

AN EMPIRICAL EXAMINATION OF THE DETERMINANT OF THE US FINANCIAL CEOS' COMPENSATION FOR THE POST-FINANCIAL CRISIS PERIOD

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Abstract

The US financial crisis of 2008 and subsequent Global Financial Crisis were considered by many economists the worst financial crisis since the Great Depression of the 1930s. As a results, Dodd-Frank Act has passed and aims “(1) to promote the financial stability of the United States by improving accountability and transparency in the financial system, to end "too big to fail", (2) to protect the American taxpayer by ending bailouts, (3) to protect consumers from abusive financial services practices, and for other purposes.”*** The enactment of Dodd-Frank Act, in part, intended to significantly influence accountability on executive compensation especially for the financial institutions.

This paper empirically investigates the changes in Financial CEOs' compensation since the Financial Crisis of 2008. Our findings show that in the post- Financial Crisis period financial leverage is significant factor influencing the CEOs' total compensation. In addition market based performance such as stock price and market-to-book ratio shows significant positive relationship with CEO compensation. This change can be interpreted an attempt to reduce opportunistic behavior of top executives after the financial crisis and the enactment of the Dodd-Frank Act.

Keywords: Financial CEO Compensation, Firm Performance, Financial Crisis of 2008, Dodd-Frank Act

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*** The Dodd-Frank Wall Street Reform and Consumer Protection Act (Pub.L. 111-203, H.R. 4173; commonly referred to as Dodd-Frank) was signed into federal law by President Barack Obama on July 21, 2010.

1 Introduction

The Financial Crisis of 2008 resulted in the biggest failure in U.S. banking and financial institutions including the failure of Wachovia, the fourth-largest U.S. bank, the meltdown of Washington Mutual and Lehman Brothers. In addition icon of American corporations such as Chrysler and GM has declared the bankruptcy. It brought executive compensation issues back into focus. In 2002, US Sarbanes-Oxley Act (SOX) was passed in order to regain the confidence of market participants and to improve transparency capital market in U.S. SOX has been referred to as the top legal milestone (Myers, 2005) and the most comprehensive public company legislation (Green, 2004). This enactment has had a broad impact not only on the U.S market but also on global capital markets. Despite the SOX, US financial market experienced another severe financial crisis and in turn global financial crisis, which is considered as the worst financial crisis since the Great Depression of

the 1930s. A \$700 billion emergency bailout plan was initiated to prevent “the end of the US economy.”

The *Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010* brought the most significant changes to affect all federal financial regulatory agencies and almost every part of the nation's financial services industry. It attempts to improve Wall Street transparency and accountability, investor protections and improvements to the regulation of Securities and executive compensation among others. The Dodd-Frank reinforces accountability of top executive and improve transparency of executive compensation by requiring at least once every 3 years, a public corporation is required to submit to a shareholder vote the approval of executive compensation. In addition members of the Board of Director's Compensation Committee shall be an independent member of the board of directors, a compensation consultant or legal council. The Act authorizes the SEC to adopt rules giving nominating shareholders access to the company's

proxy. In addition, the Act requires enhanced disclosure of executive compensation and gives shareholders the right to a “say-on-pay” vote on executive compensation. For Financial Institutions, the Act imposes significant new regulations on banking organizations and “nonbank financial companies,” such as insurance companies and investment firms. The Act gives U.S. governmental authorities more funding, more information and more power. In broad and significant areas, the Act endows regulators with wholly discretionary authority to write and interpret new rules.¹

This study examines changes in executive compensation practices since the Financial Crisis of 2008 in relation to the Dodd- Frank Act. This study makes important contributions and adds value to current corporate governance and CEO compensation literature. This study presents a longitudinal and comprehensive analysis with the most recent available data for 78 financial firms (234 firm-year observations) for 3 year periods on post-financial crisis period (2009-2011). These sample will provide us better understanding and insights about changes in CEO compensation in the post-financial crisis period. The rest of the paper is organized as follows. The second section presents theoretical background and hypotheses. The third section describes sample, descriptive statistics, and research methodology. The final section discusses the results and provides analysis and conclusions.

2 Theoretical background and research hypotheses

2.1 Literature review

The study of CEO compensation on post-financial crisis is very important but literature is limited. In order to examine the impact of the Financial crisis and the Dodd-Frank Act, one can use the framework and literature of the impact of the SOX Act 2002. Cianci, et. al. (2011) examines the relationship between corporate governance, CEO dominance and executive compensation comparing pre- and post- SOX. They focus on the differential impact on the compensation of CEO dominance and traditional corporate governance variables. Cianci, Femando, and Werner select 4 years prior to SOX and the 4 years after SOX as their sample period. With OLS regression, they find results that SOX has changed the CEO duality and compensation relation but it has not changed the CEO dominance-compensation relation. It indicates that regulatory reforms, like SOX, do not limit a CEO's power to obstruct such traditional governance mechanisms and extract higher rents in the form of compensation. But SOX may have improved the

relationship between traditional corporate governance variables and compensation.

Jaque (2008) investigates instruments for compensating executives, empirical regularities about executive pay, level of pay and regulatory changes affecting executive compensation. This paper focuses on factors that affect executive compensation. Jaque observes that the composition of payment has moved away from fixed compensation and moved increasingly toward performance-based compensation. Although annual salaries have been increasing, the proportion of total pay has decreased in the last 20 years, while compensation through options has become the most important component, increasing from a low of 35 percent to 77 percent. Jaque argues that the SOX requirements for the qualification of bonus contracts could be distorting compensation practices when in fact the discretion of the compensation board may be able to reward executives.

Wang (2003) examined how increased internal control disclosure requirements mandated by SOX affects annual corporate governance decisions regarding CFOs. This paper uses a sample of 27,979 executive-year observations from 1998 to 2005. Using non-CEO and non-COO executive officers as a control group, it finds that CFOs of firms with weak internal controls receive lower compensation and experience higher forced turnover rates after the passage of SOX. In contrast, CFOs of firms with strong internal controls receive higher compensation and do not experience significant changes in forced turnover rates. The other main finding is that there is significant increase in the level of CFO salary, bonus, and total compensation in the post-SOX period compared to the pre-SOX period for firms with strong internal controls. These results support the notion that mandated increases in disclosure reduce information asymmetry in the executive labor market.

Cohen, Dey, & Lys, (2008) investigated the prevalence of both accrual-based and real earnings management activities in the period leading to the passage of SOX and in the period following the passage of SOX. They divided the sample period into two time periods: the period prior to the passage of SOX (the pre-SOX period: 1987-2001) and the period after the passage of SOX (the post-SOX period: 2002-2005). They subdivided the pre-SOX period into two sub periods: the period prior to major corporate scandals (the pre-SOX period: 1987-1999) and the period immediately preceding the passage of SOX when the major scandals occurred (the SCA period: 2000-2001). The main findings are that accrual-based earnings management increased steadily from 1987 until the passage of the SOX in 2002, followed by a significant decline after the passage of SOX. In contrast, the level of real earnings management activities declined prior to SOX and increased significantly after the passage of SOX. In addition, new options granted during the post-SOX period are negatively associated with income-increasing accrual-

¹ Dodd-Frank Act Becomes Law, Posted by William Sweet, Skadden, Arps, Slate, Meagher & Flom LLP on Wednesday July 21, 2010 at 11:49 am

based earnings management, unexercised options are positively associated with income-increasing accrual-based earnings management.

Murphy (2003) has examined stock-based pay in a new economy. By early 2000, internet and electronic commerce would fundamentally change the global economy. These firms exploited internet, e-commerce and related advancement technologies and are loosely called “new economy” firms. Murphy complements the ILL (Ittner, Lambert, and Larcker) results by analyzing data from 1992 to 2001 and documents the effect of the 2000 market crash on stock-based pay in new economy firms. There are differences in the pay practice between new and old economy firms that new economy firms use the extensive stock options as compensation for both top-executives and lower-level employees. However, the new economy boon was ultimately unsustainable and the market crash left worthless with underwater options. The rise and fall of the new economy sector gave us an opportunity to learn more about stock-based compensation.

In regards to board committees, CEO compensation, and earnings management, Laux & Laux (2009) have analyzed the board of directors’ equilibrium strategies for setting CEO incentive pay, overseeing financial reporting and their effects on the level of earnings management. Stock-based compensation schemes tend to encourage CEOs to manipulate earnings, which in turn makes it necessary for the board to act as a vigilant overseer. However, the increase in CEO equity incentives does not necessarily lead to a higher level of earnings management because the audit committee will adjust its oversight effort in response to a change in CEO incentives. SOX assigns directors serving on the audit committee with the special responsibility of overseeing the firm’s financial accounting process. Therefore the separation of board functions will lead to stronger pay-performance sensitivity.

Döscher & Friedl (2011) focuses on the informational role of the board. One of the most important roles of the board is to lower the information asymmetry between the shareholders and CEO. This paper studies the effect of a possible collusion between a CEO and the board and examines the optimal contract between the shareholders and a CEO. They expect that companies with nonindependent boards should have higher board compensation, and lower executive compensation than their counterparts with independent boards. Empirical evidence on this issue is mixed, though the power of stakeholder groups should have an influence on CEO compensation.

Vitito et. al. (2008) studied 79,650 observations of compensation related to the five most highly paid executives from 1500 firms from 1992 to 2004. They found that after the year 2002, firms tend to give fewer stock options and more restricted stocks and bonuses, and generally these differences are statistically significant. The factors that determine CEOs and

directors compensation of S&P 500, S&P Mid Cap, and S&P Small Cap listed firms, are not all the same. ROA has positive influence on total compensation in the case of all CEOs and directors, with the exception of CEOs from S&P 500 firms, but has a negative influence on the number of stock options granted to executives for small sized companies. Mean executive compensation and the component weights are significantly different for firms across S&P 500, S&P Mid Cap, and S&P Small Cap indexes. Total compensation and forms of compensation change after the Nasdaq crash and enactment of the Sarbanes-Oxley Act.

Mehran (1995) has examined 153 randomly-selected manufacturing firms in 1979-1980. He found that there is a positive relationship between the percentage of total compensation in cash and the percentage of shares held by managers. Also there is a positive relationship between the percentage of total compensation in cash and the percentage of shares held by all outside blockholders. He finds a negative relationship between the percentage of total compensation in cash and both the percentage of outside directors and the ratio of R&D to sales. However the relationship between a manager’s equity-based compensation and the firm size is not statistically significant. Additionally, he finds that both Tobin’s Q and ROA are inversely related to the percentage of a CEO’s total compensation in cash.

Many US firms designed incentive compensation packages to insure that a CEO acts in a manner that maximizes wealth of shareholders (Jensen and Murphy 1990; Pavlik et. al. 1993). Both Murphy (1985) and Jensen and Murphy (1990) empirically examined stock returns as a measure of performance in connection with compensation plans and found that US CEO compensation is relatively insensitive to performance. Murphy (1985) argues that “it seems more appropriate to define performance in terms of shareholder returns rather than accounting profits.” Meredith (1990) and Sigler and Haley (1995) suggest that the best way to link pay and performance is to make a US CEO’s pay contingent upon accounting and market-based performance measures. In addition, the Relative Performance Expectation (RPE) hypothesis suggests that the relative performance (performance measured against the performance of competitors rather than absolute performance) has a stronger relationship to executive compensation (Antle & Smith 1986; Janakiraman et. al. 1992; Lanen and Larker 1992).

Other US CEO compensation studies have shown that many factors contributed to the level and components of compensation. These factors include firm size, accounting- and market- based performances, share price, internationalization, governance structure and ownership structure (David et. al. 1998), CEO power and managerial discretion (Finkelstein and Boyd 1998). It has been shown that American CEO compensation is directly tied to

earnings and stock returns (Jensen and Murphy 1990; Kaplan, 1994).

2.2 Hypotheses

Consistent to previous studies (e.g., Kaplan 1994), we expect that firm size will be the major factor affecting CEO compensation. It means that if a CEO manages large corporation, she/he will expect higher compensation because the large corporation requires better managerial skills and greater effort.

Carter et. al (2009) have examined changes in bonus contracts in the post-SOX era and showed that firms shifted the mix of compensation away from a fixed salary towards incentive-based bonuses after the implementation of SOX. This finding is somewhat interesting in that firms are using additional salary to compensate managers for the increased risk they face after the SOX. In order to reduce and manage risk the financial institutions for are seeking more objective performance measures such as stock price and market ratio. In addition financial leverage is an important factor of managerial control and risk management. We expect that CEO compensation will be directly affected by the market based performance measures such as stock price and market ratio in the post-financial crisis period. In order to reduce firms risk, we expect that financial leverage will be negatively associate with CEO compensation.

H1: As compared to pre-Financial crisis period, there is strong positive association between a CEO's compensation and market-based performance in the post-SOX period.

H2: As compared to pre-Financial Crisis period, there is strong negative association between a CEO's compensation and financial leverage in the post-Financial Crisis period.

H3: Similar to prior period, CEO's compensation is positively and significantly related to firm size.

3 Sample and research methodology

3.1 Sample selection and data collection

Initially all US financial firms from SIC 6000 to SIC 6999 are selected from the S&P Executive Compensation data. These firms are matched with the S&P Research Insight database for financial data. A total of 78 financial institutions were selected after eliminating firms with missing data for 2009-2011. The final sample consists of 234 firm-year observations, 78 firms for 3 year period subsequent to the 2008 Financial crisis period (2009-2011). Data on cash compensation (salary & bonuses), long-term compensation, and total compensation were gathered from S&P Executive compensation. We have decided to eliminate the year 2008 because it was a transition year.

3.2 Research methods

In order to analyze data and test hypotheses, the following research methodology was employed. First, descriptive statistics for each variable were prepared. Then, *Pearson Correlation* matrices were prepared to examine the inter-correlation between various measures of performance and compensation variables. Finally, multiple regression analysis was conducted to test the significance and magnitude of the relationships between CEO compensation and performance measures. The Ordinary Least Square (OLS) method was used to estimate the regression parameters.

The natural log values were taken for cash compensation, long-term compensation, total compensation, and firm size, because these variables are highly skewed (Ittner, Lambert and Larker 2003; Nagar, Nanda and Wysocki 2003; Shim, Lee and Corrigan 1999).

The multiple regression models are as follows;

$$(1) \ln(\text{CEO Salary}) = a + b \text{ Stock price} + \text{ROE} + \text{MVE} + \text{DE Ratio} + \text{FSIZE} + E$$

$$(2) \ln(\text{CEO Cash Comp; Salary+Bonus}) = a + b \text{ Stock price} + \text{ROE} + \text{MVE} + \text{DE Ratio} + \text{FSIZE} + E$$

$$(3) \ln(\text{CEO Incentive Comp; Bonus+Long-term Comp}) = a + b \text{ stock price} + \text{ROE} + \text{MVE} + \text{DE Ratio} + \text{FSIZE} + E$$

$$(4) \ln(\text{CEO Total Comp}) = a + b \text{ Stock price} + \text{ROE} + \text{MVE} + \text{DE Ratio} + \text{FSIZE} + E$$

Dependent Variable:

Total Compensation = Salary + Bonus + Long-term Compensation

Independent variable:

Stock price = Average annual stock price (average of Monthly stock price)

ROE = Return on Equity

MVE = Mark-to-Book Equity Value

DER = Debt-to-Equity Ratio

FSIZE= Firm Size in Sales Dollars

4 Results, analysis and conclusions

4.1 Descriptive statistics

The sample distribution by the SIC codes is presented in Table 1. The highest number of firms in the sample comes from Commercial Bank (SIC 6020), a total of

26 firms followed by the Casualty Insurance (SIC 863,688, bonus of \$414,510 and other compensation 6331) with 12 firms. On average financial CEO earned of \$222,282. a total compensation of \$1,500,480 including salary of

Table 1. Number of firms and CEO compensation (\$000) by industry

		No of Firms	Salary	Bonus	Others (Stock Option)	Total Compensation
Commercial Bank	6020	26	1,246.646	385.082	469.022	2,100.751
Savings Instituion, Federally Charterd	6035	3	502.143	0.000	108.811	610.954
Federal Credit Agencies	6111	1	1,108.974	338.000	75.100	1,522.074
Personal Credit Institutions	6141	2	475.000	0.000	106.197	581.197
Finance Services	6199	1	1,714.744	3,041.667	1,032.854	5,789.264
Security Brokers and Dealers	6211	3	841.667	939.070	102.500	1,883.237
Investment Advice	6282	5	558.884	94.000	150.384	803.269
Life Insurance	6311	4	802.264	214.833	99.014	1,116.112
Accident and Health Insurance	6321	3	1,052.557	50.491	128.536	1,231.583
Hospital and Medical Service Plans	6324	4	1,033.076	458.333	243.868	1,735.277
Fire, Marine, Casualty Insurance	6331	12	1,145.729	12.241	272.940	1,430.910
Surety Insurance	6351	4	668.458	169.525	94.511	932.494
Title Insurance	6361	1	260.000	183.333	84.193	527.527
Ins. Agents, Brokers and Services	6411	2	1,025.623	0.000	485.757	1,511.381
Land Subdivider & Developers Ex. Cemetery	6552	1	808.333	485.691	28.180	1,322.204
Real Estate Investment Trust	6798	6	574.901	259.889	74.649	909.439
Average (US\$1,000)			863.688	414.510	222.282	1,500.480
(Standard Deviation)			366.476	767.885	260.972	1,270.019
Highest			3,879.949	4,728.511	7,536.125	15,305.159
Lowest			90,000	0	9,800	90,000

Table 2 presents sample firms' sales revenues and Earnings before Interest and Taxes (EBIT). The sales revenues on average are ranged from \$38 billions to \$49 million. The EBIT is ranged from \$6.2 billions to -\$12 millions.

Table 2. Sample sales revenue and EBIT by SIC

Industry	SIC	Sales revenue	EBIT
Commercial Bank	6020	18,560.890	6,210.440
Savings Instituion, Federally Charterd	6035	787.649	141.958
Federal Credit Agencies	6111	6,578.827	4,114.066
Personal Credit Institutions	6141	9,716.822	2,672.315
Finance Services	6199	29,681.000	5,532.000
Security Brokers and Dealers	6211	1,483.402	465.572
Investment Advice	6282	2,239.239	781.620
Life Insurance	6311	2,127.927	392.595
Accident and Health Insurance	6321	11,121.611	1,522.756
Hospital and Medical Service Plans	6324	38,643.156	2,696.046
Fire, Marine, Casualty Insurance	6331	8,946.473	987.907
Surety Insurance	6351	788.647	-461.684
Title Insurance	6361	1,670.105	-12.993
Ins. Agents, Brokers and Services	6411	20,302.333	1,152.100
Land Subdivider & Developers Ex. Cemetery	6552	49.967	-21.267
Real Estate Investment Trust	6798	867.244	190.137

Note: EBIT indicates Earnings before Interest & Taxes; n=78

Table 3 and 4 shows descriptive statistics and correlation matrix of all variables by SIC codes.

Table 3-1. Descriptive statistics for all variables (2009-2011)

Variables	6020	6035	6111	6141	6199	6211	6282	6311	6321	6324	6331
2009-2012											
Salary	6.942	5.864	7.011	6.856	7.447	6.701	6.274	6.658	6.915	6.898	6.973
Bonus	5.290	5.823	8.020	6.891	6.153	4.992	5.020	7.514	3.507	6.519	5.211
Others	4.784	4.989	4.319	4.657	6.940	4.150	4.534	4.201	4.748	5.277	4.703
Salary & Bonus	7.163	5.864	7.277	6.856	8.467	7.299	6.428	6.839	6.983	7.250	6.987
Bonus & Others	5.166	4.034	6.024	4.657	8.313	6.302	5.250	5.061	5.107	5.769	4.894
Total Compensation	7.308	5.995	7.328	5.752	8.664	7.364	6.628	6.933	7.088	7.412	7.185
Firm Size	8.238	7.137	8.792	8.597	10.298	7.051	7.440	7.308	9.030	9.713	8.384
Stock Price	27.349	12.309	12.420	13.254	43.537	31.686	17.921	20.467	30.291	38.798	31.332
ROE	3.661	4.953	10.955	7.289	21.258	13.234	13.738	8.392	11.673	12.411	7.770
Market to Book Value	1.559	.864	1.178	.814	3.154	2.993	1.458	.793	1.315	1.898	1.445
Debt Leverage	61.771	71.746	35.437	75.757	31.672	52.195	29.185	43.569	29.633	35.109	23.551

Table 3-2. Descriptive statistics for all variables (2009-2011)

Variables	6351	6361	6411	6552	6798	Mean	STD
Salary	6.463	5.561	6.933	6.695	6.492	6.668	
Bonus		6.186	6.656			5.983	1.200
Others	4.013	4.433	6.000	3.554		4.665	0.878
Salary & Bonus	6.606	6.094	6.933	6.347		6.910	0.599
Bonus & Others	5.148	5.589	6.000	4.344		5.494	0.997
Total Compensation	6.766	6.268	7.307	6.078		6.954	0.710
Firm Size	6.500	7.421	9.059	6.497		7.836	1.531
Stock Price	12.904	11.453	37.830	21.916		23.571	10.893
ROE	1.998	-4.580	24.916	-5.914		8.475	8.142
Market to Book Value	1.386	.480	5.291	1.261		1.684	1.205

Table 4. Correlation matrix

Variables	1	2	3	4	5	6	7	8	9	10
1. Salary										
2. Bonus	.26									
3. Others	.35	.32								
4. Total Comp.	.82	.63	.53							
5. Salary & Bonus	.83	.66	.44	.96						
6. Bonus & Others	.27	.79	.73	.66	.64					
7. Firm Size	.44	.36	.39	.37	.46	.27				
8. Avg. Stock Price	.48	.52	.44	.49	.48	.42	.43			
9. ROE	.22	.60	.32	.21	.22	.26	.28	.27		
10. MKV to BKV	.33	.71	.44	.42	.41	.42	.36	.43	.50	
11. Debt Leverage	-.22	-.35	.05	-.25	-.24	-.07	.18	-.20	-.08	.01

4.2 Results

The results of the OLS multiple regressions are presented in Table 5. The results show that firm size continues to be statistically significant and positively associated with all compensation variables such as Cash compensation, Long-term compensation and Total compensation. The results confirm our third hypothesis that firm size is the major determinant of CEO compensation. It means that the larger the firm a CEO manages, the higher the CEO compensation. As was the case during the prior period, firm size

continues to be the major determinant of CEO compensation.

The results show that in the post-Financial Crisis period, a CEO's cash compensation is statistically significant and positively associated with stock price, and negatively associated with financial leverage. In addition, CEO incentive compensation is statistically significant and positively associated with stock price and market-to-book ratio. Finally total compensation (TCOM) is statistically significant and positively associated with stock price and market-to-book ratio and is negatively associated with financial leverage. We can conclude that firm size continues to be a very

important determinant of CEO compensation in the post-financial crisis period. The finding confirms previous studies (Kaplan 1994) conducted in the pre-SOX period. Our study points that in the post financial

crisis period, CEO compensation is strongly related to market-based performance and is significantly, negatively associated with financial leverage. The results confirm our first and second hypothesis.

Table 5. Results of multiple OLS regression analysis

(2009-2011)	Salary			Cash Compensation (Salary+Bonus)			Incentive Compensation (Bonus+Long-term Comp)			Total Compensation		
(Constant)	5.779	(.25)	***	5.555	(.32)	***	3.526	(.76)	***	5.641	(.41)	***
Firm Size	.104	(.04)	**	(1.43)	.146	(.05)	**	(1.44)	.057	(.11)		(1.42)
Stock Price	.008	(.00)	*	(1.50)	.012	(.01)	*	(1.51)	.026	(.01)	*	(1.52)
Return on Equity	-.001	(.01)		(1.38)	-.004	(.01)		(1.38)	-.001	(.02)		(1.50)
Market to Book Value	.052	(.05)		(1.59)	.150	(.07)	*	(1.59)	.367	(.17)	*	(1.71)
Debt Leverage	-.003	(.00)	*	(1.14)	-.004	(.00)	**	(1.14)	-.001	(.00)		(1.15)
Adjusted R ²	0.3044			0.3582			0.2032			0.3164		
F-Ratio	7.5442***			9.4742***			4.7935***			8.0662***		

a. n = 78. * P < 0.05; ** P < 0.01; *** P < 0.001

b. Regression Coefficients (β) are reported. Values in parentheses are Standard error. V.I.F. indicates Variance Inflation Factor.

c. Firm size indicates a naturalized log value of sales revenue.

5 Conclusions

In summary, there is a direct and positive relation between the level of compensation and firm size even after the financial crisis. In addition, the results also suggest that US CEO's total compensation is significantly and positively related to stock price and market-to-book ratio. This research can be extended to other industries in order to examine whether or not the finding holds true for other industries. The changes in CEO compensation in other countries can also provide new insights. Firms are competing in a global market and top executive compensation should converge to a global standard to attract talented managers. The comparative studies of other countries such as Japan, Germany and UK would enlighten the link between CEO compensation and performance measures in different economic environments.

References

- Antle, R., and A. Smith., 1986. An empirical investigation of the relative performance evaluation of corporate executives. *Journal of Accounting Research* 24: 1-39.
- Carter, M. E., Lynch, L. J., & Zechman, S. L. C., 2009. Changes in bonus contracts in the post-Sarbanes-Oxley era. *Review of Accounting Studies*, 14(4), 480-506.
- Cianci, A. M., Fernando, G. D., & Werner, E. M., 2011. The differential CEO dominance-compensation and corporate governance-compensation relations: Pre- and post-SOX. *Advances in Accounting*, 27(2), 213-222.
- Cohen, D. A., Dey, A., & Lys, T. Z., 2008. Real and Accrual-Based Earnings Management in the Pre- and Post-Sarbanes-Oxley Periods. *Accounting Review*, 83(3), 757-787.
- David, P. R. Kochhar and E. Levitas., 1998. The effect of institutional investors on the level and mix of CEO compensation, *Academy of Management Journal*, vol. 41, No.2, 200-202.
- Döscher, T., & Friedl, G., 2011. Corporate governance, stakeholder power, and executive compensation. [Article]. *OR Spectrum*, 33(2), 309-331.
- Finkelstein, Sydney and B.K. Boyd., 1998. How Much Does the CEO Matter? The Role of Managerial Discretion in the Setting of CEO Compensation. *Academy of Management Journal*, vol. 41, No.2, 179-199.
- Green, S., 2004. Unfinished business: Abolish the imperial CEO. *Journal of Corporate Accounting & Finance*, 15(6), 19-22.
- Hart, Olivier, 2009. Regulation and Sarbanes-Oxley. *Journal of Accounting Research*, 47 (2), 437-444.
- Ittner, C. R.A. Lambert and D.F. Larker., 2003. The structure and performance consequences of equity grants to employees of new economy firms. *Journal of Accounting & Economics*. 34. 89-127
- Jarque, A., 2008. CEO Compensation: Trends, Market Changes, and Regulation. [Article]. *Economic Quarterly*, 94(3), 265-300.
- Janakiraman, S.N., R.A. Lambert, and D.F. Larker., 1992. An empirical investigation of the relative performance evaluation hypothesis. *Journal of Accounting Research* 30: 53-69.
- Jensen, M., and K.J. Murphy., 1990. Performance pay and top-management incentives. *Journal of Political Economy* 98: 225-64.
- Kaplan, S., 1994. Top executive rewards and firm performance: A comparison of Japan and the United States, *Journal of Political Economy* 102: 510-46.
- Lanen, W.N. and D.F. Larker., 1992. Executive compensation contract adoption in the electric utility industry. *Journal of Accounting Research* 30: No.1, Spring, 70-93.
- Laux, C., & Laux, V., 2009. Board Committees, CEO Compensation, and Earnings Management. *Accounting Review*, 84(3), 869-891.
- Mehran, H., 1995. Executive compensation structure, ownership, and firm performance. *Journal of Financial Economics*, 38(2), 163-184.
- Meredith, D., 1990. Getting behind the numbers. *Chief Executives* 61: September, 34-33.

19. Murphy, K.J., 1985. Corporate performance and managerial remuneration: An empirical analysis, *Journal of Accounting and Economics*, 7, 11-42.
20. Murphy, K. J., 2003. Stock-based pay in new economy firms. [Article]. *Journal of Accounting & Economics*, 34(1-3), 129-147.
21. Nagar, Venky., D. Nanda and P. Wysocki, 2003. Discretionary disclosure and stock-based incentives, *Journal of Accounting & Economics*, 34, 283-309.+
22. Pavlik, E.L., T. W. Scott and P. Tiessen., 1993. Executive compensation: Issues and research, *Journal of Accounting Literature* 12: 131-189.
23. Shim, E. J. Lee and T. Corrigan., 1999. An empirical examination of top executive compensation and economic performance in financial service firms. *Advances in Management Accounting*. Vol. 8:225-237.
24. Sigler, K.J. and J.P. Haley., 1995. CEO pay and company performance. *Managerial Finance* 21: No.2.
25. Wang, X., 2010. Increased Disclosure Requirements and Corporate Governance Decisions: Evidence from Chief Financial Officers in the Pre and Post-Sarbanes Oxley Periods. *Journal of Accounting Research*, 48(4), 885-920.
26. Vieito, J. P., Khan, W., Cerqueira, A., & Brandão, E., 2008. Is Executive Compensation Different Across S&P Listed Firms? *Quarterly Journal of Finance & Accounting*, 47(4), 171-192.