

To compare the sensitivity of compensation to luck with the sensitivity of compensation to performance, I will also simply regress the following OLS model:

$$\text{Comp}_{k,t} = \beta \times \widehat{\text{Perf}}_{k,t} + \beta'_{X} \times X_{k,t} + \varepsilon_{k,t} \quad 8)$$

7-3. Sensitivity of firm performance, luck, and skill to corporate governance

First, I examine how pay for performance differs between well governed insurers and poorly governed insurers by using the following equation, which is similar to equation 8):

$$\text{Comp}_{k,t} = \beta \times \text{Perf}_{k,t} + \theta \times (\text{Gov}_{k,t} \times \text{Perf}_{k,t}) + \beta'_{X} \times X_{k,t} + \varepsilon_{k,t} \quad 9)$$

The coefficient, θ, represents the sensitivity of pay for performance to governance. The positive value of the coefficient implies that better governed insurers compensate CEOs more for performance.

To obtain the sensitivity of pay for luck to governance, I apply the estimated performance for luck into the equation. The new equation examines how pay for luck differs between well governed insurers and poorly governed insurers.

$$\mathrm{Comp}_{k,t} = \beta_{\mathrm{Luck}} \times \widehat{\mathrm{Perf}_{\mathrm{luck}}}_{k,t} + \beta_{\mathrm{Skill}} \times \widehat{\mathrm{Perf}_{\mathrm{skill}}}_{k,t} + \beta_{\mathrm{Firm}} \times \widehat{\mathrm{Perf}_{\mathrm{firm}}}_{k,t}$$
$$+\theta_{\mathrm{Luck}} \times \left(\mathrm{Gov}_{k,t} \times \widehat{\mathrm{Perf}_{\mathrm{luck}}}_{k,t}\right) + \beta'_{X} \times X_{k,t} + \varepsilon_{k,t} \quad (10)$$

The coefficient, θ_{Luck}, represents the sensitivity of pay for luck to governance. The negative value of the coefficient implies that poorly governed insurers compensate CEOs more for performance than well governed insurers. I will compare θ and θ_{Luck}.

The test also can assess the sensitivity of pay for skill to governance by replacing the estimated performance for luck with the estimated performance for skill in the interaction term.

$$\mathrm{Comp}_{k,t} = \beta_{\mathrm{Luck}} \times \widehat{\mathrm{Perf}_{\mathrm{luck}}}_{k,t} + \beta_{\mathrm{Skill}} \times \widehat{\mathrm{Perf}_{\mathrm{skill}}}_{k,t} + \beta_{\mathrm{Firm}} \times \widehat{\mathrm{Perf}_{\mathrm{firm}}}_{k,t}$$
$$+\theta_{\mathrm{Skill}} \times \left(\mathrm{Gov}_{k,t} \times \widehat{\mathrm{Perf}_{\mathrm{skill}}}_{k,t}\right) + \beta'_{X} \times X_{k,t} + \varepsilon_{k,t} \quad (11)$$

The coefficient, θ_{Skill}, should be positive if compensation packages operate properly in well governed insurers. The positive value of the coefficient implies that better governed insurers compensate CEOs more for performance by skill. This value is expected to be larger than θ, which is the sensitivity of pay for performance to governance.

7. Empirical Results

Table 2 shows the results of the first-stage regression. I performed ordinary least squared (OLS) regressions and firm fixed effect regressions to compare the results. Industry-wide profit

ratios, interest rates, and loss ratio differences are all significant at the 1% level and consistent with the expectation. Because higher interest rate increases the interest margins of insurers, the positive sign is expected even though a higher interest rate has the effect of decreasing underwriting profits.

The coefficients of OLS regressions are very similar to the coefficients of fixed effect regressions except that the coefficients of firm characteristic variables, such as the Herfindahl-Hirschman index for line of business, log of net premium written, and reinsurance ratio that do not change much across years in a firm, are insignificant. In columns 1 and 2, the coefficients of HHI_Line are positive and significant, implying that less diversified insurers are more profitable. This is consistent with the findings of Hoyt and Trieschmann (1991) and Cummins et al. (2010). I will adopt fixed effect regression results to estimate performance by luck, performance by skill, and performance by firm characteristics because fixed effect regressions absorb unobserved firm fixed effects.

<Table 2 is here>

According to the regression results above, I can calculate performance by luck, performance by skill, and performance by firm characteristics as follows:

$$\widehat{\text{Perf}_{\text{luck}}}_{k,t} = 0.3110838 \times \text{IPR}_t + 0.4587041 \times \text{int\_ate}_t$$

$$\widehat{\text{Perf}_{\text{skill}}}_{k,t} = 0.2373184 \times \text{Ratio\_Diff}_{k,t}$$

$$\widehat{\text{Perf\_firm}}_{k,t} = \text{Perf}_{k,t} - \widehat{\text{Perf\_luck}}_{k,t} - \widehat{\text{Perf\_skill}}_{k,t}. \quad (11)$$

Table 3 shows the OLS regression results using the three estimated performance variables above and other firm and CEO characteristic variables as independent variables. Among the three estimated performance variables, only performance by skill is significantly related with salary, while performance by luck is the most significant and prominent factor in the

regression of bonus. In the regression of total compensation (TDC1), all performances by luck, skill, and firm characteristics are related with compensation but performance by skill is the most significant and strong factor. The results seem to be reasonable because salary is predetermined at the beginning of a year based on the CEO's expected skill and it cannot be affected by luck. However, because other types of compensation are affected by the year's industry-wide underwriting results, they may reflect the luck of the year. Tenure as a CEO and whether a CEO is a director or a member of the compensation committee are positively but weakly related with salary or bonus and insignificantly related with total compensation.

<Table 3 is here>

Table 4 shows the sensitivity of pay for performance to governance in the regression of log of total compensation (TDC1). Because of the short sample period of the Blockholders data, the effect of governance is not clearly identified. In column 2, the coefficient of the intersection term of performance (EBITAD / net admitted assets) and governance (number of block holders) is negative and significant at the 5% significance level. The positive and significant coefficient of the interaction term in column 5 shows that a CEO is more rewarded for performance if the board has more independent directors, and the negative and significant coefficient of the interaction term in column 6 shows that a CEO who is a member of a compensation committee is less rewarded for performance. Because more independent directors indicate better governance and a CEO in a compensation committee indicates poor governance in terms of CEO compensation, the signs contradict the expectations.

<Table 4 is here>

Table 5 shows the sensitivity of pay for luck to governance in the regression of log of total compensation (TDC1). I included performance by skill and performance by firm

characteristics in the regression as well as performance by luck, while Bertrand and Mullainathan (2001) included only performance by luck in the regression for the sensitivity of pay for luck to governance. In the second column, the coefficient of the interaction term is -1.213, while the coefficient in Table 4 is -3.022. This means that the sensitivity of pay for luck to governance is less than the sensitivity of pay for performance to governance and is not consistent with the finding of Bertrand and Mullainathan (2001). However, the insignificant coefficient of the interaction term in column 4 in Table 4 changed to significant in Table 5. Therefore, according to Table 5, it is not clear whether the skimming view is prevalent in the US P/L insurance industry. However, it is clear that the effect of performance by skill is larger than the effect of performance by luck because the coefficient of performance by skill is larger and more significant than the coefficient of performance by luck.

Considering the mean of the variable “compensation committee” is 0.043 in Table 1, the results shown in columns 6 and 7 are not greatly different from the result shown in column 1. However, in columns 2, 3, and 5, the effect of performance by skill is getting larger and the effect of performance by luck is getting smaller by adding the interaction term.

<Table 5 is here>

Table 6 shows the sensitivity of pay for skill to governance in the regression of log of total compensation (TDC1). The interaction terms of governance and performance by luck in Table 5 are replaced with the interaction terms of governance and performance by skill in Table 6. In general, the interaction terms are insignificant. The significant coefficients of performance by luck, skill, and firm characteristics in column 1 changed to insignificant in columns 2, 3 and 4 by adding the interaction terms. Considering that the mean of the variables for the ratio of independent directors (Ind_Director) and the years as a CEO (Tenure) are 0.7 and 10 years, the

results shown in columns 5, 6, and 7 are not largely different from the results shown in column 1.

<Table 6 is here>

8. Conclusions

This study investigates whether CEOs are rewarded for luck or skill in the US property-liability insurance industry. Because the industry-wide underwriting cycle and T-bill yield curve rates are caused by external components in the P/L insurance industry, it is interpreted that CEOs are rewarded for luck if the performance by the industry-wide underwriting profits and T-bill yield curve rates is positively and significantly related to their compensation. In the ordinary least squared (OLS) regression, CEO's salary is positively related only with performance by skill and the effect of performance by skill is stronger on total compensation than the effect of performance by luck. The only effect of performance by luck that is larger than the effect of performance by skill is in the case of bonus.

If a CEO is rewarded for performance but the effect of performance by luck decreases as the firm's governance is getting better, the skimming view is prevalent (Bertrand & Mullainathan, 2001). However, the effect of governance on the CEO's compensation is not clear in this study. Therefore, this study does not support the skimming view in the US P/L insurance industry. On the other hand, the effect of performance by skill is consistently significant and stronger than the effect of performance by luck. This means that compensation packages operate well to incentivize CEOs to maximize firm value. This result supports the contracting view in the US P/L insurance industry and does not support Bertrand and Mullainathan's (2001) finding of the skimming view in non-financial industries.

References

Baker, George P., & Hall, Brian J. (2004). CEO Incentives and Firm Size. Journal of Labor Economics, 22: 767-798.

Beaver, W. H., McNichols, M. F., & Nelson, K. K. (2003). Management of the Loss Reserve Accrual and the Distribution of Earnings in the Property-Casualty Insurance Industry. Journal of Accounting and Economics, 35: 347-376.

Berry-Stolzle, T. R., Liebenberg, A. P., Ruhland, J. S., & Sommer, D. W. (2012). Determinants of Corporate Diversification: Evidence from the Property-Liability Insurance Industry. The Journal of Risk and Insurance, 79 (2), 381-413.

Bertrand, M., & Mullainathan, S. (2001). Are CEOs rewarded for luck? The ones without principals are. Quarterly Journal of Economics, 116, 901–932.

Brickley, J. A., & James, C. M. (1987). The Takeover Market, Corporate Board Composition, and Ownership Structure: The Case of Banking, Journal of Law and Economics, 30 (1), 161-180.

Core, John E., Holthausen, Robert W., & Larcker, David F. (1999). Corporate governance, chief executive officer compensation, and firm performance, Journal of Financial Economics, 51: 371-406.

Cummins, J. D., & Outreville, J. F. (1987). An International Analysis of Underwriting Cycles in Property-Liability Insurance. The Journal of Risk and Insurance, 54 (2), 246-262.

Cummins, J. D., Weiss, M. A., Xie, X., & Zi, H. (2010). Economies of Scope in Financial Services: ADEA Efficiency Analysis of the US Insurance Industry. Journal of Banking and Finance, 34 (7), 1525-1539.

Datar, Srikant, Kulp, Susan C., & Lambert, Richard A. (2001). Balancing Performance Measure. Journal of Accounting Research, 39: 75-91.

Eckles, D. L., & Halek, M. (2010). Insurer Reserve Error and Executive Compensation. Journal of Risk and Insurance, 77 (2), 329-346.

Garvey, G., & Milbourn, T. (2006). Asymmetric benchmarking in compensation: Executives are rewarded for good luck but not penalized for bad. Journal of Financial Economics, 82, 197-225.

Gaver, J. J., & Paterson, J. S. (2004). Do Insurers Manipulate Loss Reserves to Mask Insolvency Problems? Journal of Accounting and Economics, 37: 393-416.

Grace, E. V. (1990). Property-Liability Insurer Reserve Errors: A Theoretical and Empirical Analysis. Journal of Risk and Insurance, 57: 28-46.

Grace, Elizabeth (2004). Contracting Incentives and Compensation for Property-Liability Insurer Executives. The Journal of Risk and Insurance, 71: 285-307.

Grace, M. F., & Leverty, J. T. (2012). Property-Liability Insurer Reserve Error: Motive, Manipulation, or Mistake, Journal of Risk and Insurance, 79 (2), 351-380.

He, E. & Sommer, D. W. (2010). Separation of Ownership and Control: Implication for Board Composition, The Journal of Risk and Insurance, 77 (2), 265-295.

Hoyt, R. E., & Trieschmann, J. S. (1991). Risk/Return Relationship for Life-Health, Property-Liability, and Diversified Insurers, The Journal of Risk and Insurance, 58 (2), 322-330.

Huang, L., Lai, G. C., McNamara, M., & Wang, J. (2011). Corporate Governance and Efficiency: Evidence from U.S. Property-Liability Insurance Industry, The Journal of Risk and Insurance, 78 (3), 519-550.

Venezian, E. (1985). Ratemaking methods and Profit Cycles in Property and Liability Insurance. Journal of Risk and Insurance, 52, 477–500.

Table 1: Descriptive Statistics (1996-2013)

Variable	Obs	Mean	Std. Dev.	Min	Max
IPR (Industry-wide Profit Ratio)	628	0.240	0.047	0.151	0.330
Int_Rate (Interest Rate)	628	0.027	0.021	0.001	0.061
Ratio_Diff	527	0.045	0.094	-0.414	0.390
EBITAD	527	5.84E+08	1.18E+09	-2.16E+09	1.16E+10
Net Admitted Assets	527	1.29E+10	1.97E+10	3.63E+07	1.22E+11
Ln (Net Admitted Assets)	527	22.378	1.387	17.408	25.527
Perf (EBITAD / Net Admit Asst)	527	0.044	0.044	-0.151	0.243
HHI_Line	527	0.373	0.279	0.087	1.000
Net Premium Written	527	4.31E+09	6.44E+09	1.35E+07	3.52E+10
Ln (Net Premium Written)	527	21.306	1.374	16.421	24.286
Net Premium Written (Long Tail)	527	0.662	0.170	0.008	1
Reins_Ratio (Reinsurance Ratio)	527	0.212	0.211	-0.004	0.915
Performance_Luck	628	0.087	0.017	0.056	0.125
Performance_Skill	527	0.011	0.022	-0.098	0.093
Performance_Firm	527	-0.053	0.037	-0.240	0.139
Reinsurer (Indicator)	628	0.143	0.351	0	1
Multiline Insurer (Indicator)	628	0.205	0.404	0	1
Salary ($,000)	628	861	355	0	3,000
Bonus ($,000)	628	697	1,229	0	10,125
TDC1 ($,000)	622	5,619	5,890	33	45,549
Tenure	628	10.223	10.411	1	47
Director (Indicator)	628	0.978	0.148	0	1
Comp Committee (Indicator)	628	0.043	0.203	0	1
Ratio of Independent Directors	353	0.704	0.168	0.167	0.929
Number of Block Holders	98	2.633	1.683	0	6
Shares of Block Holders (%)	98	30.309	24.861	0	93
Institutional Block Holder (Indicator)	98	0.878	0.329	0	1

Note: Industry-wide profit ratio (IPR) is one minus industry-wide loss ratio. Interest rate (Int_Rate) is 1 year T-bill yield curve rate. IPR is one minus industry-wide loss ratio. Ratio_Diff is the difference between industry-wide loss ratio and insurer specific loss ratio (ILR - loss ratio). HHI_Line is the Herfindahl-Hirschman Index based on business lines and their net premium written tabulated on the NAIC annual statements, Underwriting and Investment Exhibit Part 1B - Premium Written. Net premium written (long tail) is the ratio of net premium written in long tail lines of business. Reins_Ratio (Reinsurance Ratio) is the ratio of premium ceded to the sum of direct premium and premium assumed. TDC1 is salary + bonus + other annual compensation + restricted stock grants + long-term incentive plan (LTIP) payouts + all other compensation + value of options granted. Tenure is the number of years as a CEO. Director and Comp_Comm are indicator variables which are 1 if CEO is a member of board or compensation committee.

Table 2: First Stage Regressions (1996-2013)

	(1)	(2)	(3)	(4)
Dependent Variable	Performance	Performance	Performance	Performance
IPR	0.334***	0.336***	0.311***	0.355***
	(0.0298)	(0.0305)	(0.0397)	(0.0370)
Int_Rate	0.401***		0.459***	
	(0.0681)		(0.102)	
Ratio_Diff	0.199***	0.197***	0.237***	0.235***
	(0.0174)	(0.0175)	(0.0256)	(0.0260)
HHI_Line	0.0291***	0.0233***	0.0322	0.0356
	(0.00632)	(0.00663)	(0.0229)	(0.0236)
Ln_Net_Prm	0.00513***	0.00442***	0.0088	-0.00545
	(0.00146)	(0.00152)	(0.011)	(0.0106)
Reins_Ratio	-0.0390***	-0.0479***	-0.0179	-0.0411
	(0.00972)	(0.0104)	(0.0307)	(0.0308)
Constant	-0.167***	-0.138***	-0.249	0.06
	(0.0333)	(0.0356)	(0.234)	(0.2240)
Observations	527	527	527	527
Fixsed effect			Firm	Firm
Robust S.E.	Yes	Yes	Yes	Yes
Adj. R-squared	0.4285	0.3938	0.4900	0.4596

Note: Robust standard errors in parentheses. *, **, *** significant at 10%, 5%, and 1% 2-sided confidence level. The dependent variable, performance, is earnings before income tax and dividend (EBITAD) scaled by net admitted assets. Int_Rate is 1 year T-bill yield curve rate. IPR is one minus industry-wide loss ratio. Ratio_Diff is the difference between industry-wide loss ratio and insurer specific loss ratio (ILR - loss ratio). HHI_Line is the Herfindahl-Hirschman Index based on business lines and their net premium written tabulated on the NAIC annual statements, Underwriting and Investment Exhibit Part 1B - Premium Written. Ln_Net_Prem is the log of net premium written. Reins_Ratio is the ratio of premium ceded to the sum of direct premium and premium assumed.

Table 3: Second Stage Regressions (1996-2013)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	Salary	Ln_Salary	Bonus	Ln_Bonus	TDC1	Ln_TDC1
Perf_Luck	-1,169	1.067	13,860***	17.65***	14,516	4.712***
	(772.5)	(2.068)	(3311)	(4.311)	(10169)	(1.677)
Perf_Skill	2,341***	3.290*	-557.6	14.68***	20,253**	7.224***
	(711.7)	(1.714)	(2156)	(3.08)	(10147)	(1.677)
Perf_Firm	130.4	1.401	2,761*	4.328***	12,530**	2.916***
	(460.8)	(0.925)	(1515)	(1.542)	(6324)	(1.109)
Ln_Net_Admt	133.2***	0.0829	316.0***	0.553***	2,807***	0.493***
	(14.83)	(0.0703)	(57.33)	(0.0495)	(181.2)	(0.0338)
Long_Net_Prm	322.3***	0.318*	681.5**	1.324***	2,120*	-0.122
	(113.8)	(0.171)	(345.6)	(0.486)	(1092)	(0.221)
Reins_Ratio	689.6***	0.464**	2,622***	3.447***	12,823***	1.929***
	(90.88)	(0.204)	(333.4)	(0.375)	(1570)	(0.198)
HHI_Line	272.8***	-0.00523	322.8*	0.855***	3,061***	0.678***
	(69.77)	(0.162)	(183.3)	(0.288)	(725.4)	(0.122)
Tenure	1.63	0.00934**	16.07**	0.00389	26.73	0.00244
	(1.619)	(0.00436)	(7.105)	(0.00592)	(25.53)	(0.00392)
Director	108.4*	-0.0379	816.9***	-0.757	1208	0.129
	(65.29)	(0.194)	(306.3)	(0.63)	(1692)	(0.177)
Comp_Comm	133.5*	0.0713	-230.7	0.124	-1234	-0.282
	(72.28)	(0.0981)	(145.6)	(0.617)	(948.7)	(0.18)
Re_Ins	139.6***	-0.0172	-166	0.790***	432.1	0.217**
	(47.3)	(0.202)	(176.5)	(0.21)	(1018)	(0.109)
Multi_Ins	183.4***	-0.106	16.68	0.214	324.7	0.0926
	(46.28)	(0.193)	(162.2)	(0.144)	(551)	(0.0915)
Constant	-2,660***	4.389***	-9,454***	-8.630***	-64,516***	-3.889***
	(356.2)	(1.481)	(1618)	(1.397)	(4880)	(0.82)
Observations	527	524	527	297	523	523
Robust S.E.	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.2738	0.0134	0.2402	0.4205	0.4079	0.4213

Note: Robust standard errors in parentheses. *, **, *** significant at 10%, 5%, and 1% 2-sided confidence level. Reins_Ratio is the ratio of premium ceded to the sum of direct premium and premium assumed. TDC1 is (salary + bonus + other annual compensation+ restricted stock grants + long-term incentive plan (LTIP) payouts + all other compensations + value of options granted). Ln_Net_Admt is a log of net admitted asset. Long_Net_Prm is the ratio of net premium written in long tail lines of business. Tenure is the number of years as a CEO. Director and Comp_Comm are indicator variables which are 1 if CEO is a member of board or compensation committee. Re_Ins and Multi_Ins are indicator variables which are 1 if the insurer is a reinsurer or multi line insurer.

Table 4: Sensitivity of Governance to Performance

Dependent Variable: Ln_TDC1	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Governance Variable:		Num_Blkhldr	Blkhldr_Ins	Shr_Blkhldr	Ind_Director	Comp_Comm	Tenure
Performance	4.321***	9.636	-4.72	2.331	-5.208*	4.488***	4.141***
	(0.98)	(6.283)	(3.384)	(4.52)	(2.812)	(0.98)	(1.19)
Performance		-3.022**	5.985	-0.0525	14.66***	-6.629**	0.0177
* Governance		(1.482)	(3.609)	(0.187)	(3.302)	(3.31)	(0.0506)
Ln_Net_Admtd	0.481***	0.321***	0.346***	0.352***	0.480***	0.475***	0.481***
	(0.0334)	(0.0974)	(0.091)	(0.0917)	(0.0361)	(0.0335)	(0.0335)
Long_Net_Prm	0.0122	-0.969	-0.854	-0.942	0.579*	0.0303	0.0116
	(0.22)	(0.92)	(0.97)	(0.933)	(0.295)	(0.22)	(0.22)
Reins_Ratio	2.036***	0.105	-0.163	-0.134	2.073***	2.008***	2.031***
	(0.18)	(1.408)	(1.584)	(1.637)	(0.334)	(0.18)	(0.181)
HHI_Line	0.633***	0.58	0.427	0.508	0.521***	0.591***	0.629***
	(0.115)	(0.454)	(0.527)	(0.473)	(0.123)	(0.116)	(0.116)
Re_Ins	0.250**	0.496	0.296	0.385	0.507***	0.242**	0.251**
	(0.101)	(0.332)	(0.383)	(0.476)	(0.13)	(0.102)	(0.101)
Multi_Ins	0.111	0.567*	0.483	0.521*	0.109	0.1	0.11
	(0.0902)	(0.293)	(0.314)	(0.309)	(0.0958)	(0.0906)	(0.0902)
Constant	-3.450***	0.81	0.374	0.226	-3.858***	-3.303***	-3.451***
	(0.787)	(2.582)	(2.543)	(2.464)	(0.82)	(0.789)	(0.787)
Observations	523	98	98	98	346	523	523
Robust S.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.4171	0.2179	0.1742	0.1699	0.5454	0.4196	0.4161

Note: Robust standard errors in parentheses. *, **, *** significant at 10%, 5%, and 1% 2-sided confidence level. Dependant variable is a log of TDC1 (salary + bonus + other annual compensation + restricted stock grants + LTIP payouts + all other compensation + value of options granted). Num_Blkhldr is the number of block holders who have shares of 5% or more. Blkhldr_Ins is the number of institutional block holders. Shr_Blkhldr is the share of block holders. Ind_Director is the ratio of independent directors. Comp_Comm is an indicator variables which is 1 if CEO is a member of compensation committee. Tenure is the number of years as a CEO. Performance is EBITAD scaled by net admitted asset. Ln_Net_Admt is a log of net admitted asset. Long_Net_Prm is the ratio of net premium written in long tail lines of business. Reins_Ratio is the ratio of premium ceded to the sum of direct premium and premium assumed. HHI_Line is the Herfindahl-Hirschman Index based on business lines and their net premium written tabulated on the NAIC annual statements, Underwriting and Investment Exhibit Part 1B - Premium Written. Re_Ins and Multi_Ins are indicator variables which are 1 if the insurer is a reinsurer or multi line insurer.

Table 5: Sensitivity of Governance to Pay for Luck

Dependent Variable: Ln_TDC1	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Governance Variable:		Num_Blkhldr	Blkhldr_Ins	Shr_Blkhldr	Ind_Director	Comp_Comm	Tenure
Perf_Luck	4.736***	6.430	0.986	8.504	-3.029	4.799***	4.622***
	(1.688)	(9.826)	(9.816)	(9.799)	(2.482)	(1.687)	(1.69)
Perf_Skill	7.541***	21.61**	21.24*	16.480	10.35***	7.346***	7.480***
	(1.653)	(10.57)	(10.77)	(10.42)	(2.227)	(1.669)	(1.659)
Perf_Firm	2.912***	-1.962	-1.063	-1.752	2.620**	2.882***	2.918***
	(1.091)	(2.596)	(2.626)	(2.587)	(1.244)	(1.1)	(1.096)
Perf_Luck		-1.213**	1.446	-0.170**	11.81***	-3.354*	0.00953
* Governance		(0.569)	(2.427)	(0.0766)	(2.455)	(1.953)	(0.0412)
Ln_Net_Admtd	0.498***	0.353***	0.388***	0.392***	0.490***	0.493***	0.498***
	(0.0333)	(0.0832)	(0.0813)	(0.0786)	(0.0345)	(0.0332)	(0.0338)
Long_Net_Prm	-0.165	-0.803	-0.843	-0.387	0.301	-0.133	-0.163
	(0.219)	(0.898)	(0.895)	(0.85)	(0.277)	(0.221)	(0.219)
Reins_Ratio	1.968***	-0.225	-0.464	0.511	1.895***	1.930***	1.962***
	(0.188)	(1.533)	(1.498)	(1.337)	(0.376)	(0.187)	(0.192)
HHI_Line	0.715***	0.924*	0.660	1.097**	0.616***	0.683***	0.711***
	(0.115)	(0.47)	(0.452)	(0.493)	(0.121)	(0.117)	(0.12)
Re_Ins	0.195*	0.556	0.394	0.952**	0.438***	0.189*	0.196*
	(0.104)	(0.346)	(0.341)	(0.427)	(0.127)	(0.104)	(0.104)
Multi_Ins	0.111	0.860**	0.792**	0.647**	0.118	0.0996	0.108
	(0.0904)	(0.337)	(0.363)	(0.295)	(0.0943)	(0.0908)	(0.0904)
Constant	-3.870***	-0.629	-1.087	-1.881	-4.077***	-3.748***	-3.855***
	(0.777)	(2.268)	(2.242)	(2.018)	(0.79)	(0.775)	(0.792)
Observations	523	98	98	98	346	523	523
Robust S.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.4218	0.2256	0.2045	0.305	0.5729	0.4231	0.4207

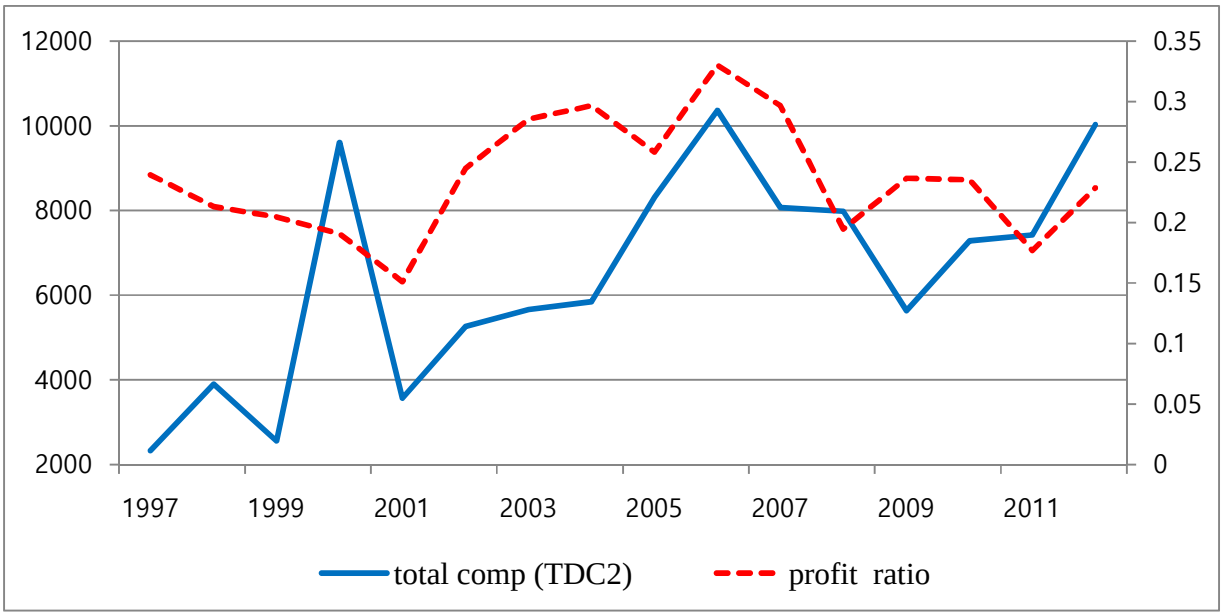
Note: Robust standard errors in parentheses. *, **, *** significant at 10%, 5%, and 1% 2-sided confidence level. Dependant variable is a log of TDC1 (salary + bonus + other annual compensation + restricted stock grants + LTIP payouts + all other compensation + value of options granted). Num_Blkhldr is the number of block holders who have shares of 5% or more. Blkhldr_Ins is the number of institutional block holders. Shr_Blkhldr is the share of block holders. Ind_Director is the ratio of independent directors. Comp_Comm is an indicator variables which is 1 if CEO is a member of compensation committee. Tenure is the number of years as a CEO. Long_Net_Prm is the ratio of net premium written in long tail lines of business. Reins_Ratio is the ratio of premium ceded to the sum of direct premium and premium assumed. HHI_Line is the Herfindahl-Hirschman Index based on business lines and their net premium written tabulated on the NAIC annual statements, Underwriting and Investment Exhibit Part 1B - Premium Written. Re_Ins and Multi_Ins are indicator variables which are 1 if the insurer is a reinsurer or multi line insurer.

Table 6: Sensitivity of Governance to Pay for Skill

Dependent Variable: Ln_TDC1	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Governance Variable:		Num_Blkhldr	Blkhldr_Ins	Shr_Blkhldr	Ind_Director	Comp_Comm	Tenure
Perf_Luck	4.736***	2.476	2.120	2.431	4.992***	4.721***	4.354***
	(1.688)	(10.08)	(9.982)	(10.15)	(1.764)	(1.693)	(1.68)
Perf_Skill	7.541***	25.14*	2.198	31.890	-20.07*	7.516***	4.001*
	(1.653)	(14.69)	(12.77)	(19.38)	(11.52)	(1.657)	(2.268)
Perf_Firm	2.912***	-1.169	-0.957	-0.79	2.391*	2.868***	3.085***
	(1.091)	(2.589)	(2.608)	(2.34)	(1.325)	(1.099)	(1.106)
Perf_Skill		-1.384	19.77	-0.367	43.06***	9.584	0.292**
* Governance		(3.59)	(13.82)	(0.767)	(15.04)	(25.29)	(0.14)
Ln_Net_Admtd	0.498***	0.389***	0.382***	0.382***	0.507***	0.500***	0.497***
	(0.0333)	(0.0805)	(0.0819)	(0.088)	(0.0355)	(0.0333)	(0.0333)
Long_Net_Prm	-0.165	-0.795	-0.835	-0.744	0.286	-0.173	-0.157
	(0.219)	(0.865)	(0.897)	(0.98)	(0.287)	(0.219)	(0.219)
Reins_Ratio	1.968***	-0.315	-0.498	-0.19	1.890***	1.972***	1.920***
	(0.188)	(1.493)	(1.5)	(1.671)	(0.378)	(0.188)	(0.191)
HHI_Line	0.715***	0.734*	0.628	0.787	0.773***	0.725***	0.704***
	(0.115)	(0.42)	(0.442)	(0.53)	(0.124)	(0.113)	(0.113)
Re_Ins	0.195*	0.455	0.37	0.522	0.430***	0.195*	0.212**
	(0.104)	(0.315)	(0.338)	(0.45)	(0.129)	(0.104)	(0.104)
Multi_Ins	0.111	0.810**	0.783**	0.811**	0.138	0.113	0.118
	(0.0904)	(0.356)	(0.361)	(0.361)	(0.0982)	(0.0906)	(0.0921)
Constant	-3.870***	-1.237	-0.905	-1.145	-4.520***	-3.915***	-3.798***
	(0.777)	(2.285)	(2.253)	(2.317)	(0.803)	(0.775)	(0.776)
Observations	523	98	98	98	346	523	523
Robust S.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.4218	0.2040	0.2091	0.2132	0.5592	0.4209	0.4267

Note: Robust standard errors in parentheses. *, **, *** significant at 10%, 5%, and 1% 2-sided confidence level. Dependant variable is a log of TDC1 (salary + bonus + other annual compensation + restricted stock grants + LTIP payouts + all other compensation + value of options granted). Num_Blkhldr is the number of block holders who have shares of 5% or more. Blkhldr_Ins is the number of institutional block holders. Shr_Blkhldr is the share of block holders. Ind_Director is the ratio of independent directors. Comp_Comm is an indicator variables which is 1 if CEO is a member of compensation committee. Tenure is the number of years as a CEO. Long_Net_Prm is the ratio of net premium written in long tail lines of business. Reins_Ratio is the ratio of premium ceded to the sum of direct premium and premium assumed. HHI_Line is the Herfindahl-Hirschman Index based on business lines and their net premium written tabulated on the NAIC annual statements, Underwriting and Investment Exhibit Part 1B - Premium Written. Re_Ins and Multi_Ins are indicator variables which are 1 if the insurer is a reinsurer or multi line insurer.

Figure 1: Comparison of average CEO compensations and underwriting profit ratios



Source: Compustat Execucomp, A.M. Best