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Essays on Commercial Bank Risk, Regulation and Governance

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Dedication

I am grateful to the God Almighty for being kind and generous in every aspect of my life, especially during my doctoral studies. I also want to thank my wife, Dr. Sajiya Jalil for the support and care she has provided every moment. I would like to thank my parents for their endless love and support. Also I would like to dedicate this thesis to my daughter, Raida Anonnah.

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Abstract

In the first chapter, I analyze the effect of various risks faced by commercial banks on the executive compensation in banking industry. Executives in any industry are, on average, risk averse if their compensation is not tied to the long term performance of the firm. Commercial bank executives are more risk averse due to the regulatory pressure in addition to board governance mechanism. Commercial banks face various risks because of the regulatory mechanism and unique asset structure of the firm. Because commercial bank executives are risk-averse, it is expected that they should associate their own pay and pay-performance sensitivities (PPS) with the risks their banks face.

I use a dataset of 149 commercial banks and compensation of 1,248 executives. The results show that bank executives associate their performance based pay with both idiosyncratic risk and systematic risk. But they associate their fixed pay only with systematic risk. The risk based PPS is also affected by the idiosyncratic risk but not by the systematic risk. Both asset return risk and insolvency risk have significant positive effect on PPS. Executives also associate their performance based pay with asset return risk because the asset structure of banks is different and proper management of such assets is also a performance measure for these executives. All these results imply that the risk-averse nature of bank executives as they demand premium compensation for the exposure to different risks faced by the firm.

In the second chapter, I analyze the regulatory effect on the governance mechanism in banking industry in addition to the board governance mechanism. Using a sample of 37,354 executives including both CEOs and other executives from banking and all other industries I find that the bank executives put significantly higher emphasis on the fixed compensation in terms of salary and bonus, and significantly lower emphasis on the performance based compensation. Bank executives also put minimum emphasis on the risk based PPS although they put significant emphasis on return based PPS. Also bank executives put higher emphasis on performance based pay and lower emphasis on fixed pay as such regulatory binding relaxes over time. This again indicates the risk-averse nature of the bank executives due to the regulatory pressure in addition to board governance mechanism.

JEL Classification : G21, G28, G30, G34

Key Words : Corporate Governance, Executive Compensation, Banking Industry, Pay-Performance Sensitivity, Idiosyncratic Risk, Systematic Risk, Asset Return Risk, Insolvency Risk, Delta, Vega.

Chapter 01: Bank Risk and Executive Compensation

1.1. Introduction

Shareholders, as they have the ultimate claim on the net assets of the firm, bear the wealth effect resulting from the decisions made by the managers. Thus a firm faces agency problem when the manager does not assume the full or major share of the wealth effect (Jensen and Meckling, 1976; Fama, 1980). Executive compensation arrangements may be an important instrument to mitigate such agency problem and provide incentive for long term optimum firm performance (Gray and Cannella, 1997).

The governance mechanism in a median unregulated firm is established by the firm's board of directors. In a similar way, the governance mechanism of a commercial bank is also set by the bank's board of directors. But commercial banks still need to address the regulatory agendas in addition to the board established governance mechanism. Executives are risk averse in any firm. Core, Guay and Larcker (2003) argue that the performance measures of an executive are noisy and beyond the executive's control. So the performance based pay imposes a risk on the executive and thus a risk-averse executive may claim premium compensation over the fixed cash pay. On the other hand, as the deposits in the commercial banks are insured by the Federal Deposit Insurance Corporation (FDIC) and executive compensation is independent of investment level (Grundy and Li, 2010); executives in banking industry are risk-averse too.

Board of directors, as representatives of shareholders; establish the governance mechanism in order to ensure long term firm performance. For this the board includes stock option in executive's compensation plan to induce risk-taking by the executive. executives in

commercial banks are more risk averse due to the regulatory pressure in addition to board governance mechanism. Chen, Steiner, and Whyte (2006) find evidence supporting this argument in banking sector. They find that banks are progressively using more option-based compensation, which is related to risk taking. On the other hand Houston and James (1995) find evidence against the hypothesis that compensation policies promote risk taking in banking industry. They find that executives receive less cash and option compensation and equity-based incentives and such compensation policies do not promote risk taking. So, literature in this regard is does not provide any conclusive evidence. In this context, the main research question in this paper is –

> *Do executives in commercial banks claim premium compensation for bank risk exposure? If they do so, what are the effects of such risks on executive compensation and pay-performance sensitivities (PPS) in banking industry?*

This paper analyzes the role of various risks faced by executives in commercial banks on their compensation and pay-performance sensitivities (PPS). Commercial banks face various financial statement based risks e.g., insolvency risk or asset return risk in addition to market based systematic and idiosyncratic risk faced by all types of firms. Most of the prior studies define bank risk as the systematic and unsystematic risk faced by the bank. Gray and Cannella (1997) use beta and sigma as a measure of systematic and unsystematic risk respectively by using the capital asset pricing model (CAPM). Victoravich, Xu, Buslepp and Grove (2011) also define bank risk as systematic and idisyncratic risk. This paper analyzes not only systematic or unsystamatic risk, but also other financial statement based risk, e.g., asset return risk and insolvency risk.

The regulatory mechanism and unique asset structure expose the commercial bank executives to various kinds of risk. Because executives in commercial banks are risk-averse agent, it is expected that they should associate their pay and pay-performance sensitivities (PPS) with these risks faced by their banks. This paper analyzes the effect of such risk exposure on executive compensation and pay-performance sensitivities of commercial bank executives. Using a hand collected dataset of 149 commercial banks and compensation of 1,248 executives (263 CEOs and 1,385 other top five executives), the heteroscedasticity corrected OLS and panel data (random effects) estimates show that executives in commercial banks associate their performance based pay (options grants) with both idiosyncratic risk and systematic risk. But they associate their fixed pay only with systematic risk faced by the bank by claiming premium compensation. The risk based pay-performance sensitivity is also affected by the idiosyncratic risk but not by the systematic risk. Both types of financial statement based risks – asset return risk and insolvency risks have significant positive effect on pay-performance sensitivities (PPS). Executives in commercial banks also associate their performance based pay with asset return risk because the asset structure of commercial banks is different and proper management of such assets is also a performance measure for these executives. The results also show a significantly higher risk exposure by the executives and for this executives claim premium compensation over other top five executives in commercial banks. All these results imply that the risk-averse nature of commercial bank executives as they demand premium compensation for the exposure to the different kinds of risks faced by the firm.

This paper makes significant contribution in the growing literature of executive risk-taking in commercial banks. This will be one of the first papers analyzing the effect of various risks faced by the commercial banks. Literature mainly focuses on analyzing the board strength

in inducing executives to take risk (Pathan, 2009; Victoravich, Xu, Buslepp and Grove, 2011). This paper rather analyzes the effect of such risk-taking initiatives on executive compensations. Second, this paper not only analyzes the effect of systematic and idiosyncratic risk, but also other financial statement based risks – asset return risk and insolvency risk faced by the bank. This will be the first paper to analyze the effect of the latter two risks on executive compensation. Third, this paper analyzes executive compensation of commercial banks over a longer sample period (from 1992 to 2006). Houston and James (1995) compare CEO compensation between banking and other unregulated industries over a period of 1982 to 1988. Fahlenbrach and Stulz (2011) analyze CEO compensation over a period of 2006 to 2008 (the recent crisis period). This paper, on the other hand, analyzes compensation of both CEO and other top five executives over a longer sample period. Last but not the least, the sample used for the commercial banks is so far the largest one (149 commercial banks) in the literature. Sufficiently larger sample will provide with precise estimates of the analysis as well as better understanding of the results.

The next section discusses literature on bank risk, board monitoring and executive compensation, section 3 discusses the hypotheses, section 4 discusses the methodology and data sources, section 5 explains the summary statistics and findings, and section 6 concludes the paper.

1.2. Literature on Bank Risk, Board Monitoring and Executive Compensation

Core, Guay and Larcker (2003) state that the performance measures of a CEO are noisy and beyond the CEO's control. So the performance based pay imposes a risk on the executive and a risk-averse executive may claim premium compensation over the fixed cash pay. The consequence of poor performance is the reduction in the performance based compensation. As

the deposits in the commercial banks are insured by FDIC, and executive compensation is independent of investment level (Grundy and Li, 2010) a risk-averse executive would like to design pay structure such as to avoid risk or at least be paid premium compensation for risk-taking.

Investing in risky but positive-NPV projects improves the potential to maximize firm value. As executive s are risk averse, the board designs executive compensation structure to take risk. Haugen and Senbet (1981) and Smith and Stulz (1985) suggest that the use of stock option as a part of executive compensation to mitigate managers'aversion to investing in risky but positive-NPV projects. Crawford, Ezzell and Miles (1995) find support for this such incentives for CEO. They analyze CEO compensation of 124 banks for the period 1976 to 1988. They observe a significant increase in pay-performance sensitivities (PPS) in the period of commercial bank deregulation.

On the other hand, Smith and Watts (1992) and Houston and James (1995) find that CEO compensation in banking industry is designed to discourage risk-taking behavior. Smith and Watts (1992) use total firm risk as risk measure and find that, in regulated sector, firms with higher leverage and dividend yield offer lower stock based compensation. Houston and James (1995) analyze the CEO compensation structure in banking and compare it with other industries.They find that on average, bank CEOs receive less cash compensation, are less likely to participate in a stock option plan, hold fewer stock options, and receive a smaller percentage of their total compensation in the form of options and stock than the CEOs in other industries do. They also use total firm risk as the risk measure.

Chen, Steiner and Whyte (2006) investigate the relation between option-based CEO compensation and risk faced by the commercial banks for the period 1992 – 2000. They find that

commercial banks use stock option-based compensation progressively over time in order to induce risk-taking by CEOs. In this paper, the authors use four different risk measures for firm risk – total risk, systematic risk, idiosyncratic risk and interest rate risk.

The principal-agent model predicts that an executive's pay-performance sensitivity will be decreasing in the riskiness of the firm's performance (Aggarwal and Samwick, 1999). They test this prediction by using a sample of top executives at 1,500 of the largest publicly traded firm corporations in the U.S.A. They report that the pay-performance sensitivities of both CEOs and other executives are decreasing in the firm risk. They also show that the variance of a firm's stock returns is an important variable in pay-performance regressions and that omitting it leads to downward-biased estimates of the pay-performance sensitivity. The authors use total risk, systematic risk and idiosyncratic risk as measures of firm risk.

Armstrong and Vashishtha (2012) examine how stock options give CEOs differential incentives to alter the systematic and idiosyncratic risk of the firm. They argue that, vega (the pay-risk sensitivity) gives risk-averse managers an incentive to increase total risk. But they find that the CEOs do so by increasing systematic risk rather than idiosyncratic risk as they can hedge the systematic risk. They also suggest that delta (pay-return sensitivity) gives CEOs incentives to alter the level of their firms' systematic and idiosyncratic risk. They find that delta is positively related to both systematic and idiosyncratic, and thus total risk. This suggests that investing in positive-NPV projects may require managers to increase idiosyncratic risk even though it cannot be hedged.

Hermalin (2005) suggests that the association between board monitoring and the board's decision to hire externally or internally depends on the CEO's ability to operate the firm and the board's ex post monitoring. The higher the uncertainty about CEO's ability, the more valuable is

the board monitoring of CEO's performance. Because the firm benefits from upside risk related to this uncertainty and is protected on the downside by the board's right to fire the CEO. Andres and Vallelado (2008) analyze the role of board in the governance mechanism of commercial banks for the period 1995 to 2005. They find an inverted U-shaped relationship between board size and bank performance. Thus they conclude that higher number of board members to a certain limit should enhance the monitoring and supervisory function of the board.

Victoravich, Xu, Buslepp and Grove (2011) examines whether bank risk is influenced by equity incentives. They analyze board effectiveness using CEO duality, staggered board, board independence and so on and find that when a CEO has more power, they can influence the board's decision-making to their benefit in reducing risk. But powerful CEOs are more likely to take on risk when their personal wealth is tied to long-term firm value as opposed to short-term firm value. They also use total risk, idiosyncratic risk and systematic risk as measures of firm risk. Pathan (2009) analyzes bank risk taking and board strength. They find that strong bank boards positively affect bank risk-taking by influencing CEOs to take risk. This author again uses total risk, idiosyncratic risk and systematic risk as bank risk measure. Song (2011) suggests that monitoring by creditors could serve as substitute for performance-sensitive compensations, e.g., commercial banks. They use total bank loans as a proxy for monitoring by creditors and find that creditors scrutinize and exert influence on CEOs' pay to deter risk-shifting behavior. Banks with large loans tend to have smaller amount of total compensation.

Flannery and Rangan (2008) analyze the commercial bank capitalization and regulatory intervention. They find no evidence that a bank's market capitalization increases with its asset volatility prior to 1994. They use annualized asset return risk (ARR) to analyze capitalization and bank risk. This ARR measure incorporates all banks' risks - asset returns, liability returns,

changes in the off-balance-sheet book, and operating efficiencies. Equation 1 provides the calculation of ARR.

$$\sigma_A = \left({}^{E}/_{A}\right)\sigma_E * \sqrt{250} \quad (1)$$

Here, E = Equity returns;

A = Equity + Book value of Debt,

σ = Standard Deviation.

Boyd, Graham and Hewitt (1993) analyze the bank mergers and effect of insolvency risk. They calculate insolvency risk by using a Z-score. The equation 2 presents the calculation of Z-score.

$$Z = \frac{Average\ (Returns) + Average\left({}^{Equity}/_{Total\ Assets}\right)}{Std.Dev\left({}^{Equity}/_{Total\ Assets}\right)} \quad (2)$$

A high Z-score means less insolvency risk. Because both these risks are calculated using financial statements, they are also known as financial statement based risks. This paper analyzes both financial statement and market based risks and their effect on the executive compensation and pay-performance sensitivities (PPS).

The market based risks are the idiosyncratic and systematic risks faced by the firm. This paper uses the method suggested by Pathan (2009) to calculate these two risks. Idiosyncratic risk is the standard deviation of the error terms (ε_i) in the equation (3):

$$R_{it} = \alpha_i + \beta_{1i} R_{mt} + \beta_{2i} INTEREST_{it} + \varepsilon_i \quad (3)$$

Systematic risk is the estimate of β_{1i} – the coefficient of Rm_t in equation (3).

1.3. Hypotheses Development

Because executives are risk averse (Holmstrom and Milgrom, 1987, 1991), they should claim a premium compensation for the risks they assume in their job. As fixed compensation (salary and bonus) is considered as the reservation pay to the executives, it should not be affected by the idiosyncratic risk of the bank but should be affected significantly by the systematic risk face by the bank. On the other hand, the variable component of the executive pay (options grants) is aimed at binding the firm performance with the executive pay. For this, the variable component of the executive pay should mainly be affected by the idiosyncratic risk. In this light, the first two hypotheses of this paper are –

H1.1$_A$: The fixed component of executive compensation is not affected at all by the idiosyncratic risk faced by the bank.

H1.1$_B$: The fixed component of executive compensation is positively affected by the systematic risk faced by the bank.

H1.2: The variable component of executive compensation is positively affected by both the idiosyncratic and systematic risks faced by the bank.

Boards use stock options plan in compensation to induce executives to take positive-NPV risky projects. So, the vega (the dollar change in executive pay with respect to 1% change in stock return volatility) and delta (the dollar value of executive pay in response to 1% change in the firm's stock price) should be directly affected by the various risks faced by the bank. Vega, being the risk based pay-performance sensitivity, should be directly and positively affected by various types of bank risks. But the direction of the effect of bank risks on delta is not clear. John and John (1993) suggest that delta gives managers an incentive to reduce systematic and

idiosyncratic risk, but delta encourages executives to take risks that result in a transfer of wealth from creditors to shareholders. In this light, the third and fourth hypotheses are –

H1.3: The vega is positively affected by all types of risks faced the bank.

H1.4: The delta is significantly affected by all types of risks faced the bank.

1.4. Methodologies and Data Sources

All four hypotheses are tested by using the model stated in equation (4) and equation (5). Equation (4) tests the effect of market based risks – idiosyncratic risk and systematic risk on executive compensation and pay-performance sensitivities.

$$Ln\,(Executive\ Compensation_{it};\ Delta_{it};\ Vega_{it}) = \beta_0 + \beta_1 IDIORISK_{it} + \beta_2 SYSRISK_{it} + \beta_3 CEODUM_{it} + \beta_4 EXCDIRDUM_{it} + \beta_5 INTLCKDUM_{it} + \beta_6 TENURE_{it} + \beta_7 Ln\,(FIRMSIZE)_{it} + \beta_8 ROA_{it} + \beta_9 ROE_{it} + \varepsilon_{it} \quad (4)$$

On the other hand, equation (5) tests the effect of financial statement based risks – asset return risk and insolvency risk on executive compensation and pay-performance sensitivities.

$$Ln\,(Executive\ Compensation_{it};\ Delta_{it};\ Vega_{it}) = \beta_0 + \beta_1 ARRISK_{it} + \beta_2 INSVRISK_{it} + \beta_3 CEODUM_{it} + \beta_4 EXCDIRDUM_{it} + \beta_5 INTLCKDUM_{it} + \beta_6 TENURE_{it} + \beta_7 Ln\,(FIRMSIZE)_{it} + \beta_8 ROA_{it} + \beta_9 ROE_{it} + \varepsilon_{it} \quad (5)$$

The dependent variable in equation (4) and (5) – executive compensation takes three forms – (i) total pay to the executives, (ii) cash pay to the executives (salary and bonus), and (iii) options granted to the executives. The cash pay to the executives is the fixed part of their compensation that does not vary with the performance of the bank. The option granted to the executives is the variable part of their compensation that varies with the bank performance in the

same direction. IDIORISK is the idiosyncratic risk and SYSRISK is the systematic risk faced by the commercial bank calculated using equation (3). ARRISK is the asset return risk and INSVRISK is the insolvency risk faced by the commercial bank and calculated using equation (1) and equation (2).

CEODum is a dummy variable equals 1 if the executive is a CEO and 0 otherwise, ExcDirDum is a dummy variable equals 1 if the executive is also a director in his/her own firm and 0 otherwise, and IntLckDum is a dummy variable equals 1 if the board is an interlocked board (where the executives are also directors in boards of other firms and vice versa) and 0 otherwise. TENURE is tenure period or total service life of an executive in a firm or bank, FIRMSIE is calculated as the total asset size of the firm, ROA and ROE are returns on assets and equity respectively. ε is the noise term, i is the firm indicator and t is the time (year) indicator.

This paper follows Coles, Daniel and Naveen (2006) to calculate delta and vega for each firm. The model for calculating delta is presented in equation (6) –

$$Delta = e^{-dT} * N(Z) * \left({}^{S}/_{100}\right) * No.of\ options\ issued \quad (6)$$

where $$Z = \left[\ln\left({}^{S}/_{X}\right) + T\left(r - d + {}^{\sigma^2}/_{2}\right)\right] \div (\sigma T)^{1/2} \quad (7)$$

Equation (8) presents the model for calculating vega –

$$Vega = e^{-dT} * N'(Z) * S * T^{1/2} * \left({}^{S}/_{100}\right) * 0.01 * No.of\ options\ issued \quad (8)$$

Here, S = Stock price,

X = Exercise price of the option grant,

T = Time to maturity of the option in years,

r = log (Risk free return),

d = Dividend payouts,

σ = Expected stock-return volatility over the life of the option,

N( ) = Cumulative probability function for the normal distribution, and

N□( ) = The normal density function.

For econometric purpose, this paper use both heteroskedasticity corrected Ordinary Least Squares (OLS) and panel data (random effects) regression procedure. This paper uses random effects model as the group effect on the executives is assumed to be random. The differences across executives should influence, to a significant extent, the compensation and pay-performance sensitivity.

1.5. Findings

1.5.1. Summary Statistics

There are a total of 149 commercial banks in the sample from 1992 to 2006. There are a total of 1,648 executives of which 263 are CEOs and 1385 are other top five executives in the sample. Table 1 presents the summary statistics of key variables. For the sample commercial banks, the average cash payment to executives is $843,109.162 with a minimum of $851,300 and a maximum of $22,000,000. A total of 7,384 executives are granted options as a part of their compensation plan. The average options granted to the bank executives is $723,276.783 with a maximum of $47,776,170. The average total payment (salary, bonus, options grant, long term incentive plans and other equity incentives) to the executives is $2,084,266.014 with a minimum of $8,513,000 and a maximum of $84,825,245.

Table 1: Summary Statistics: Compensation, Pay-Performance Sensitivity, Governance, and Risk Measures

Cash pay to the executives is the total of annual salary and bonus paid to the executive. The *Options* grant to the executive is the book value of stock options granted to each executive. *Other pay* includes long term incentive plans and other equity incentives and *Total pay* is the total of all forms of pay to the executives. *Tenure* is the total number of years an executive serves a firm. *Delta* is the dollar value of executive pay in response to 1% change in the firm's stock price, and *Vega* is the dollar change in executive pay with respect to 1% change in stock return volatility. *Idiosyncratic risk* is the standard deviation of the error terms (ε_i) in the equation (Pathan, 2009): $R_{it} = \alpha_i + \beta_{1i} Rm_t + \beta_{2i} INTEREST_i + \varepsilon_i$. *Systematic risk* is the coefficient of Rm_t in the same equation ($\beta 1i$). *Asset Return Risk* is calculated by following method suggested by Flannery and Rangan (2008): $\sigma_A = (E / A)\ \sigma_E * (250)^{1/2}$, where E is Equity, A equals (Equity + Book value of Debt), and σ indicates the standard deviation. *Insolvency Risk* is calculated by following the method suggested by Boyd, Graham, and Hewitt (1993): $Z = [Average\ Returns + Average\ of\ (Equity/Total\ assets)] / Std.\ dev.\ of\ (Equity/Total\ assets)$.

	Obs.	Min	Max	Avg.	SD
Cash Pay ('000)	8,413	8.513	22,000.000	843.110	1,133.720
Option Grants ('000)	7,384	0.000	47,776.170	723,280	2,005.690
Other Pay ('000)	8,413	0.000	34,716.100	347.420	1,582.390
Total Pay ('000)	8,413	8.513	84,825.250	2,084.270	3,844.760
Delta	7,384	15.270	936.030	438.290	382.110
Vega	7,384	0.000	135.450	61.380	113.890
Tenure (Year)	8,413	1.000	38.000	14.100	2.830
Idiosyncratic Risk	2,235	0.062	3.107	0.236	0.118
Systematic Risk	2,235	0.000	0.492	0.013	0.012
Asset Return Risk	2,235	0.967	16.283	4.718	3.024
Insolvency Risk	2,235	0.073	2.266	0.819	1.062

The average delta for all the executives is 438.29 with a minimum of 15.27 and maximum of 936.03. The average vega for all the executives is 61.38 with a maximum of 135.45. The average tenure of the executives in the banking industry is 14.1 years with a maximum of 38 years.

Of the market based risks, the average idiosyncratic risk of 149 sample banks is 0.236 with a minimum of 0.062 and a maximum of 3.107. The average systematic risk is 0.013 with a maximum of 0.494. Of the financial statement based risks, the average asset return risk is 4.718 with a minimum of 0.967 and maximum of 16.283. The average insolvency risk is 0.819 with a minimum of 0.073and maximum of 2.266.

A total of 5,618 firm-executives (66.8%) act as directors in their firms where 2,792 firm-executives (33.2%) do not. Again, a total of 8,220 firm-executives (97.7%) work as directors in other board where 190 (2.3%) firm-executives do not do so.

1.5.2. Regression Results

Table 2 and Table 3 present the heteroscedasticity corrected Ordinary Least Squares (OLS) estimates of equation (3) and equation (4). Table 4 and Table 5 present the panel data (random effects) estimates and test results of the same two equations. This paper uses random effects model as the group effect on the executives is assumed to be random. The differences across executives should have some influence on the compensation of pay-performance sensitivity. The Hausman test also suggests the use of random effects model. For the null hypothesis –

H_0: Difference across coefficients is random and not systematic;

the χ^2 value is 3.183 with a p-value of 0.072.

1.5.2.1. Effects of Market Based Risks

Table 2 and Table 3 present the OLS and panel data (random effects) estimates respectively of market based risk on cash pay, options grants and total pay to the executives. Table 2 shows that the idiosyncratic risk has no significant effect on cash pay to the executives.

Table 2: OLS Regression Results: Market Based Risk, 1992 – 2006

This table presents the OLS estimates of the following equation for the commercial banks for 1992 – 2006:

$$Ln\,(Executive\ Compensation_{it};\ Delta_{it};\ Vega_{it}) = \beta_0 + \beta_1 IDIORISK_{it} + \beta_2 SYSRISK_{it} + \beta_3 CEODUM_{it} + \beta_4 EXCDIRDUM_{it} + \beta_5 INTLCKDUM_{it} + \beta_6 TENURE_{it} + \beta_7 Ln\,(FIRMSIZE)_{it} + \beta_8 ROA_{it} + \beta_9 ROE_{it} + \varepsilon_{it}$$

Model (1), (2), (3), (4), and (5) presents the estimates using Executive compensation – cash pay (salary + bonus), option grants, total compensation, vega and delta as the dependent variables. *CEODum* is a dummy variable equals 1 if the executive is a CEO and 0 otherwise, *ExcDirDum* is a dummy variable equals 1 if the executive is also a director in his/her own firm and 0 otherwise, *IntLckDum* is a dummy variable equals 1 if the board is an interlocked board (where the executives are also directors in boards of other firms and vice versa) and 0 otherwise. *REG94* and *REG99* are dummy variables that take the value of 1 if the firm is a commercial bank and in the sample after 1994 and 1999, 0 otherwise, and *REG02* is a dummy variable with a value of 1 for all the firms in the sample after 2002. *Firmsize* is the total assets of the firm, *Tenure* is the total number of years an executive serves a firm, and *ROA* and *ROE* are return on asset and return on equity of each firm in each year respectively. ε is the noise term, i is the firm indicator and t is the time (year) indicator. The p-values are presented in the parentheses.

	Cash Pay (1)	**Options** (2)	**Total Pay** (3)	**Vega** (4)	**Delta** (5)
Constant	3.9679 ***	2.2587 ***	1.7115 ***	1.1235 ***	1.9731 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
IDIORISK	0.2592	0.1291***	0.0172 *	0.1698 **	0.1291
	[0.104]	[0.001]	[0.072]	[0.043]	[0.211]
SYSRISK	0.0053 *	0.2661 **	0.0087 *	0.0052 **	0.0385 **
	[0.067]	[0.046]	[0.089]	[0.029]	[0.031]
CEODum	1.5317 ***	1.9735 ***	1.5116 ***	0.9354 ***	1.4326 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ExcDirDum	1.9846 ***	1.4561 ***	1.2084 ***	0.5227	1.1431 *
	[0.000]	[0.000]	[0.000]	[0.221]	[0.092]
IntLckDum	1.1755 ***	1.1676 **	1.1352 ***	0.1949	0.1062
	[0.000]	[0.031]	[0.000]	[0.291]	[0.341]
Tenure	0.4261 **	0.3810 **	0.3717 **	0.2915 ***	0.2914 **
	[0.012]	[0.036]	[0.022]	[0.009]	[0.032]
Firmsize	1.3013 ***	1.4121 ***	1.4226 ***	1.2912 ***	1.4717 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ROA	1.3814 **	1.3175 *	1.2914 *	1.2117 **	1.2117 **
	[0.023]	[0.081]	[0.077]	[0.042]	[0.039]
ROE	0.7319 ***	0.5271 ***	0.6112 ***	0.7218 ***	0.3992 ***
	[0.000]	[0.000]	[0.000]	[0.001]	[0.002]
R^2	0.234	0.219	0.265	0.262	0.345
Observation	8,413	7,384	8,413	7,384	7,384

***, ** and * indicates significance at 1%, 5% and 10% level.

Table 3: Panel (Random Effect) Regression Results: Market Based Risk, 1992 – 2006

This table presents the Panel (Random Effects) regression estimates of the following equation for the commercial banks for 1992 – 2006:

$$Ln\,(Executive\ Compensation_{it};\ Delta_{it};\ Vega_{it}) = \beta_0 + \beta_1 IDIORISK_{it} + \beta_2 SYSRISK_{it} + \beta_3 CEODUM_{it} + \beta_4 EXCDIRDUM_{it} + \beta_5 INTLCKDUM_{it} + \beta_6 TENURE_{it} + \beta_7 Ln\,(FIRMSIZE)_{it} + \beta_8 ROA_{it} + \beta_9 ROE_{it} + u_{it} + \varepsilon_{it}$$

Model (1), (2), (3), (4), and (5) presents the estimates using Executive compensation – cash pay (salary + bonus), option grants, total compensation, vega and delta as the dependent variables. *CEODum* is a dummy variable equals 1 if the executive is a CEO and 0 otherwise, *ExcDirDum* is a dummy variable equals 1 if the executive is also a director in his/her own firm and 0 otherwise, *IntLckDum* is a dummy variable equals 1 if the board is an interlocked board (where the executives are also directors in boards of other firms and vice versa) and 0 otherwise. *REG94* and *REG99* are dummy variables that take the value of 1 if the firm is a commercial bank and in the sample after 1994 and 1999, 0 otherwise, and *REG02* is a dummy variable with a value of 1 for all the firms in the sample after 2002. *Firmsize* is the total assets of the firm, *Tenure* is the total number of years an executive serves a firm, and *ROA* and *ROE* are return on asset and return on equity of each firm in each year respectively. u is the between-entity error and ε is the within-entity error, i is the firm indicator and t is the time (year) indicator. The p-values are presented in the parentheses.

	Cash Pay (1)	**Options** (2)	**Total Pay** (3)	**Vega** (4)	**Delta** (5)
Constant	3.6471 ***	3.0584 ***	1.2132 ***	1.0273 ***	1.0736 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
IDIORISK	0.3569	0.2291 ***	0.0371 *	0.2096 **	0.1931
	[0.104]	[0.001]	[0.072]	[0.043]	[0.211]
SYSRISK	0.0451 *	0.2391 **	0.0837 *	0.0158 **	0.0189 **
	[0.067]	[0.046]	[0.089]	[0.029]	[0.031]
CEODum	0.3175 ***	0.1975 ***	0.1511 ***	0.2935 ***	0.2432 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ExcDirDum	1.1984 ***	1.1456 ***	1. 1208 ***	1.5232	1. 2143 *
	[0.000]	[0.000]	[0.000]	[0.221]	[0.092]
IntLckDum	2.1755 ***	2.1676 **	1.9352 ***	1.0949	1.0621
	[0.000]	[0.031]	[0.000]	[0.291]	[0.341]
Tenure	0.1426 **	0.1381 **	0.1371 **	0.1291 ***	0.1291 **
	[0.012]	[0.036]	[0.022]	[0.009]	[0.032]
Firmsize	1.1301 ***	1.2492 ***	1.2422 ***	1.2916 ***	1.2471 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ROA	1.3281 **	1.3317 *	1.2191 *	1.2611 **	1.2311 **
	[0.023]	[0.081]	[0.077]	[0.042]	[0.039]
ROE	0.1739 ***	0.1521 ***	0.2612 ***	0.2728 ***	0.1392 ***a
	[0.000]	[0.000]	[0.000]	[0.001]	[0.002]
R^2	0.244	0.269	0.261	0.273	0.316
Observation	8,413	7,384	8,413	7,384	7,384

***, ** and *c indicates significance at 1%, 5% and 10% level.

Because the cash pay is the basic pay based on executives' regular appointment, it is not affected by the additional risk the bank faces. This indicates that the fixed compensation is not determined by the performance of the firm, rather it is the minimum pay to the executive for accepting the position in the bank and regular duties. But the idiosyncratic risk has a positive and significant (at 1% level) effect on the performance based compensation (option grants). This indicates that the executives in commercial banks associate their performance based pay with the market based risk the firm faces. Idiosyncratic risk is unique to the bank and the executives are expected not only to bear such risk but also to manage this risk. Such risk exposure may affect the executive performance and for this reason, executives associate their performance based pay with such risk exposure. The total pay of the executives is also positively affected by the idiosyncratic risk, but mainly it reflects the effect on the options granted to the executives. The panel data (random effects) estimates in Table 3 shows similar effects of idiosyncratic risk on three forms of executive compensation. These findings provide support for hypothesis $H1.1_A$ and $H1.1_B$.

Table 2 also shows the effect of systematic risk on various forms of executive compensation. The systematic risk positively affects the cash pay, options grant, and total pay at 10%, 5% and 10% level of significance respectively. This indicates that the executives in commercial banks also associate their pay to the systematic risk of the bank. The fixed part of the compensation reflects the systematic risk exposure by the executives, but they also associate the variable performance based pay with the systematic risk faced by the bank. This implied the risk-averse nature of the commercial bank executives as they demand premium compensation for the exposure to the market risk faced by the firm. The panel data (random effects) estimates in Table

3 shows similar effects of systematic risk on three forms of executive compensation. These findings provide support for hypothesis H1.2.

Both idiosyncratic and systematic risks have significant effect on pay-performance sensitivities (PPS). The idiosyncratic risk has a positive and significant (at 10% level) effect on vega – the risk based pay-performance sensitivity; and no significant effect on delta – the return based pay-performance sensitivity. The risk that is unique to the bank, only affect the risk based pay-performance sensitivity. The return based pay-performance sensitivity is not exposed to the idiosyncratic risk of the bank. On the other hand, the systematic risk positively affects both vega and delta at 5% level of significance. This indicates that both the risk based and return based pay-performance sensitivity is exposed to market risk of the bank. The panel data (random effects) estimates in Table 3 shows very similar but more robust effect of systematic rusk on both types of pay-performance sensitivity measures. These findings provide support for hypothesis H1.3 and H1.4.

1.5.2.2. Effects of Financial Statement Based Risks

Table 4 and Table 5 present the OLS and panel data (random effects) estimates respectively of financial statement based risk on cash pay, options grants and total pay to the executives. Table 4 shows that the asset return risk has positive and significant (at 1% level) effect on cash pay to the executives. A major responsibility of the executives in commercial banks is to manage the assets of the banks and for this the executives associate their fixed pay with the risk related to asset returns. Asset return risk also has a positive and significant (at 1% level) effect on option granted to the executives. This implies that executives in commercial banks associate their performance based pay with asset return risk because the asset structure of commercial banks is different and proper management of such assets is also a performance

measure for commercial bank executives. The total pay is also positively and significantly (at 1% level) affected by the asset return risk. The panel data (random effects) estimates in Table 5 reveals similar and more robust effects of asset return risk on these three forms of executive compensation.

Table 4 also shows the effect of insolvency risk on various forms of executive compensation. The insolvency risk positively affects the cash pay, options grant, and total pay at 10% level of significance. A firm always faces a risk of insolvency and commercial banks are highly exposed to insolvency risk due to the nature of business. For this, commercial banks are governed by strict regulations compared to other industries. The executives of commercial banks, being aware of such risk exposure, associate both their fixed and performance based pay by claiming a premium pay for such risk exposure.

Both asset return risk and insolvency risks have significant effect on pay-performance sensitivities (PPS). The asset return risk has a positive and significant (at 5% level) effect on both the risk based pay-performance sensitivity (vega) and the return based pay-performance sensitivity (delta). On the other hand, the insolvency risk has a positive and significant (at 10% level) effect on both vega and delta. This implies that commercial bank executives put higher focus on asset return risk than that of insolvency risk, but both types of financial statement based risks seem to be important for the executives to focus on. And for this they associate their pay and pay-performance sensitivities with these two risks. Again the panel data (random effects) estimates in Table 5 show very similar but more robust results.

Table 4: OLS Regression Results: Financial Statement Based Risk, 1992 – 2006

This table presents the OLS estimates of the following equation for the commercial banks for 1992 – 2006:

$$Ln\,(Executive\ Compensation_{it};\ Delta_{it};\ Vega_{it}) = \beta_0 + \beta_1 ARRISK_{it} + \beta_2 INSVRISK_{it} + \beta_3 CEODUM_{it} + \beta_4 EXCDIRDUM_{it} + \beta_5 INTLCKDUM_{it} + \beta_6 TENURE_{it} + \beta_7 Ln\,(FIRMSIZE)_{it} + \beta_8 ROA_{it} + \beta_9 ROE_{it} + \varepsilon_{it}$$

Model (1), (2), (3), (4), and (5) presents the estimates using Executive compensation – cash pay (salary + bonus), option grants, total compensation, vega and delta as the dependent variables. *CEODum* is a dummy variable equals 1 if the executive is a CEO and 0 otherwise, *ExcDirDum* is a dummy variable equals 1 if the executive is also a director in his/her own firm and 0 otherwise, *IntLckDum* is a dummy variable equals 1 if the board is an interlocked board (where the executives are also directors in boards of other firms and vice versa) and 0 otherwise. *REG94* and *REG99* are dummy variables that take the value of 1 if the firm is a commercial bank and in the sample after 1994 and 1999, 0 otherwise, and *REG02* is a dummy variable with a value of 1 for all the firms in the sample after 2002. *Firmsize* is the total assets of the firm, *Tenure* is the total number of years an executive serves a firm, and *ROA* and *ROE* are return on asset and return on equity of each firm in each year respectively. ε is the noise term, i is the firm indicator and t is the time (year) indicator. The p-values are presented in the parentheses.

	Cash Pay (1)	**Options** (2)	**Total Pay** (3)	**Vega** (4)	**Delta** (5)
Constant	2.1281 ***	2.1852 ***	1.9713 ***	1. 8185 ***	2.972 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ARRISK	0.2381 ***	0.3314 ***	0.1928 ***	0.9217 **	0.7126 **
	[0.001]	[0.002]	[0.005]	[0.021]	[0.037]
INSVRISK	0.1925 *	0.2176 *	0.3118 *	0.0014 *	0.0291 *
	[0.071]	[0.081]	[0.079]	[0.092]	[0.037]
CEODum	1.1315 ***	1.1758 ***	1.1401 ***	1.1495 ***	1.1333 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ExcDirDum	1.4198 ***	1.1695 ***	1.2682 ***	0.2557	0.2141 *
	[0.000]	[0.000]	[0.000]	[0.221]	[0.092]
IntLckDum	1.1759 ***	1.1667 **	1.1328 ***	0.0194	0.0252
	[0.000]	[0.031]	[0.000]	[0.291]	[0.341]
Tenure	0.3463 **	0.4409 **	0.9113 **	0.5251 ***	0.6393 **
	[0.012]	[0.036]	[0.022]	[0.009]	[0.032]
Firmsize	1.4392 ***	1.1286 ***	1.4421 ***	2.4115 ***	1.1473 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ROA	1.1236 **	1.1062 *	1.1653 *	1.2255 **	1.1216 **
	[0.023]	[0.081]	[0.077]	[0.042]	[0.039]
ROE	0.1981 ***	0.1941 ***	0.1228 ***	0.1955 ***	0.1883 ***
	[0.000]	[0.000]	[0.000]	[0.001]	[0.002]
R^2	0.221	0.219	0.265	0.262	0.234
Observation	8,413	7,384	8,413	7,384	7,384

***, ** and *c indicates significance at 1%, 5% and 10% level.

Table 5: Panel (Random Effect) Regression Results: Financial Statement Based Risk, 1992 – 2006

This table presents the Panel (Random Effects) regression estimates of the following equation for the commercial banks for the period 1992 – 2006:

$$Ln\,(Executive\ Compensation_{it};\ Delta_{it};\ Vega_{it}) = \beta_0 + \beta_1 ARRISK_{it} + \beta_2 INSVRISK_{it} + \beta_3 CEODUM_{it} + \beta_4 EXCDIRDUM_{it} + \beta_5 INTLCKDUM_{it} + \beta_6 TENURE_{it} + \beta_7 Ln\,(FIRMSIZE)_{it} + \beta_8 ROA_{it} + \beta_9 ROE_{it} + u_{it} + \varepsilon_{it}$$

Model (1), (2), (3), (4), and (5) presents the estimates using Executive compensation – cash pay (salary + bonus), option grants, total compensation, vega and delta as the dependent variables. *CEODum* is a dummy variable equals 1 if the executive is a CEO and 0 otherwise, *ExcDirDum* is a dummy variable equals 1 if the executive is also a director in his/her own firm and 0 otherwise, *IntLckDum* is a dummy variable equals 1 if the board is an interlocked board (where the executives are also directors in boards of other firms and vice versa) and 0 otherwise. *REG94* and *REG99* are dummy variables that take the value of 1 if the firm is a commercial bank and in the sample after 1994 and 1999, 0 otherwise, and *REG02* is a dummy variable with a value of 1 for all the firms in the sample after 2002. *Firmsize* is the total assets of the firm, *Tenure* is the total number of years an executive serves a firm, and *ROA* and *ROE* are return on asset and return on equity of each firm in each year respectively. u is the between-entity error and ε is the within-entity error, i is the firm indicator and t is the time (year) indicator. p-values are in parentheses.

	Cash Pay (1)	**Options** (2)	**Total Pay** (3)	**Vega** (4)	**Delta** (5)
Constant	2.3286 ***	2.2855 ***	1.8715 ***	1. 7181 ***	2.678 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ARRISK	0.3382 ***	0.4313 ***	0.2927 ***	0.8216 **	0.6125 **
	[0.001]	[0.002]	[0.007]	[0.021]	[0.037]
INSVRISK	0.2926 *	0.3175 **	0.2117 *	0.1015 *	0.1094 *
	[0.071]	[0.011]	[0.072]	[0.092]	[0.037]
CEODum	1.2316 ***	1.3757 ***	1.2404 ***	1.2496 ***	1.2464 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ExcDirDum	1.3197 ***	1.2696 ***	1.3686 ***	0.3556	0.3149 *
	[0.000]	[0.000]	[0.000]	[0.221]	[0.092]
IntLckDum	1.3757 ***	1.2668 **	1.2329 ***	0.1195	0.1253
	[0.000]	[0.031]	[0.000]	[0.291]	[0.341]
Tenure	0.2465 **	0.3407 **	0.7115 **	0.4256 ***	0.3395 **
	[0.012]	[0.036]	[0.022]	[0.009]	[0.032]
Firmsize	1.3393 ***	1.2284 ***	1.1423 ***	1.5117 ***	1.2477 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ROA	1.2234 **	1.2064 *	1.2655 *	1.3258 **	1.2217 **
	[0.023]	[0.081]	[0.077]	[0.042]	[0.039]
ROE	0.1582 ***	0.2943 ***	0.2225 ***	0.3956 ***	0.2882 ***
	[0.000]	[0.000]	[0.000]	[0.001]	[0.002]
R^2	0.252	0.237	0.214	0.258	0.243
Observation	8,413	7,384	8,413	7,384	7,384

***, ** and *c indicates significance at 1%, 5% and 10% level.

1.5.2.3. Effect on CEOs

The dummy variable for the CEOs (CEODum) in all the tables indicate that there exists a significant differential risk exposure by the CEOs and for this CEOs claim premium compensation over other top five executives in commercial banks. Both Table 2 and Table 3 show that both the idiosyncratic risk and systematic risk significantly (at 1% level) increase the risk exposure of the CEOs of commercial banks than that of other executives of the banks. Table 4 and Table 5 show that both the asset return risk and insolvency risk again significantly (at 1% level) increase the risk exposure of the CEOs of commercial banks than that of other executives. This result is consistent with the findings of Ang, Lauterbach and Schreiber (2002), who analyze the pay structure of top management in the U.S. Banks and find that CEOs earn higher compensation than that of other top executives. As the CEO holds the most important position in the bank, it is expected that the CEO assumes maximum risk in the bank and for this, associates his/her pay with corresponding risk exposure by claiming premium pay over other executives of the bank.

1.5.2.4. Effects of Other Governance and Control Variables

Both OLS and panel data (random effects) estimates in all tables indicate that the size of the firm and return on equity (ROE) are highly significant (at 1% level) for all the forms of compensation and pay-performance sensitivities, whereas the return on assets (ROA) is also significant for all variables, but not at 1% level. Tenure of the executive is also significant for all the variables but at 5% level.

The executive director dummy (ExcDirDum) variable, as shown by all the tables, is significant at 1% level for all forms of compensation and at 10% level for delta – the risk based

pay-performance sensitivity. It is not at all significant for vega – the return based pay-performance sensitivity. This indicates that executives who are also directors in the board earn significantly higher compensation than the non-executive directors in the board. This result is not consistent with the findings of Cordeiro, Veliyath and Eramus (2000), who suggest that executive directors put less effort for the corporate governance development in the firm. Being a director in the board, the executives may influence to sanction themselves an above average compensation for them. This implies that executives, who are also board members, are not willing to associate their performance with bank returns, but claim premium compensation for higher exposure to both market based and financial statement based risks.

All the tables indicate that the board interlocking dummy (IntLckDum) variable has a positive and significant effect (at 1% level) on cash pay and total pay, but at 5% level for options grants. This is consistent with the finding of Hallock (1997). In the banking industry, the directors an interlocked board remains busy and can't monitor the bank governance mechanism effectively. Board interlocking (IntLckDum) variable has no impact on delta and vega. This indicates that busy directors put no emphasis on performance based pay, especially if it is return based. The executive directors do not put any emphasis on vega but do emphasis on delta (with 10% level of significance). This indicates that the executive directors of firms care about the risk faced by the bank and associate such risk with their pay and performance measures.

1.6. Conclusion

Commercial bank is a highly regulated industry with a distinguished asset structure. This regulatory framework put a sound governance system in addition to board established governance mechanism. Such regulatory mechanism and unique asset structure expose the

commercial bank executives to various kinds of risk. Because executives in commercial banks are risk-averse agent, it is expected that they should associate their pay and pay-performance sensitivities (PPS) with these risks faced by their banks. This paper analyzes the effect of such risk exposure on executive compensation and pay-performance sensitivities of commercial bank executives.

This paper analyzes two types of risks – market based risks (idiosyncratic risk and systematic risk) and financial statement based risks (asset return risk and insolvency risk) and their effect on executive compensation and pay-performance sensitivities. Using a hand collected dataset of 149 commercial banks and compensation of 1,248 executives (263 CEOs and 1,385 other top five executives), the heteroscedasticity corrected OLS and panel data (random effects) estimates show that executives in commercial banks associate their performance based pay (options grants) with both idiosyncratic risk and systematic risk by claiming a premium compensation. But they associate their fixed pay only with systematic risk faced by the bank. The risk based pay-performance sensitivity is also affected by the idiosyncratic risk but not by the systematic risk.

On the other hand, both types of financial statement based risks – asset return risk and insolvency risks have significant effect on pay-performance sensitivities (PPS). Executives in commercial banks also associate their performance based pay with asset return risk because the asset structure of commercial banks is different and proper management of such assets is also a performance measure for these executives. The results also show a significantly higher risk exposure by the executives and for this executives claim premium compensation over other top five executives in commercial banks. All these results imply that the risk-averse nature of

commercial bank executives as they demand premium compensation for the exposure to the different kinds of risks faced by the firm.

Busy directors, who also sit in other boards, put no emphasis on performance based pay, especially if it is return based. The executive directors do not put any emphasis on vega but do emphasis on delta with little significance. This indicates that the executive directors of firms care about the risk faced by the bank and associate such risk with their pay and performance measures.

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Chapter 02: Governance Structure and Executive Compensation in Banking and Non-Banking Industries

2.1. Introduction

Commercial bank is the largest regulated industry in the U.S. economy. Twenty large banks are placed in the recent Fortune 500 list (http://money.cnn.com/, May 21, 2012). Bank of America, being the largest commercial bank, is ranked as the thirteenth largest firm (ninth in 2011) and KeyCorp, being the twentieth largest commercial bank, is ranked as the four hundred and ninety ninth largest firm (four hundred and seventy ninth) in the list. But unlike other industrial firms in the market, the commercial banks need to face a tight regulatory framework set by the federal government. Bank regulations appear for various reasons, but mainly to avoid bank misuses and bank run and thereby panic in the economy. Commercial banks provide various services to the economy e.g., liquidity maintenance, money supply, credit allocation and so on (Cornett and Tehranian, 2004). Failure to provide any of these services may create serious economic disorder. For this, it is important to monitor performance of commercial banks and impose necessary regulations in order to ensure sound financial position of commercial banks. Although regulations may be beneficial to the overall economy, these regulations have important implication for the governance mechanism of commercial banks.

The governance mechanism in a median unregulated firm is established by the board of the firm. Similarly the governance mechanism of a commercial bank is also set by the board of directors. But commercial banks still need to address the regulatory agendas in addition to the governance mechanism set by the board. For example, the Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991 requires significant auditing, corporate

reporting, and governance reforms for commercial banks. Moreover FDICIA put regulatory control over executive compensation in banking industry. Commercial banks need to address such additional regulatory requirements over the governance requirements set by the boards of the banks. This should have differential effect on the governance mechanism in the commercial banks. For this the study of such additional regulatory effect is important as well as interesting for the commercial banks in the U.S.A.

The main objective of this paper is to analyze the regulatory effect on the commercial banks' governance mechanism in addition to the board established governance. CEO compensation and pay-for-performance are two major research areas of firm governance mechanism (Core, Holthausen and Larcker, 1999). For this, I will analyze executive compensation and pay-performance-sensitivity (PPS) in both banking and non-banking industries in the U.S.A. As the banking industry is a regulated one, comparison of commercial banks with firms of other unregulated industries will provide us with a clear picture of regulatory effect on the governance mechanism in commercial banks over the board governance system. In this context, the main research question is –

Does the executive compensation in banking industry differ from other unregulated industries due to the regulatory provisions and the structure of the banking industry?

Do different regulations over the years in banking industry make any effect on executive risk taking and their compensation?

This paper makes significant contribution in the literature of corporate governance for regulated industries, e.g., commercial banks. First, this is one of the first papers to analyze the regulatory effect on commercial banks' governance in addition to the board governance

mechanism. Literature on bank governance mainly focuses on the comparison of the board governance mechanism between banking and other unregulated industries (Booth, Cornett and Tehranian, 2002, Adams and Mehran, 2003). On the other hand, I analyze executive compensation of both unregulated industrial firms and commercial banks. Such analysis will provide with insights into the combined dynamics of regulatory and board governance mechanism on the executive compensation in the banking industry. Second, this paper analyzes the effect of various commercial bank related regulations on executive pay and pay-performance sensitivities. In this paper, I analyze the effect of three regulations, the Riegle-Neal Act of 1994, the Gramm-Leach-Bliley Act of 1999, and the Sarbane Oxley Act of 2002.

Third, I analyze executive compensation of both industrial firms and commercial banks over a longer sample period (from 1992 to 2006). Houston and James (1995) compare CEO compensation between banking and other unregulated industries over a period of 1982 to 1988. Fahlenbrach and Stulz (2011) analyze CEO compensation over a period of 2006 to 2008 (the recent crisis period). I, on the other hand, analyze compensation of both CEO and other top five executives over a longer sample period. Last but not the least, the sample used for the commercial banks is so far the largest one (149 commercial banks) in the literature. Sufficiently larger sample will provide with precise estimates of the analysis as well as better understanding of the results.

In this paper, I analyze the regulatory effect on the governance of commercial banks in addition to the board governance mechanism. I analyze the executive compensation in the banking industry compared to other unregulated industries in the U.S.A. Using a sample of 37,354 executives including both CEOs and other executives of banking and all other industries, over the period of 1992 to 2006, I find that executives in banking industry put significantly

higher emphasis on the fixed compensation in terms of salary and bonus, and significantly lower emphasis on the performance based compensation (options grant). Also executives in baking industry put less emphasis on risk based performance sensitivities with pay although they put some emphasis on return based performance sensitivities. This indicates the risk-averse nature of the executives in banking industry. Such emphasis on performance based pay increases as the regulatory requirement relaxes over time in banking industry. The governance variables e.g., executive tenure, board interlocking, directorship of the executives in the same firm, and CEO position as well as firm performance e.g., return on assets and return on equity make significant impact on the executive pay too.

The next section discusses regulations in the banking industry, section 3 discusses the regulatory effect on bank governance mechanism, section 4 discusses the hypotheses, section 5 discusses the methodology and data sources, section 6 explains the summary statistics and findings, and section 7 concludes the paper.

2.2. Regulations in Banking Industry

Cornett and Tehranian (2004) identifies five different areas where banks need to be regulated – market entry; to ensure the quality of service and increased profit, safety and soundness; to protect depositors and borrowers against the risk of bank failure, credit allocation; to ensure lending to social sectors, e.g., housing, consumer protection; against discrimination and unfair practices in lending, e.g., unnecessary or unfair fees and monetary policy; to ensure smooth money supply. Although these regulations intend to enhance bank performance and value, such regulations may be considered as an additional governance force independent of board governance mechanism (Andres and Vallelado, 2008).

Banks in the U.S.A. are operated under the regulations set by the Federal Deposit Insurance Corporation (FDIC), the Federal Reserve Board, the Office of the Comptroller of the Currency, or the Office of Thrift Supervision. The Glass-Steagall Act of 1932 established the FDIC to monitor and control commercial banks from underwriting and public offerings of securities. The Bank Holding Company Act of 1956 (BHCA) further restricts bank affiliations with non-banking firms. This prohibited firms owning banks to own or control insurance, manufacturing, real estate and securities firms, or any other non-banking firms.

The restrictions on commercial banks were relaxed mainly in 1990s. The Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 allowed national banks to establish branches across states in the U.S.A. after June 1, 1997. Such banks need not follow the state government regulations either. This raised the competition faced by commercial banks and also increased bank efficiency. Stiroh and Strahan (2003) show that after such deregulation, relative performance became a much better predictor of future market share.

At the end of 1990s, the Gramm-Leach-Bliley Act of 1999 (also known as the Financial Services Modernization Act of 1999) removed the barriers set by the Glass-Steagall Act of 1932 and allowed commercial banks, investment banks, securities firms, and insurance companies to consolidate. As a result, the banking sector gained much welfare in term of business efficiency and risk exposure. Mamun, Hassan and Maroney (2005) show that the systematic risk exposure for commercial banks decreased after the passage of the Gramm-Leach-Bliley Act of 1999.

In the early 2000s, the Sarbanes–Oxley Act of 2002 was enacted responding to a number of major corporate and accounting scandals. This act also established serious regulations on the U.S. Banking industry by raising the audit and reporting requirements. Siegel, Franz and O'Shaughnessy (2010) find that the returns (ROA and ROE) are negative for registered banks

after the Sarbanes-Oxley Act of 2002. They conclude that the costs of this act exceed the benefits.

After the recent the recent financial crisis of 2007-08, the Federal Reserve had to pledge billions of dollars to several large banks to help the economic recovery. The Federal government, since then, has been regulating the compensation of top executives of these banks. The Emergency Economic Stabilization Act of 2008 is established to address the subprime mortgage crisis. This act authorizes the U.S. Secretary of the Treasury to spend up to US$700 billion to purchase distressed assets. But this act also set a $500,000 compensation limit for executives at institutions receiving such financial assistance. Similarly, the American Recovery and Reinvestment Act of 2009 limits bonus payments to the executives to no more than one-third of the total compensation.

The Guidance on Sound Incentive Compensation Policies of 2009 requires regular review of incentive-compensation programs of all banks. Such regulation established to evaluate managers' risk-taking incentives and also incorporate these results into supervisory ratings. The Final Guidance of Incentive Compensation for banking organizations, released on June 21, 2010, proposes to discourage bank employees to take imprudent risks by aligning incentive compensation with risk and financial results, effective controls and risk-management, and strong corporate governance.

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 presents formal regulatory standards for pay practices that must specify compensation practices contributing towards unsafe and unsound banking. This act requires the disclosure of actual compensation and financial performance of the bank, median annual total annual compensation of all employees, annual total compensation of the CEO, and the ratio of the median annual total

to the total CEO compensation. Moreover, this act requires all the members of the compensation committee to be independent. The Federal Deposit Insurance Corporation (FDIC) 12 C.F.R. Part 327 (Incorporating Employee Compensation Criteria into the Risk Assessment System) of 2010 is requires the bank executive pay structure to be incorporated into the determination of banks' deposit insurance premiums.

All these regulations on board structure and executive pay should make the compensation structure in banking industry more sensitive towards the regulatory governance mechanism than that of other unregulated industries. For this reason, it should be interesting to examine the effect of such regulations on executive compensation in commercial banks and compare these effects with that of in other unregulated industries. Core and Guay (2010) analyze these proposals to regulate executive compensation in the financial industry. Although they agree with the view that regulatory bodies should guide executive compensation practices, they put doubt on many of these regulations as they are already embedded in a typical executive compensation plan.

2.3. Regulatory Effect on the Governance Mechanism in Banking Industry

The role of board of directors and executive compensation is widely recognized in the corporate governance literature. Weisbach (1988) suggest that the probability CEO turnover increases in an outsider-dominated board (where majority of the board of directors are independent and not firm executives). Ravina and Sapienza (2009) also suggest that independent directors can perform their role effectively. Morck, Shleifer, and Vishny (1988) finds board size and firm value, which suggest smaller board size for increased performance. Jensen (1993), Yermack (1996), and Coles, Daniel and Naveen (2008) also advocate smaller board size.

Adams and Mehran (2003) compare the corporate governance practices between banking and manufacturing industry over the period 1986 to 1996. By analyzing descriptive statistics, the authors conclude that boards in commercial banks are larger and more independent. Also the CEO options pay is smaller in commercial banks. The authors argue that such differences are attributable to the regulatory effect in the banking industry. Andres and Vallelado (2008) analyze the role of board in the governance mechanism of commercial banks for the period 1995 to 2005. They find an inverted U-shaped relationship between board size and bank performance. Thus they conclude that higher number of board members to a certain limit should enhance the monitoring and supervisory function of the board. Booth, Cornett and Tehranian (2002) compare the board structure between unregulated and regulated (banking and utilities) industries for the year 1999. The authors find that regulated industries face less degree of insider owner substitution than that of unregulated industry. By analyzing the board independence of both regulated and unregulated firms, the authors conclude that the regulatory provision in the regulated industries act as a '*substitute*' of board governance.

On the other hand, Executive compensation has long been a mechanism for sound governance (Jensen and Murphy, 1990). Shleifer and Vishny (1997) analyze executive compensation in the context of an agency problem. They suggest that, in an agency problem, complete contingent contracts for executives are not feasible. With an incomplete contract, managers possess the residual rights of control over the firm. Thus managers have sufficient liberty to focus on their own interest. As a solution to such agency problem, the authors suggest to grant managers a highly contingent, long term incentive contract ex ante. This will align the managers' interests with those of investors.

Hubbard and Palia (1995) examine CEO compensation of 147 commercial banks for the period 1980 to 1989. They find higher levels of pay in competitive corporate control markets (in which interstate banking is permitted). Mishra and Nielsen (2000) analyze governance mechanism in large commercial banks and find a positive association between the board independence and CEO pay-performance sensitivity. In a more recent paper, Grundy and Li (2010) develop a model predicting relationship between investment level and executive compensation. Their empirical test suggests that executive compensation is not significantly related to the investment level in the firm.

There is a growing comprehensive literature on the regulation and risk taking incentive in banking industry. Core, Guay and Larcker (2003) suggest that as the performance measures of an executive are noisy and beyond the executive's control, the performance based pay imposes a risk on the executive and so a risk-averse executive may claim premium compensation over the fixed cash pay. Crawford, Ezzell and Miles (1995) analyze executive compensation of 124 banks for the period 1976 to 1988. They observe a significant increase in pay-performance sensitivities (PPS) from 1976-81 regulation subsamples to 1982-88 deregulation subsamples. Both the papers document increase in CEO pay in commercial banks due to deregulation in banking industry. Houston and James (1995) use cross-section and time series data over the period of 1982 to 1988 in order to test the relation between CEO compensation and bank risk taking. By analyzing a sample of both banking and nonbanking firms, the authors conclude that the compensation structure in commercial banks do not encourage risk taking. Smith and Watts (1992) similarly find that option grant ratio in banking industry is less frequent than other industries.

On the other hand, Perry and Zenner (2001) analyze the Internal Revenue Code Section 162(m) of 1992, which requires enhanced disclosure on executive compensation. Their results

suggest that some firms reduced executive pay in response to Section 162(m). Also the pay for performance sensitivity increased for firms likely to be affected by 162(m). In a more recent paper, Cunat and Guadalupe (2009) examine two deregulation episodes in the 1990s – the Riegle-Neal Act of 1994 and The Gramm-Leach-Bliley Act of 1999. Their results indicate that the deregulations in the banking industry substantially changed the level and structure of compensation. The variable components of the executive compensation increased along with performance-pay sensitivities while the fixed component fell.

2.4. Hypothesis Development

Even though Booth, Cornett and Tehranian (2002) conclude that regulatory provisions act as a substitute for board governance mechanism, White (2011), on the contrary, indicates that there is just a bare relationship between corporate governance and prudent regulation of banks. Both the regulatory effect and governance mechanism have uncorrelated but significant effect on bank governance mechanism. This independent and additional regulatory provision in addition to the board governance mechanism should effect the compensation of both the CEO and other top executives in commercial banks compared to the same of executives in other unregulated industries. So the first hypothesis is -

H2.1: The total executive compensation in banking industry is significantly different than that of in other industries due to the regulatory effect in addition to the board governance mechanism.

DeYoung, Peng and Yan (2009) find that compensation structure have changed with the deregulation process in the banking industry. The Reigle-Neal Act of 1994 allows banks to expand into new geographic market. Again the Gramm-Leach-Bliley Act of 1999 allowed banks

to provide non-commercial banking financial services such as investment banking, insurance and underwriting. On the other hand, Smith and Watts (1992) and Houston and James (1995) find that executive compensation in banking industry is designed to discourage risk-taking behavior. The consequence of poor performance is the reduction in the performance based compensation. As the deposits in the commercial banks are insured by FDIC, and executive compensation is independent of investment level (Grundy and Li, 2010) a risk-averse executive would like to emphasis more on fixed cash compensation. In this light, the two-fold second hypotheses are –

$H2.2_A$: The fixed component of executive compensation in banking industry is, on average, higher than that of in other unregulated industries due to the regulatory provisions in banking industry.

$H2.2_B$: The variable component of executive compensation in banking industry is, on average, lower than that of in other unregulated industries due to the regulatory provisions in banking industry.

The variable component of the compensation is related to the performance and risk level of the firm. DeYoung, Peng and Yan (2009) associate this variable component with firm performance and firm risk. They refer to two terms – delta and vega, to address executive pay sensitivity towards firm performance and risk respectively. Both these variables are two important measures of executive incentives. Core and Guay, 2002 define delta, the pay-performance sensitivity, as the dollar value of executive pay in response to one percent change in the firm's stock price. The authors mention it as semi-elastic as the fixed component of the compensation is not affected by the firm performance. The stock and option grants to the executive cause the variation in the delta value. On the other hand, vega, the pay-risk sensitivity, is the dollar change in executive pay with respect to one percent change in stock return volatility.

Knopf, Nam and Thornton (2002), Rogers (2002), Nam, Ottoo and Thornton (2003), and Coles, Daniel and Naveen (2006) show that high vega compensation plans encourage the CEO to make riskier choices while high delta compensation plans discourage such risk taking attitude. As CEOs in banking industry are risk averse, the vega in the banking industry should be higher and the delta should be lower than that of in other unregulated industries. So the hypotheses related to pay sensitivities are –

H2.3$_A$: The vega in banking industry is higher than that of in other unregulated industries.

H2.3$_B$: The delta in banking industry is lower than that of in other unregulated industries.

Finally the executives in both commercial banks and other industries should be willing to associate their pay with performance as the regulatory binding relaxes over time. Thus the executives should be less risk-averse and should emphasize more on performance based pay and less on fixed pay. This should affect the pay-performance sensitivities of the executive pay both in terms of firm risk (vega) and return (delta).

2.5. Methodology and Data Sources

Hypothesis 2.1, 2.2$_A$ and 2.2$_B$ will be tested by equation (9) presented below.

$$Ln\,(Compensation_{it}) = \beta_0 + \beta_1 CEODUM_{it} + \beta_2 EXCDIRDUM_{it} + \beta_3 INTLCKDUM_{it} + \beta_4 BANKDUM_{it} + \beta_5 REG94_{it} + \beta_6 REG99_{it} + \beta_7 REG02_{it} + \beta_8 TENURE_{it} + \beta_9 Ln(FIRMSIZE)_{it} + \beta_{10} ROA_{it} + \beta_{11} ROE_{it} + \beta_{12} BANKDUM_{it} * INTLCKDUM_{it} + \beta_{13} BANKDUM_{it} * TENURE_{it} + \varepsilon_{it} \quad (9)$$

For hypothesis 2.3_A and 2.3_B, I will use the model presented in equation (10).

$$Ln\,(Delta_{it}\ or\ Vega_{it}) = \beta_0 + \beta_1 CEODUM_{it} + \beta_2 EXCDIRDUM_{it} + \beta_3 INTLCKDUM_{it} + \beta_4 BANKDUM_{it} + \beta_5 REG94_{it} + \beta_6 REG99_{it} + \beta_7 REG02_{it} + \beta_8 TENURE_{it} + \beta_9 Ln(FIRMSIZE)_{it} + \beta_{10} ROA_{it} + \beta_{11} ROE_{it} + \beta_{12} BANKDUM_{it} * INTLCKDUM_{it} + \beta_{13} BANKDUM_{it} * TENURE_{it} + \varepsilon_{it} \quad (10)$$

Again, I calculate delta and vega following equation (6), (7), and (8) presented in chapter 1. For econometric purpose, I use both heteroskedasticity corrected Ordinary Least Squares (OLS) and panel data (random effects) regression procedure. I use random effects model as I assume that the group effect on the executives to be random. The differences across executives should influence, to a significant extent, the compensation of pay-performance sensitivity.

The dependent variable in equation (9) – executive compensation takes three forms – (i) total pay to the executives, (ii) cash pay to the executives (salary and bonus), and (iii) options granted to the executives. The cash pay to the executives is the fixed part of their compensation that does not vary with the performance of the bank. The option granted to the executives is the variable part of their compensation that varies with the bank performance in the same direction. CEODum is a dummy variable equals 1 if the executive is a CEO and 0 otherwise, ExcDirDum is a dummy variable equals 1 if the executive is also a director in his/her own firm and 0 otherwise, IntLckDum is a dummy variable equals 1 if the board is an interlocked board (where the executives are also directors in boards of other firms and vice versa) and 0 otherwise, and BnkDum is a dummy variables equals 1 if the firm is a bank and 0 otherwise. This variable should capture the regulatory effect on the bank executive compensation. REG94, REG99 and REG02 are dummy variables to capture the effect of the Riegle-Neal Act of 1994, the Gramm-Leach-Bliley Act of 1999, and the Sarbane Oxley Act of 2002 respectively. TENURE is tenure

period or total service life of an executive in a firm or bank, FIRMSIE is calculated as the total asset size of the firm, ROA and ROE are returns on assets and equity respectively. ε is the noise term, i is the firm indicator and t is the time (year) indicator.

The compensation data for all executives including CEO is collected from the Compustat ExecuComp database for the period 1992 to 2006. This database provides compensation data of both the CEOs and other top five executives mainly from the industrial firms and also from some commercial banks. Most of the data on the compensation of executives from commercial banks are hand collected from banks' annual report and proxy statements. The final sample includes a total of 374 different industries (by SIC). The utilities firms are not included in the sample although these firms are regulated firms too. As the paper focus on only one regulated industry – commercial banks, it is feasible to exclude other regulated firms to obtain results free from the bias of regulations from other regulated industries. The final sample includes a total of 188,926 firm-executive-year data over seventeen year from 1992 to 2006. The firm performance data are collected from the Center for Research in Security Prices (CRSP) database.

2.6. Findings

2.6.1. Summary Statistics and Univariate Analysis

There are a total of 3,256 firms included in the sample. Of these there are 149 commercial banks and 3,107 industrial firms from other 373 industries. Of the banking sample there are 8,413 firm-executive-year data and of the industrial firm sample, there are 180,513 firm-executive-year data over the sample period. The full sample consists of a total of 37,354 executives including 5,903 CEOs and 31,451 executives. The banking sub-sample includes a total of 1,648 executives of which 263 are CEOs and 1385 are other executives. The industrial

sub-sample consists of a total of 35,706 executives including 5,640 CEOs and 30,066 other executives.

Table 6 presents the summary statistics of different forms of compensation and pay-performance sensitivity (delta and vega), and CEO tenure by industry and executive types. The average cash payment (salary and bonus) to the executives is $649,767 with a minimum of $225,000 and a maximum of $121,374,949. For banking industries, the average cash payments to executives are higher ($843,109.162) with a minimum of $851,300 and a maximum of $22,000,000. On the other hand, for the rest of the industries, the average cash payments to executives are lower ($640,757.094) with a minimum of $225,000 and a maximum of $121,374,949. The difference of the average cash payments to executives between banking and other industries are highly significant (t-value = 16.81). This indicates significantly higher cash pay to the bank executives due to the regulatory provisions in addition to the board governance mechanism. This also implies that executives in commercial banks avoid risk by accepting higher cash pay than the executives of other industries.

A total of 162,608 firm-executives of all the industries are granted options over the sample period. The average options granted to the executives is $837,224.271 with a maximum of $600,347,350 and a minimum of $0. Of the banking industry, a total of 7,384 firm-executives are granted options. The average options granted to the bank executives is $723,276.783 with a maximum of $47,776,170. The average options granted to the executives of other industries is $842,644.749 with a maximum of $600,347,350. The average options grant in banking industry is significantly lower than that of in other industries (t-value = 2.576). This again indicates the risk-averse behavior by the bank executives, perhaps due to the regulatory provision in banking

industry. As risk taking is not necessary for the bank executives, they put more emphasis on the fixed compensation and less on the performance based compensation.

The average total payment (salary, bonus, options grant, long term incentive plans and other equity incentives) to the executives of all the industries is $1,867,737.613 with a minimum of $225,000 and a maximum of $655,447,998. For banking industries, the average total pay to executives is $2,084,266.014 with a minimum of $8,513,000 and a maximum of $84,825,245. On the other hand, for the rest of the industries, the average total pay to executives are lower ($1,857,646.077) with a minimum of $225,000 and a maximum of $655,447,998. The difference of the total pay to executives between banking and other industries is highly significant (t-value = 4.063). This significance is mainly driven by the significantly higher fixed cash compensation paid to the bank executives.

The average delta for the total sample firms is 610.08, while the same for the banking industry is 438.29 and for other industries is 721.92. The difference of the delta between the executives is highly significant (t-value = 3.831). On the other hand, the average delta of CEOs is 927.39 and the same of other executives is 772.38. The difference between the delta of CEOs and other executives is again highly significant (t-value = 2.471). This again indicates the risk-averse behavior by the executives of commercial banks as they are less likely to associate their compensation with the risk exposure of the firm.

The average vega for the total sample firms is 72.29, where the same for the banking industry is 61.38 and for other industries is 81.52. The difference of the vega between the executives is highly significant (t-value = 4.137). The average vega of CEOs is 89.31 and the same of other executives is 36.31. The difference between the vega of CEOs and other executives is again highly significant (t-value = 3.104). This again implies the risk-averse

behavior by the executives of commercial banks as they are less willing to relate their pay with the performance of the firm.

Table 6: Summary Statistics of Relevant Variables

Cash pay to the executives is the total of annual salary and bonus paid to the executive. The *Options* grant to the executive is the book value of stock options granted to each executive. *Other pay* includes long term incentive plans and other equity incentives and *Total pay* is the total of all forms of pay to the executives. *Tenure* is the total number of years an executive serves a firm. *Delta* is the dollar value of CEO pay in response to 1% change in the firm's stock price, and *Vega* is the dollar change in CEO pay with respect to 1% change in stock return volatility All the figures except for the number of observations and Tenure (in years) are expressed in thousand dollars.

	Cash Pay	Option Grants	Other Pay	Total Pay	Delta	Vega	Tenure
			All Firms				
Obs.	188,926	162,608	188,926	188,926	162,608	162,608	188,926
Min	0.225	0.000	0.000	0.225	15.27	0.00	1
Max	121,374.95	600,347.35	129,126.39	655,448.00	1429.45	182.76	52
Avg.	649.77	837.22	367.90	1,867.74	610.08	72.29	9.72
SD	1,080.06	3,889.86	1,764.91	5,000.88	1243.91	166.23	3.24
			Banking Industry				
Obs.	8,413	7,384	8,413	8,413	7,384	7,384	8,413
Min	8.513	0.000	0.000	8.513	15.27	0.00	1
Max	22,000.00	47,776.17	34,716.10	84,825.25	936.03	135.45	38
Avg.	843.11	723.28	347.42	2,084.27	438.29	61.38	14.1
SD	1,133.72	2,005.69	1,582.39	3,844.76	382.11	113.89	2.83
			Other Industries				
Obs.	180,513	155,224	180,513	180,513	155,224	155,224	180,513
Min	0.225	0.000	0.000	0.225	20.37	0.00	1
Max	121,374.95	600,347.35	129,126.39	655,448.00	1429.45	182.76	52
Avg.	640.76	842.64	368.86	1,857.65	721.92	81.52	8.89
SD	1,076.65	3,957.12	1,772.96	5,048.09	1372.49	171.93	3.74
			CEOs Only				
Obs.	27,881	27,630	27,881	27,881	27,630	27,630	27,881
Min	0.390	0.000	0.000	0.390	33.27	4.67	1
Max	102,448.77	600,347.35	129,126.39	655,448.00	1429.45	182.76	36
Avg.	1,278.23	1,970.97	950.61	4,490.34	927.39	89.31	13.7
SD	1,847.99	7,669.11	3,465.31	10,043.62	1187.26	162.36	3.47
			Other Executives Only				
Obs.	161,045	134,978	161,045	161,045	134,978	134,978	161,045
Min	0.225	0.000	0.000	0.225	15.27	0.00	1
Max	121,374.95	255,629.94	106,433.45	329,641.97	1283.73	65.38	52
Avg.	540.97	605.15	267.02	1,413.70	772.38	36.31	14.2
SD	834.89	2,423.27	1,227.32	3,237.01	993.82	44.01	2.21

Of the total sample, a total of 132,444 firm-executives (70.1%) also act as directors in the same firm, where 56,482 firm-executives (29.9%) do not act as director of that firm. In the banking sub-sample 5,618 firm-executives (66.8%) act as directors in their firms where 2,792 firm-executives (33.2%) do not do so. In the sub-sample of other industries a total of 126,826 firm-executives (70.3%) act as directors in the same firm where 53,687 firm-executives (29.7%) do not act as a director of the same firm. The average cash pay, options grant and total pay to the executives acting as a director is $1,037,116.275, $1,458,742.905 and $3,388,328.884 respectively. On the other hand, the average cash pay, options grant and total pay to the executives not acting as a director is $484,579.606, $513,044.962 and $1,458,378.226 respectively. Such difference is also significant both in banking industry (t-value of 22.361, 14.161 and 21.263 respectively) and in other industries (t-value of 102.095, 46.625 and 85.72 respectively) indicating that executives acting as directors earn significantly higher than non-executive directors.

Again, of the total sample 185,415 firm-executives (98.1%) are working as a director in the boards of other firms where 3,511 firm-executives (1.9%). In the banking sub-sample 8,220 firm-executives (97.7%) work as directors in other board where 190 (203%) firm-executives do not do so. Similarly, 177,192 (98.2%) firm-executives work as a director in other boards where 3,321 firm-executives (1.8%) do not do the same. The average cash pay, options grant and total pay to the executives of an interlocking board is $1,125,896.241, $1,204,236.857 and $2,968,654.297 respectively. On the other hand, the average cash pay, options grant and total pay to the executives of a non-interlocking board is $874,795.517, $719,157.549 and $2,138,259.874 respectively. The difference of the average cash pay, options grant and total pay between the executives of an interlocked and non-interlocked board is highly significant with a t-value of

8.255, 4.845 and 5.578 respectively. Such difference is also significant both in banking industry (t-value of 6.982, 2.147 and 5.673 respectively) and in other industries (t-value of 6.652, 4.653 and 4.625 respectively) indicating significantly higher pay to the executives of an interlocked (busy) board in all the industries.

Of the sub-sample of 27,881 firm-CEOs the average cash pay, options grants and total pay are $1,278,225.53, $1,970,973.88 and $4,490,340.869 respectively. Again, of the other executive sub-sample of 161,045 firm-executives, the average cash pay, options grants and total pay are $540,965.921, $605,145.698 and $1,413,698.05 respectively. The difference of the average cash pay, options grant and total pay between the CEOs and the other executives are highly significant with a t-value of 108.46, 53.644 and 97.186 respectively.

2.6.2. Regression Results

Table 7, Table 9, and Table 11 present the heteroscedasticity corrected Ordinary Least Squares (OLS) estimates and test results of equation (9) and equation (10) respectively. Again Table 8, Table 10, and Table 12 present the panel data (random effects) estimates and test results of equation (9) and equation (10) respectively. I use random effects model as the group effect on the executives is assumed to be random. The differences across executives should have some influence on the compensation of pay-performance sensitivity. The Hausman Test also suggests the use of random effects model. For the null hypothesis –

H_0: Difference across coefficients is random and not systematic;

the χ^2 value is 3.667 with a p-value of 0.055.

Table 7 and Table 8 present the estimates for the full sample of executives from commercial banks and other industries. Table 9 and Table 10 present the estimates for the sample

of executives from commercial banks. Table 11 and Table 12 present the estimates for the sample of executives from other unregulated industries.

2.6.2.1. Effects on Various Forms of Compensation

In Table 7, the bank dummy (BnkDum) variable is highly significant (1% level) providing supportive evidence for hypothesis 2.1. The BnkDum variable has a positive significance on cash pay, and total pay to the executives. Table 8 also provides a similar sign with consistent sign and significance. This indicates that the total pay to the bank executives is significantly higher than that of executives in other industries. Also this provides support for hypothesis 2.2_A indicating that bank executives put significantly higher emphasis on the fixed compensation.

On the other hand, in both Table 7 and Table 8, the BnkDum variable has a negative and highly significant (1% level) effect on options granted to executives. This provides support for hypothesis 2.2_B, suggesting that the executives in commercial banks choose to put lesser emphasis on the performance based compensation compared to the executives in other industries. Such results imply the risk-averse nature of the commercial bank executives.

The interacting variables (BnkDum * IntLckDum) and (BnkDum * Tenure) from Table 7 and Table 8 show that, even after controlling for board governance mechanism, the regulatory governance has significant effect on all forms of pay. For cash pay and total pay, these two variables have positive significant effect at 5% level and 10% level respectively and negative effect on options granted to executives.

Table 7: OLS Regression Results: Full Sample, 1992 – 2006

This table presents the OLS regression estimates of the following equation for the full sample for 1992 – 2006:

$$Ln\,(Compensation_{it}; Delta_{it}; Vega_{it}) = \beta_0 + \beta_1 CEODUM_{it} + \beta_2 EXCDIRDUM_{it} + \beta_3 INTLCKDUM_{it} + \beta_4 BANKDUM_{it} + \beta_5 REG94_{it} + \beta_6 REG99_{it} + \beta_7 REG02_{it} + \beta_8 TENURE_{it} + \beta_9 Ln(FIRMSIZE)_{it} + \beta_{10} ROA_{it} + \beta_{11} ROE_{it} + \beta_{12} BANKDUM_{it} * INTLCKDUM_{it} + \beta_{13} BANKDUM_{it} * TENURE_{it} + \varepsilon_{it}$$

CEODum equals 1 if the executive is a CEO and 0 otherwise, *ExcDirDum* equals 1 if the executive is also a director in his/her own firm and 0 otherwise, *IntLckDum* equals 1 if the board is an interlocked board and 0 otherwise, and *BnkDum* equals 1 if the firm is a bank and 0 otherwise. *REG94*, *REG99*, and *REG02* equal 1 if the firm is a commercial bank and in the sample after 1994, 1999, and 2002, 0 otherwise. *Firmsize* is the total assets of the firm, *Tenure* is the total number of years an executive serves a firm, and ROA and ROE are return on asset and return on equity of each firm in each year respectively. ε is the noise term, i is the firm indicator and t is the time (year) indicator. The p-values are presented in the parentheses.

	Cash Pay (1)	**Options** (2)	**Total Pay** (3)	**Vega** (4)	**Delta** (5)
Constant	6.1427 ***	6.1861 ***	7.0432 ***	3.8413 ***	2.8974 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
CEODum	6.1913 ***	6.8659 ***	7.6137 ***	1.3549 ***	2.1137 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ExcDirDum	5.7548 ***	6.0672 ***	6.0558 ***	0.2317	1.1003 *
	[0.000]	[0.000]	[0.000]	[0.126]	[0.068]
IntLckDum	-5.2165 ***	-5.1441 **	-6.6638 ***	-1.7395	-0.0241
	[0.000]	[0.019]	[0.000]	[0.182]	[0.274]
BnkDum	4.9698 ***	-5.1375 ***	4.5443 *	2.7391 ***	-1.0252 ***
	[0.000]	[0.001]	[0.085]	[0.000]	[0.000]
REG94	-0.0023 **	0.2412 *	0.0079 *	0.0013 *	0.0349 **
	[0.036]	[0.052]	[0.058]	[0.079]	[0.037]
REG99	-0.3491 ***	0.5279 ***	0.1972 **	0.3164 **	0.2167 **
	[0.008]	[0.001]	[0.024]	[0.015]	[0.031]
REG02	-0.2973 ***	0.2838 ***	0.2003 **	0.3413 **	0.1829 **
	[0.005]	[0.003]	[0.024]	[0.03]	[0.04]
Tenure	0.1324 **	0.1273 **	0.1012 **	0.1137 **	0.1263 **
	[0.021]	[0.016]	[0.012]	[0.019]	[0.011]
Firmsize	1.0325 ***	1.2943 ***	1.0358 ***	1.9134 ***	1.5839 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ROA	1.1196 **	1.6372 *	1.8723 *	1.2012 *	1.1973 **
	[0.019]	[0.071]	[0.089]	[0.077]	[0.029]
ROE	0.8892 ***	0.7201 ***	0.6547 ***	0.8113 ***	0.7147 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
BnkDum * IntLckDum	0.2617 **	-0.0212 **	0.0027 **	-0.0118 *	-0.0013 *
	[0.039]	[0.026]	[0.021]	[0.073]	[0.088]
BnkDum * Tenure	0.0982 *	-0.0317 *	0.0022	0.0018 *	0.0072 *
	[0.081]	[0.089]	[0.172]	[0.071]	[0.096]
Observation	188,926	162,608	188,926	162,608	162,608

***, ** and * indicates significance at 1%, 5% and 10% level.

Table 8: Panel (Random Effect) Regression Results: Full Sample, 1992 – 2006

This table presents the Panel estimates of the following equation for the full sample for the period 1992 – 2006:

$$Ln\,(Compensation_{it}; Delta_{it}; Vega_{it}) = \beta_0 + \beta_1 CEODUM_{it} + \beta_2 EXCDIRDUM_{it} + \beta_3 INTLCKDUM_{it} + \beta_4 BANKDUM_{it} + \beta_5 REG94_{it} + \beta_6 REG99_{it} + \beta_7 REG02_{it} + \beta_8 TENURE_{it} + \beta_9 Ln(FIRMSIZE)_{it} + \beta_{10} ROA_{it} + \beta_{11} ROE_{it} + \beta_{12} BANKDUM_{it} * INTLCKDUM_{it} + \beta_{13} BANKDUM_{it} * TENURE_{it} + u_{it} + \varepsilon_{it}$$

CEODum equals 1 if the executive is a CEO and 0 otherwise, *ExcDirDum* equals 1 if the executive is also a director in his/her own firm and 0 otherwise, *IntLckDum* equals 1 if the board is an interlocked board and 0 otherwise, and *BnkDum* equals 1 if the firm is a bank and 0 otherwise. *REG94*, *REG99*, and *REG02* equal 1 if the firm is a commercial bank and in the sample after 1994, 1999, and 2002, 0 otherwise. *Firmsize* is the total assets of the firm, *Tenure* is the total number of years an executive serves a firm, and ROA and ROE are return on asset and return on equity of each firm in each year respectively. u is the between-entity error and ε is the within-entity error, i is the firm indicator and t is the time (year) indicator. The p-values are presented in the parentheses.

	Cash Pay (1)	**Options** (2)	**Total Pay** (3)	**Vega** (4)	**Delta** (5)
Constant	4.4512 ***	4.4827 ***	5.1038 ***	2.7836 ***	2.0996 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
CEODum	4.4864 ***	4.9753 ***	5.5172 ***	0.9818 ***	1.5317 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ExcDirDum	4.1701 ***	4.3965	4.3883 ***	0.1679	0.7973 *
	[0.000]	[0.127]	[0.000]	[0.133]	[0.093]
IntLckDum	-3.7801 ***	-3.7276 **	-4.8288 ***	-1.2605	-0.0175
	[0.000]	[0.038]	[0.000]	[0.278]	[0.332]
BnkDum	3.6013 ***	-3.7228 ***	3.2930 **	1.9849 ***	-0.7429 ***
	[0.001]	[0.005]	[0.017]	[0.000]	[0.000]
REG94	-0.0017 *	0.1748 *	0.0057	0.0009	0.0253
	[0.092]	[0.089]	[0.121]	[0.219]	[0.347]
REG99	-0.2530 **	0.3825 **	0.1429 **	0.2293 **	0.1570 **
	[0.017]	[0.012]	[0.021]	[0.011]	[0.023]
REG02	-0.2154 ***	0.2057 **	0.1451 **	0.2473 **	0.1325 **
	[0.001]	[0.014]	[0.022]	[0.037]	[0.042]
Tenure	0.0959 **	0.0922 **	0.0733 ***	0.0824 **	0.0915 **
	[0.014]	[0.019]	[0.009]	[0.025]	[0.018]
Firmsize	0.7482 ***	0.9379 ***	0.7506 ***	1.3865 ***	1.1478 ***
	[0.001]	[0.003]	[0.002]	[0.004]	[0.009]
ROA	0.8113 **	1.1864 *	1.3567 *	0.8704 *	0.8676 **
	[0.019]	[0.071]	[0.089]	[0.077]	[0.029]
ROE	0.6443 ***	0.5218 ***	0.4744 ***	0.5879 ***	0.5179 ***
	[0.002]	[0.001]	[0.007]	[0.003]	[0.004]
BnkDum * IntLckDum	0.1896 **	-0.0154 **	0.0020 *	-0.0086 **	-0.0009 *
	[0.027]	[0.033]	[0.074]	[0.018]	[0.072]
BnkDum * Tenure	0.0712 **	-0.0230 *	0.0016 *	0.0013 *	0.0052 *
	[0.035]	[0.092]	[0.083]	[0.069]	[0.072]
Observation	188,926	162,608	188,926	162,608	162,608

***, ** and * indicates significance at 1%, 5% and 10% level.

The CEO dummy (CEODum) variable has a positive sign with 1% level of significance under both OLS and Panel (random effects) estimates for all three forms of compensation to the executives. This indicates that CEOs in all the industries earn significantly higher compensation than other top executives in the firm. This result is consistent with the findings of Ang, Lauterbach and Schreiber (2002), who analyze the pay structure of top management in the U.S. Banks and find that CEOs earn higher compensation than that of other top executives. For only the sample of commercial banks, Table 9 and Table 10 provide very similar effect of the variable CEODum. Table 11 and Table 12 provide similar effect for the sample of other industries for the same variable.

The executive director dummy (ExcDirDum) variable, as Table 7 and Table 8 reveal, again has a positive sign with 1% level of significance for all three forms of compensation under both OLS and Panel (random effects) estimates. This indicates that executives who are also directors in the board earn significantly higher compensation than the non-executive directors in the board. This result is consistent with the findings of Cordeiro, Veliyath and Eramus (2000), who suggest that executive directors put less effort for the corporate governance development in the firm. Being a director in the board, the executives may influence to sanction themselves an above average compensation for them. For commercial bank sample, an OLS estimate in Table 9 indicates a very similar result. But the panel (Random effects) estimates in Table 10 indicate that the ExcDirDum variable is significant at 1% level for cash pay, and 10% level for total pay, but not significant at all for options granted to executives. This implies that executives, who are also board members, are not willing to associate their performance with pay. Again this indicates the risk-averse nature of the commercial bank executives. For the sample of other industries, Table

11 and Table 12 indicate that ExcDirDum variable is significant for all forms of pay, indicating that executives in all other industries associate their pay with performance.

Table 7 and Table 8 indicates that the board interlocking dummy (IntLckDum) variable has a negative sign with 1% level of significance for cash pay and total pay to the executives, but has a negative effect with 5% level of significance on options grants. This indicates that the interlocked boards in fact serve as an effective check and balance mechanism for the firm governance. Executives of an interlocked board cannot evade board members, even though they remain busy in more than one board. Rather the enhanced director experience allows them to establish tight governance in the firm. This result is not consistent with the findings of Hallock (1997), who finds that executive compensation in industrial firms is significantly higher if the board is an interlocked or busy board.

Table 9 presents OLS estimates for the commercial bank industry for IntLckDum variable, which show that this variable is positive and significant at 1% level for cash pay and total pay, but at 5% level for options grants. Table 10 presents the panel (random effects) shows that this variable is significant at 1% level for cash pay, but at 5% level for options grants and total pay. Table 11 and Table 12 again provide similar results of total sample for this variable, negative effect of IntLckDum variable for other industries. This is consistent with the finding of Hallock (1997). In the banking industry, the directors may remain busy enough not to monitor the bank governance mechanism effectively.

2.6.2.2. Effects on Various Forms of Pay-Performance Sensitivity (PPS)

Table 7 and Table 8 indicate that the BnkDum variable has positive effect on Vega and negative effect on Delta at 1% level of significance. This again indicates that the executives in

commercial banks tend to avoid risk by putting less emphasis on risk based PPS measures compared to executives in other industries. But commercial bank executives put higher emphasis on return based PPS measures. Board interlocking (IntLckDum) variable has no impact on delta and vega indicating that busy directors put no emphasis on performance based pay. The executive directors do not put any emphasis on vega but do emphasis on delta (with 10% level of significance). This indicates that the executive directors of firms care about the risk faced by the firm and associate such risk with their pay and performance measures. But CEOs put the most emphasis on performance based pay and its sensitivities. The CEODum variable has positive and significant (at1% level) on both delta and vega. The commercial bank (Table 9 and Table 10) and other industry subsamples (Table 11 and Table 12) reveal similar findings. In brief, the results indicate that executives put significant emphasis on performance and risk sensitivity as long as they emphasize performance based pay.

2.6.2.3. Effects of Regulation

Table 7 and Table 8 present the effect of three different regulatory effects on all the sample firms. The variables REG94 and REG99 apply only to commercial banks and REG02 applies to all the firms. Table 7 indicates that the REG94 variable has negative impact on cash pay and positive impact on delta at 5% level of significance and positive impact on options grants, total pay, and vega at 10% level of significance. After the implementation of the Riegle-Neal Act of 1994, commercial bank executives put less emphasis on fixed pay and higher emphasis on performance based pay and its sensitivities, although the panel (random effects) estimates from Table 8 indicate that the PPS has not at all influenced by the Riegle-Neal Act of 1994. The commercial bank subsample from Table 9 and Table 10 also reveal similar impact of the Riegle-Neal Act of 1994 on executive pay and pay-performance sensitivities.

Table 9: OLS Regression Results: Commercial Bank Sample, 1992 – 2006

This table presents the OLS estimates of the following equation for commercial banks for 1992 – 2006:

$$Ln\,(Compensation_{it}; Delta_{it}; Vega_{it}) = \beta_0 + \beta_1 CEODUM_{it} + \beta_2 EXCDIRDUM_{it} + \beta_3 INTLCKDUM_{it} + \beta_4 REG94_{it} + \beta_5 REG99_{it} + \beta_6 REG02_{it} + \beta_7 TENURE_{it} + \beta_8 Ln(FIRMSIZE)_{it} + \beta_9 ROA_{it} + \beta_{10} ROE_{it} + \varepsilon_{it}$$

CEODum is equals 1 if the executive is a CEO and 0 otherwise, *ExcDirDum* equals 1 if the executive is also a director in his/her own firm and 0 otherwise, *IntLckDum* equals 1 if the board is an interlocked board and 0 otherwise. *REG94*, *REG99*, and *REG02* equal 1 if the firm is a commercial bank and in the sample after 1994, 1999, and 2002, 0 otherwise. *Firmsize* is the total assets of the firm, *Tenure* is the total number of years an executive serves a firm, and *ROA* and *ROE* are return on asset and return on equity of each firm in each year respectively. ε is the noise term, i is the firm indicator and t is the time (year) indicator. The p-values are presented in the parentheses.

	Cash Pay (1)	**Options** (2)	**Total Pay** (3)	**Vega** (4)	**Delta** (5)
Constant	6.7779 ***	6.8257 ***	7.7715 ***	4.2385 ***	3.1970 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
CEODum	6.8315 ***	7.5758 ***	8.4010 ***	1.4950 ***	2.3323 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ExcDirDum	6.3498 ***	6.6945 ***	6.6820 ***	0.2557	1.2141 *
	[0.000]	[0.000]	[0.000]	[0.221]	[0.092]
IntLckDum	5.7559 ***	5.6760 **	7.3528 ***	-1.9194	-0.0266
	[0.000]	[0.031]	[0.000]	[0.291]	[0.341]
REG94	-0.0025 *	0.2661 **	0.0087	0.0014	0.0385
	[0.071]	[0.011]	[0.172]	[0.192]	[0.317]
REG99	-0.3852 ***	0.5825 ***	0.2176 **	0.3491 **	0.2391 **
	[0.004]	[0.001]	[0.041]	[0.034]	[0.011]
REG02	-0.3280 ***	0.3131 ***	0.2210 **	0.3766 **	0.2018 **
	[0.001]	[0.008]	[0.027]	[0.037]	[0.031]
Tenure	0.1461 **	0.1405 **	0.1117 **	0.1255 ***	0.1394 **
	[0.012]	[0.036]	[0.022]	[0.009]	[0.032]
Firmsize	1.1393 ***	1.4281 ***	1.1429 ***	2.1112 ***	1.7477 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ROA	1.2354 **	1.8065 *	2.0659 *	1.3254 **	1.3211 **
	[0.023]	[0.081]	[0.077]	[0.042]	[0.039]
ROE	0.9811 ***	0.7946 ***	0.7224 ***	0.8952 ***	0.7886 ***
	[0.000]	[0.000]	[0.000]	[0.001]	[0.002]
R^2	0.0211	0.0193	0.0655	0.0262	0.0345
Observation	8,413	7,384	8,413	7,384	7,384

***, ** and * indicates significance at 1%, 5% and 10% level.

Table 10: Panel (Random Effects) Regression Results: Commercial Banks, 1992 – 2006

This table presents the Panel estimates of the following equation for the commercial banks for 1992 – 2006:

$$Ln\,(Compensation_{it}; Delta_{it}; Vega_{it}) = \beta_0 + \beta_1 CEODUM_{it} + \beta_2 EXCDIRDUM_{it} + \beta_3 INTLCKDUM_{it} + \beta_4 REG94_{it} + \beta_5 REG99_{it} + \beta_6 REG02_{it} + \beta_7 TENURE_{it} + \beta_8 Ln(FIRMSIZE)_{it} + \beta_9 ROA_{it} + \beta_{10} ROE_{it} + u_{it} + \varepsilon_{it}$$

CEODum is equals 1 if the executive is a CEO and 0 otherwise, *ExcDirDum* equals 1 if the executive is also a director in his/her own firm and 0 otherwise, *IntLckDum* equals 1 if the board is an interlocked board and 0 otherwise. *REG94*, *REG99*, and *REG02* equal 1 if the firm is a commercial bank and in the sample after 1994, 1999, and 2002, 0 otherwise. *Firmsize* is the total assets of the firm, *Tenure* is the total number of years an executive serves a firm, and *ROA* and *ROE* are return on asset and return on equity of each firm in each year respectively. *u* is the between-entity error and ε is the within-entity error, i is the firm indicator and t is the time (year) indicator. The p-values are presented in the parentheses.

	Cash Pay (1)	**Options** (2)	**Total Pay** (3)	**Vega** (4)	**Delta** (5)
Constant	4.9586 ***	4.9937 ***	5.6856 ***	3.1009 ***	2.3390 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
CEODum	4.9978 ***	5.5425 ***	6.1462 ***	1.0937 ***	1.7063 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ExcDirDum	4.6455 ***	4.8977	4.8886 *	0.1870	0.8882 *
	[0.003]	[0.101]	[0.081]	[0.129]	[0.079]
IntLckDum	4.2110 ***	4.1525 **	5.3793 **	-1.4042	-0.0195
	[0.007]	[0.061]	[0.019]	[0.123]	[0.261]
REG94	-0.0037 *	0.1273 **	0.0027	0.0041	0.0438
	[0.083]	[0.032]	[0.211]	[0.327]	[0.297]
REG99	-0.4271 ***	0.3271 ***	0.1152 **	0.2718 **	0.2918 **
	[0.002]	[0.001]	[0.032]	[0.041]	[0.022]
REG02	-0.2400 **	0.2291 **	0.1616 **	0.2755 **	0.1476 **
	[0.012]	[0.031]	[0.028]	[0.061]	[0.036]
Tenure	0.1068 **	0.1027 **	0.0817 **	0.0918 **	0.1019 **
	[0.026]	[0.013]	[0.010]	[0.019]	[0.027]
Firmsize	0.8335 ***	1.0448 ***	0.8362 ***	1.5446 **	1.2786 **
	[0.004]	[0.008]	[0.007]	[0.012]	[0.011]
ROA	0.9038 **	1.3216 *	1.5114 **	0.9696 **	0.9665 **
	[0.021]	[0.028]	[0.056]	[0.036]	[0.032]
ROE	0.7178 ***	0.5813 ***	0.5285 ***	0.6549 **	0.5769 **
	[0.006]	[0.002]	[0.004]	[0.013]	[0.015]
Observation	8,413	7,384	8,413	7,384	7,384

***, ** and * indicates significance at 1%, 5% and 10% level.

Table 11: OLS Regression Results: Other Industries Sample, 1992 – 2006

This table presents the OLS estimates of the following equation for other industries for the period 1992 – 2006:

$$Ln\,(Compensation_{it}; Delta_{it}; Vega_{it}) = \beta_0 + \beta_1 CEODUM_{it} + \beta_2 EXCDIRDUM_{it} + \beta_3 INTLCKDUM_{it} + \beta_4 REG02_{it} + \beta_5 TENURE_{it} + \beta_6 Ln(FIRMSIZE)_{it} + \beta_7 ROA_{it} + \beta_8 ROE_{it} + \varepsilon_{it}$$

CEODum is equals 1 if the executive is a CEO and 0 otherwise, *ExcDirDum* equals 1 if the executive is also a director in his/her own firm and 0 otherwise, *IntLckDum* equals 1 if the board is an interlocked board and 0 otherwise. *REG02* equals 1 for all the firms in the sample after 2002, 0 otherwise. *Firmsize* is the total assets of the firm, *Tenure* is the total number of years an executive serves a firm, and *ROA* and *ROE* are return on asset and return on equity of each firm in each year respectively. ε is the noise term, i is the firm indicator and t is the time (year) indicator. The p-values are presented in the parentheses.

	Cash Pay (1)	**Options** (2)	**Total Pay** (3)	**Vega** (4)	**Delta** (5)
Constant	5.7817 ***	5.8225 ***	6.6292 ***	3.6155 ***	2.7271 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
CEODum	5.8274 ***	6.4624 ***	7.1662 ***	1.2753 ***	1.9895 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ExcDirDum	5.4166 ***	5.7106 ***	5.6999 ***	0.2181	1.0356
	[0.000]	[0.000]	[0.000]	[0.198]	[0.115]
IntLckDum	-4.9099 ***	-4.8418 **	-6.2721 ***	-1.6373	-0.0227
	[0.000]	[0.023]	[0.000]	[0.344]	[0.417]
REG02	-0.2798 ***	0.2671 **	0.1885 **	0.3212 **	0.1721 **
	[0.002]	[0.011]	[0.021]	[0.033]	[0.039]
Tenure	0.1246 **	0.1198 **	0.0952 **	0.1070 ***	0.1188 **
	[0.017]	[0.028]	[0.036]	[0.006]	[0.037]
Firmsize	0.9718 ***	1.2182 ***	0.9749 ***	1.8009 ***	1.4908 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ROA	1.0538 **	1.5409 *	1.7622 **	1.1306 **	1.1269 **
	[0.013]	[0.065]	[0.041]	[0.028]	[0.041]
ROE	0.8369 ***	0.6777 ***	0.6162 ***	0.7636 ***	0.6726 ***
	[0.000]	[0.000]	[0.000]	[0.003]	[0.007]
R^2	0.0179	0.01647	0.0559	0.0223	0.0294
Observation	180513	155224	180513	155224	155224

***, ** and * indicates significance at 1%, 5% and 10% level.

Table 12: Panel (Random Effect) Regression Results: Other Industries Sample, 1992 – 2006

This table presents the Panel (Random Effects) regression estimates of the following equation for other industries for the period 1992 – 2006:

$$Ln\,(Compensation_{it}; Delta_{it}; Vega_{it}) = \beta_0 + \beta_1 CEODUM_{it} + \beta_2 EXCDIRDUM_{it} + \beta_3 INTLCKDUM_{it} + \beta_4 REG02_{it} + \beta_5 TENURE_{it} + \beta_6 Ln(FIRMSIZE)_{it} + \beta_7 ROA_{it} + \beta_8 ROE_{it} + u_{it} + \varepsilon_{it}$$

CEODum is equals 1 if the executive is a CEO and 0 otherwise, *ExcDirDum* equals 1 if the executive is also a director in his/her own firm and 0 otherwise, *IntLckDum* equals 1 if the board is an interlocked board and 0 otherwise. *REG02* equals 1 for all the firms in the sample after 2002, 0 otherwise. *Firmsize* is the total assets of the firm, *Tenure* is the total number of years an executive serves a firm, and *ROA* and *ROE* are return on asset and return on equity of each firm in each year respectively. u is the between-entity error and ε is the within-entity error, i is the firm indicator and t is the time (year) indicator. The p-values are presented in the parentheses.

	Cash Pay (1)	**Options** (2)	**Total Pay** (3)	**Vega** (4)	**Delta** (5)
Constant	5.2462 ***	5.2834 ***	6.0154 ***	3.2808 ***	2.4746 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
CEODum	5.2877 ***	5.8639 ***	6.5026 ***	1.1572 ***	1.8053 ***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ExcDirDum	4.9149 ***	5.1818 **	5.1721 *	0.1979	0.9397 **
	[0.003]	[0.027]	[0.073]	[0.217]	[0.048]
IntLckDum	-4.4553 **	-4.3934 *	-5.6913 **	-1.4856	-0.0206
	[0.014]	[0.056]	[0.024]	[0.182]	[0.354]
REG02	-0.2539 **	0.2424 **	0.1710 *	0.2915 **	0.1562 **
	[0.031]	[0.029]	[0.063]	[0.028]	[0.041]
Tenure	0.1130 *	0.1087 **	0.0864 **	0.0971 **	0.1078 **
	[0.062]	[0.034]	[0.017]	[0.026]	[0.035]
Firmsize	0.8818 **	1.1054 **	0.8847 **	1.6341 **	1.3528 **
	[0.013]	[0.019]	[0.027]	[0.038]	[0.021]
ROA	0.9562 **	1.3983 **	1.5990 *	1.0259 **	1.0226 *
	[0.036]	[0.011]	[0.072]	[0.046]	[0.067]
ROE	0.7594 **	0.6150 **	0.5591 **	0.6929 *	0.6104 **
	[0.011]	[0.027]	[0.021]	[0.079]	[0.048]
Observation	180513	155224	180513	155224	155224

***, ** and * indicates significance at 1%, 5% and 10% level.

Table 7 and Table 8 indicate that the REG99 variable has significant and negative impact on cash pay and positive impact on options grant, total pay, delta and vega. This again indicates that after the Gramm-Leach-Bliley Act of 1999, executives in banking industry put more emphasis on performance based pay and its sensitivity, thus realizing higher risk than before. The commercial bank subsample also reveals similar results in Table 9 and Table 10.

Finally REG02 variable in Table 7 and Table 8 indicate that, after the Sarbane Oxley Act of 2002, executives in all industry assume higher performance based pay and put less emphasis on fixed pay. Also they put higher importance on pay-performance sensitivities. The commercial bank (Table 9 and Table 10) and other industry (Table 11 and Table 12) subsamples also reveal similar results.

2.6.2.4. Other Control Variables

Both OLS and panel estimates in al tables indicate that the size of the firm and return on equity (ROE) are highly significant (at 1% level) for all the forms of compensation and pay-performance sensitivities. Tenure of the executive and return on assets (ROA) is also significant, but at 5% or 10% level.

2.7. Conclusion

Executive compensation is determined by a number of firm factors as well as the benchmark industry in which the firm operates. For a regulated industry like commercial banks, the additional regulatory pressure should be one of the relevant factors that determine the executive compensation in banking industry. In this paper, I analyze the regulatory effect on the governance mechanism in the banking industry in addition to the board governance mechanism. For this reason, I analyze the executive compensation in the banking industry and compare it to

that of in other industries. By analyzing 37,354 executives including both CEOs and other executives over the of 1992 to 2006, I find that executives in banking industry put significantly higher emphasis on fixed part of compensation (salary and bonus) and lesser emphasis on variable part of compensation (options grants) compared to executives in other unregulated industries. Thus the executives in commercial banks also put minimum emphasis on the risk based pay-performance sensitivity although they put significant emphasis on return based pay-performance sensitivity. Such differences can be attributed to the higher risk-aversion by the executives in banking industry due to the regulatory governance in addition to board established governance mechanism. Also executives put higher emphasis on performance based pay and lower emphasis on fixed pay as such regulatory binding relaxes over time. This clearly explains the regulatory effect on the executive compensation of commercial banks.

The results indicate that, CEOs and other executives in the banking industry act as a risk-averse agent as their compensation is independent of investment level (Grundy and Li, 2010) and the structure of the compensation does not encourage excessive risk-taking (Houston and James, 1995). For this reason, executives in the banking industry put significantly higher emphasis on the fixed part of the compensation and significantly lower emphasis on the performance based compensation. CEOs and other executives in the banking industry also earn higher compensation than the executive compensation in other industries. Results also indicate that CEOs on average earn significantly higher compensation than that of other executives in all the industries. The interlocked and busy boards serve as an effective governance mechanism in all the industries. This indicates that busy board members can effectively implement their earned experience and enhance the governance mechanism. Executives, who are also directors in the same firm, also earn significantly higher compensation by influencing the board in their favor. The governance

variables e.g., executive tenure, board interlocking, directorship of the executives in the same firm, and CEO position as well as firm performance e.g., return on assets and return on equity make significant impact on the executive pay too.

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Appendix 1: Variable Definition and Data Sources

Variable	Definition	Data Sources
Dependent Variable		
Total Pay	Log (Total CEO compensation).	ExecuComp
Fixed Pay	Log (Salary + Bonus).	ExecuComp
Variable Pay	Log (Options and equity grants to executives).	ExecuComp
Delta	The dollar value of executive pay in response to 1% change in the firm's stock price	ExecuComp, CRSP
Vega	The dollar change in executive pay with respect to 1% change in stock return volatility	ExecuComp, CRSP
Independent Variable		
BANKRISK	Five different bank risks.	
(i) Total risk	The standard deviation of the daily bank stock returns in each year.	CRSP
(ii) Unsystematic risk	The standard deviation of the error terms (ε_i) in the equation (Pathan, 2009): $R_{it} = \alpha_i + \beta_{1i}\, Rmt + \beta_{2i}\, INTEREST_i + \varepsilon_i$	CRSP
(iii) Systematic risk	Coefficient of Rmt in the above equation (β_{1i})	
Rmt	Market return (S&P 500 or CRSP value or equally weighted)	CRSP
INTEREST	3-month (5 year) Treasury-bill (bond) rate	Fed (St. Louis)
(iv) Asset Return Risk	$\sigma_A = \left(E/A\right)\sigma_E * \sqrt{250}$ E: Equity returns; A: (E+Book value of Debt)	Compustat, CRSP
(v) Insolvency Risk	Z = [Average(Returns) + Average(Equity/Total assets)] / Std. dev.(Equity/Total assets)	CRSP, Compustat
BANKDUM	A dummy variable equals 1 if the firm is a bank.	
REG94	A dummy variables equals 1 if the year is 1995 or more – indicates period after the Riegle-Neal Act of 1994.	
REG99	A dummy variables equals 1 if the year is 2000 or more – indicates period after the Gramm-Leach-Bliley Act of 1999.	
REG02	A dummy variables equals 1 if the year is 2003 or more –	

	indicates period after the Sarbane Oxley Act of 2002.	
INTLCKDUM	A dummy variable equals 1 if the executive is a member of the compensation committee.	ExecuComp
CEODUM	A dummy variable equals 1 if the executive is a CEO.	ExecuComp
EXCDIRDUM	A dummy variable equals 1 if the executive is a member of the board.	ExecuComp
TENURE	The tenure period of the executive in the firm or bank.	ExecuComp
FIRMSIZE	Log (Total Asset of the firm or bank).	CompuStat
ROA	The return on assets of the firm.	CompuStat
ROE	The return on Equity of the firm.	CompuStat

Vita

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