

# CEO Compensation And Firm Performance: Is There Any Relationship?

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## ABSTRACT

*Recent media and public attention has focused on CEO compensation. This study looks at the relationship between CEO compensation and several measures of firm performance across a wide variety of industries. The study used a database of CEO compensation for 200 large public companies which filed proxy statements with the SEC for 2007. Total CEO compensation consists of: base salary, cash bonuses, perks, stock awards, and option awards. The measures of firm performance were: company revenue, year-to-year change in net income, and year-to-year change in total shareholder return (TSR). Correlation and regression analysis were used to test various hypotheses. We expected that total CEO compensation and its components would be directly related to financial measures of company performance.*

**Keywords:** Executive compensation, firm performance, chief executives

## INTRODUCTION

With the economy contracting and stock prices falling, recent media and public attention has focused on CEO and executive compensation. When most companies were reporting favorable results quarter after quarter and year after year, this subject was of interest primarily to academic researchers. Occasionally, there have been proxy resolutions brought forth by shareholders and shareholder groups to “rubber stamp” compensation schemes approved by the boards of directors of public companies. In 2007 and 2008, Congress held several hearings on excessive pay and heard calls for action, but little was taken.

Earlier this year, President Obama called Wall Street bankers “shameful” for giving themselves nearly \$20 billion in bonuses as the economy was deteriorating and the government was spending billions to bail out some of the nation's biggest and well known banks and financial institutions.

Subsequently, the Obama administration announced a salary cap of \$500,000 for top executives at companies that receive the largest amounts of money under the \$700 billion Federal bailout program, calling the step an expression not only of fairness but of “basic common sense.”

The public's recent interest in executive pay stems from two sources. First, toward the end of 2006, the Securities and Exchange Commission set tighter rules for corporate proxies requiring more information about the methods used to compile pay packages for top management. Second, the sinking economy increased stockholder discontent -- especially when executive pay rose as share prices declined. The average overall compensation in 2007 for chief executives at 200 large companies that had filed proxies by the following March 28 approached \$12 million.

Our study was conducted in the second quarter of 2008. It used data from 2007. It looked at the relationship between total CEO compensation and measures of firm performance across a wide variety of industries. We also looked at the relationship between components of CEO compensation and measures of firm performance.

## **LITERATURE REVIEW**

There has been a great deal of academic research on executive compensation starting in the late 1950's. Subsequently, there are several noteworthy articles, including those written by Lewellen, W. and B. Huntsman (1970), Ciscel, D. and T. Carroll (1980), Coughlan and Schmidt (1985), K.J. Murphy (1985, 1986), and M. Jensen and K.J. Murphy (1990).

P. Kostiuk (1990) and Baker, Jensen, and Murphy (1988) published articles about firm size and executive compensation. K.J. Murphy (1999) observed that while companies use a variety of financial and non-financial measures in their annual bonus plans for executives, most use a single measurement such as revenues, net income, pre-tax income, operating profits (EBIT), or economic value added.

In 1999, K. J. Murphy wrote a paper on "Executive Compensation" which summarized empirical and theoretical research on executive compensation and description of trends in pay practices for CEO pay. He observed that pay practices vary across firms, industries, and countries. There has been a dramatic shift in pay practices over time (more pay and more forms of compensation).

In 2004, K.J. Murphy and J. Zabochnik wrote an article and observed that some people believe that recent increases in pay reflect increased power that self-dealing CEOs wield over captive boards. This increased power, the argument goes, allows the CEOs to extract more "rents" from their companies, at the expense of the companies' workers and shareholders. They argued that the "rent-extraction" explanation is not entirely convincing, and they offered a market-based explanation of the recent trends. Increases in executive compensation can be explained by an increase in the importance of general skills, as opposed to firm-specific knowledge, to manage modern corporations.

In an article entitled, "The SEC's Disclosure Law and CEO Compensation," R. Kamery (2004) discovered that new compensation disclosures changed the determinants of pay. Boards of directors which formerly looked at peer group performance within or outside of the industry (market based measures) had to focus more on financial indicators of firm performance. They looked at periods before and after 1993 when the SEC required boards to justify their reasons for the level of CEO compensation.

Nourayi, M. and F. Daroca (2008) in an article entitled, "CEO Compensation, Firm Performance, and Operational Characteristics" examined pay in companies in both regulated and unregulated industries and relative to sales, number of employees, and the nature of the business (in terms of new-economy and old-economy). The data used was from 1996-2002.

Nourayi, M. and S. Mintz (2008) in an article entitled, "Tenure, Firm's Performance, and CEO's Compensation" looked at the influence of firm performance and CEO cash and total compensation based on time in that position. Firm size appeared to be a significant explanatory variable for CEO cash and total compensation regardless of CEO tenure and measure of performance. The data used was from 2001-2002.

Prior research studies have found a small but significant link between total CEO compensation and firm performance. However, these studies used relatively old data or focused on traditional forms of pay without adequate consideration of stock awards and options. The data used in these studies was extracted from annual reports or shareholder proxy statements under the old SEC reporting rules. Our study looked at the relationship between total CEO pay and its components under the most recent SEC rules and measures of firm performance..

## **RESEARCH DESIGN AND HYPOTHESES**

This study used several measures of executive compensation and measures of firm performance.

There is no consensus of what is meant by firm performance and prior studies have used a variety of financial and non-financial measures. Particularly troublesome is the time horizon over which to measure firm performance. Is a CEO hired for what he/she can do for a company in the short run or long run? Is the

compensation scheme based on past pay and performance with former employers with an expectation he/she can do it all over again? Or is based on a compensation consultant's report supplied to a compensation committee based on market factors?

Correlation and regression analysis were used to test various hypotheses. We expected that total CEO compensation and its components such as base pay and cash bonuses to be directly related to financial measures of firm performance.

## **THE SAMPLE AND DESCRIPTIVE STATISTICS**

In this part of the paper, we describe our data source, the sample, and variables used in this research study.

The study was based on CEO compensation data for 2007 from 200 large public companies which filed proxy statements with the SEC by March 31, 2008. Each company had total reported revenue in excess of \$6.5 billion. The data was compiled by Equilar, Inc., an executive compensation research firm and reported in the Sunday edition of *The New York Times* on April 6, 2008. The data is available on-line at: [www.nytimes.com/interactive/2008/04/05/business/20080405\\_EXECCOMP\\_GRAPHIC.html](http://www.nytimes.com/interactive/2008/04/05/business/20080405_EXECCOMP_GRAPHIC.html)

The data was not in Excel format.

Under new SEC disclosure rules, all public companies must now file detailed compensation data in proxy statements. The rules were effective for all companies whose fiscal years ended on or after December 31, 2006.

Descriptive statistics for companies included in the sample is presented in Table 1. Total revenue ranged from \$6,592,000,000 to \$194,495,000,000. Percent change in net income ranged from -91% to 206% and percent change in TSR ranged from -96% to 120%. There were 72 different industries included in the sample. Information about the companies in the largest industrial classifications (more than four companies) is presented in Table 2. The industries with the largest representations were banking (10) followed by conventional electricity (8), food products (8), and pharmaceuticals (7).

## **VARIABLES USED TO MEASURE CEO COMPENSATION**

There were six variables use to measure CEO compensation:

### **1. Base Salary**

Annual pay that does not depend on the company's results. By law, any amount exceeding \$1 million is not tax deductible by the company. The annual salary for a CEO who served only part of the year was derived either from information disclosed by the company about the new chief's contract, or by prorating the salary based on the time actually served in the position.

### **2. Cash Bonus**

The sum of all cash payments to executives in addition to salary, including those based on performance as well as those that are purely discretionary.

### **3. Perks/Other**

Miscellaneous pay, not linked to performance, that includes such disparate items as, moving expenses, personal use of corporate aircraft, and the value of assorted other benefits, including contributions to 401(k) plans and company-paid premiums for supplemental life insurance. The new disclosure rules from the Securities and Exchange Commission mandate that companies disclose all perquisites and benefits unless their aggregate value is less than \$10,000.

4. Stock Awards\*

The aggregate value on the grant date of incentive plan or service-based stock and/or unit awards, as reported by the company. Incentive plan stock awards are earned for attaining some predetermined goals. Service-based stock awards vest if the executive stays with the company for a set period of time.

5. Option Awards\*

The aggregate value on the grant date of incentive plan or service-based awards of stock options or stock appreciation rights, as reported by the company. As with the stock awards, incentive plan option awards are earned for attaining some predetermined goals, while service-based option awards vest if the executive stays for the company for a set period of time.

6. Total Compensation

The total compensation represents the sum of base salary, discretionary and performance-based cash bonuses, stock awards, option awards, and other compensation like benefits and perquisites.

Information about CEO compensation for companies within the sample is presented in Table 3 and Figures 1-6. Base salaries ranged from \$0 to \$8.1 million with Steve Jobs of Apple Computer receiving \$1 per year. Cash bonuses ranged from \$0 to \$26,985,474; perks/other ranged from \$0 to \$3,220,157, the value of stock awards ranged from \$0 to \$36,179,923 and value of option awards ranged from \$0 to \$50,087,100. Total compensation ranged from \$1 to \$83,785,021 (John Thain, former CEO of Merrill Lynch).

**VARIABLES USED TO MEASURE COMPANY PERFORMANCE**

There were three variables used to measure company performance for 2007:

1. Total Revenue

Company revenue for 2007. The amounts were not adjusted to reflect spin-offs or restatements. And some financial institutions reported only revenues derived from interest income.

\*Both stock and option award amounts include the value of all service-based and performance-based awards on the day that they were granted. If the company reported those values, its numbers were used. If it did not, Equilar used the assumptions that the company provided to generate the numerical value.

2. Percent Change in Net Income

The percentage change in the company's net income from continuing operations, before accounting changes and extraordinary items, from fiscal 2006 to fiscal 2007.

3. Percent Change in Total Shareholder Return (TRS)

The percentage change in shareholder return (TSR) from the beginning to the end of fiscal 2007, assuming that dividends were reinvested. Total Shareholder Return (TSR) is a concept used to compare the performance of different companies' stocks and shares over time. It combines share price appreciation and dividends paid to show the total return to the shareholder. The absolute size of the TSR will vary with stock markets, but the relative position reflects the market perception of overall performance relative to a reference group.

With  $Price_{begin}$  = share price at beginning of period,  $Price_{end}$  = share price at end of period, Dividends = dividends paid and  $TSR = \text{Total Shareholder Return}$ , TSR is computed as:

$$TSR = (Price_{end} - Price_{begin} + Dividends) / Price_{begin}$$

## **CORRELATION ANALYSIS AND RESULTS**

The results of the study showed no significant correlation between total CEO compensation and change in net income or change in TSR. However, there was a significant correlation between total compensation and total revenue. In other words, the larger the company in terms of the sales, the more its CEO received. The Pearson correlation coefficient (0.299) was significant at the 0.1 level.

Base salary was significantly correlated with total revenue (.188 Pearson correlation coefficient at the .01 level), but there was no statistically significant correlation between base salary and percentage change in company net income or percent change in TSR.

CEO cash bonuses were significantly correlated with measures of firm performance – total revenue, change in net income, and change in TSR, with Pearson correlation coefficients of 0.290, 0.153, and 0.167, respectively, at the .05 level except for total revenue at the .01 level.

The value of perks, stock awards, and option awards were not statistically correlated with percent change in net income or the percent change in TSR .

Option awards were not significantly correlated with total revenue which is not surprising.

## **REGRESSION ANALYSIS AND RESULTS**

We set up several regressions with components of CEO (base salary, cash bonus, perks, value of stock awards, and value of option awards) as dependent variables and total revenue, change in net income, change in TSR as independent variables (predictors of components of CEO compensation). See Tables 4-8. Using stepwise regression, we discovered that company revenue was the only statistically significant variable (at the .01 level) as a predictor of all of the individual components of CEO compensation except for perks (significant at the .05 level) and the value of option awards. The  $r^2$ s were relatively low for each regression:

Base salary	.039
Cash bonus	.113
Perks	.023
Stock awards	.074

The regression for the value of option awards as the dependent variable did not work using stepwise regression, because the  $r^2$ s were too small. Instead, we used the “enter” method to force the independent variables into the model. None of them proved to be statistically significant as predictors of the dollar amount of option awards.

Finally, we set up a regression equation for total CEO compensation as the dependent variable and total revenue, change in net income, change in TSR as independent variables (predictors of total CEO compensation). See Table 9. Again, using stepwise regression, company revenue was the only statistically significant variable (at the .01 level) as a predictor of the total CEO compensation, but with a  $r^2$  of only .10. Percentage change in net income and percent change in TSR were not significant factors.

## **SUMMARY AND IMPLICATIONS**

While there is a presumed strong relationship between CEO compensation and firm performance, we did not find this to be the case. The exception was total revenue, but with a low  $r^2$  of only .10. CEO compensation is higher in larger firms. This is consistent with the findings in other studies. Presumably, larger companies can afford to hire better-paid CEOs with the expectation that they are better qualified to lead when times are good (years leading up to 2007). We are not sure about this statement, when the general economy turns bad (2008 and beyond).

Firm performance as measured by total company revenue is a significant factor in determining base salary, cash bonuses, perks, and the value of stock awards. However, the  $r^2$ s were relatively low.

## LIMITATIONS

The findings are limited to the 200 companies in the database compiled by Equilar. The study only included CEO compensation for one year (namely, 2007), and measures of firm performance over one time period (2006 to 2007). The results could be different for other years and other time periods. There are many measures of firm performance which we did not use. Further study and analysis are needed in this area.

## AUTHOR INFORMATION

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	Minimum	Maximum	Mean	Median	Standard Deviation
Total Revenue (in millions)	\$6,592	\$194,495	\$26,361	\$15,605	\$28,643
Percent Change in NI	-91%	206%	12%	0%	38%
Percent Change in TSR	-96%	120%	10%	0%	34%

Industry	#	Min.	Max.	Mean	Median	Std Dev
Banking	10	\$7,894	\$124,467	\$35,699	\$16,313	\$37,756
Electricity	8	\$9,366	\$18,916	\$13,507	\$13,247	\$2,610
Food Products	8	\$7,599	\$44,018	\$16,864	\$12,153	\$11,698
Pharma	7	\$18,634	\$61,095	\$31,430	\$24,198	\$15,318
Auto Part	6	\$6,769	\$34,624	\$16,539	\$13,419	\$9,569
Pipelines	6	\$7,283	\$26,714	\$14,734	\$13,304	\$7,251
Computer	5	\$7,004	\$104,286	\$32,480	\$13,873	\$36,315
Diversified Industrials	5	\$9,003	\$172,738	\$50,765	\$24,462	\$61,642
Electrical Component	5	\$10,384	\$22,572	\$15,383	\$15,681	\$4,164
Financial Services	5	\$8,909	\$87,968	\$60,777	\$62,675	\$28,422
Food Retailers	5	\$6,592	\$35,042	\$15,788	\$7,201	\$11,512
Specialty Retailers	5	\$8,337	\$17,692	\$12,719	\$12,958	\$3,609

	Minimum	Maximum	Mean	Median	Standard Deviation
Base Salary	\$0	\$8,100,000	\$1,131,956	\$1,090,834	\$655,827
Cash Bonus	\$0	\$26,985,474	\$3,049,362	\$2,203,500	\$3,513,767
Perks/ Other	\$0	\$3,220,157	\$322,784	\$205,780	\$400,884
Stock Awards	\$0	\$36,179,923	\$3,852,906	\$2,774,620	\$4,998,758
Option Awards	\$0	\$50,087,100	\$3,346,081	\$2,161,470	\$5,557,345



**Table 4 Regression – dependent is Base Salary; independents are total revenue, change in NI, and change in TSR**

<b>Model Summary</b>					
Model	R Square	Adjusted R Square			
	.039	.033			
a. Predictors: (Constant), Total Revenue					
<b>Coefficients<sup>a</sup></b>					
Model		Standardized Coefficients		t	Sig.
		Beta			
	(Constant)			15.106	.000
	Total Revenue	.197		2.679	.008*
a. Dependent Variable: base sal					

**Table 5 Regression - dependent variable is Cash Bonus**

<b>Model Summary</b>					
Model	R Square	Adjusted R Square			
	.113	.103			
a. Predictors: (Constant), Total Revenue					
<b>Coefficients<sup>a</sup></b>					
Model		Standardized Coefficients		t	Sig.
		Beta			
	(Constant)			5.512	.000
	Total Revenue	.298		4.182	.000
	Percent Change in Net Income	.192		2.694	.008*
a. Dependent Variable: cash bonus					

**Table 6 Regression – dependent variable is Perks**

<b>Model Summary</b>					
Model	R Square	Adjusted R Square			
	.023	.018			
a. Predictors: (Constant), Total Revenue					
<b>Coefficients<sup>a</sup></b>					
Model		Standardized Coefficients		t	Sig.
		Beta			
	(Constant)			6.543	.000
	Total Revenue	.152		2.056	.041*
a. Dependent Variable: perks					

**Table 7 Regression - dependent is Stock Awards**

Model Summary					
Model	R Square	Adjusted R Square			
	.074	.068			
a. Predictors: (Constant), Total Revenue					
Coefficients <sup>a</sup>					
Model		Standardized Coefficients		t	Sig.
		Beta			
	(Constant)			5.558	.000
	Total Revenue	.271		3.761	.000*
a. Dependent Variable: stock awd					

**Table 8 Regression - dependent variable is Option Awards (stepwise didn't work because the R-squared is too small; we used the "Enter" method to force the variables into the model)**

Model Summary					
Model	R Square	Adjusted R Square			
	.009	-.008			
a. Predictors: (Constant), Total Revenue, Percent Change in TSR, Percent Change in Net Income					
Coefficients <sup>a</sup>					
Model		Standardized Coefficients		t	Sig.
		Beta			
	(Constant)			5.051	.000
	Percent Change in TSR	-.003		-.042	.967
	Percent Change in Net Income	.092		1.147	.253
	Total Revenue	.045		.590	.556
a. Dependent Variable: option awd					

**Table 9 Regression - Total Compensation is the dependent variable**

Model	R Square	Adjusted R Square			
	.100	.085			
Coefficients <sup>a</sup>					
Model		Standardized Coefficients		t	Sig.
		Beta			
	(Constant)			9.144	.000
	Total Revenue	.300		4.156	.000*
	Percent Change in Net Income	.110		1.444	.151
	Percent Change in TSR	.042		.551	.582
a. Dependent Variable: total					

Figure 1 CEO Base Salary



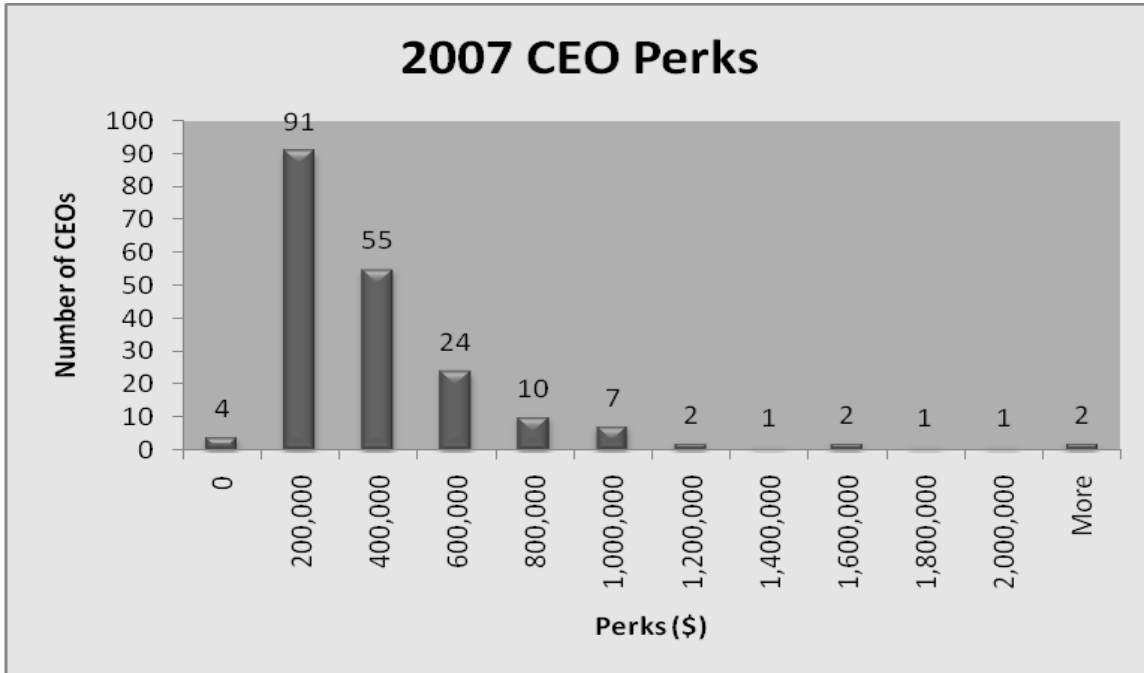
Min: \$0                      Mean: \$1,131,956  
 Max: \$8,100,000        Median: \$1,090,834    SD: \$655,827

Figure 2 CEO Cash Bonus



Min: \$0                      Mean: \$3,049,362  
 Max: \$26,985,474        Median: \$2,203,500    SD: \$3,513,767

Figure 3 CEO Perks/Other



Min: \$0      Mean: \$322,784  
 Max: \$3,220,157      Median: \$205,780      SD: \$400,884

Figure 4 CEO Stock Awards



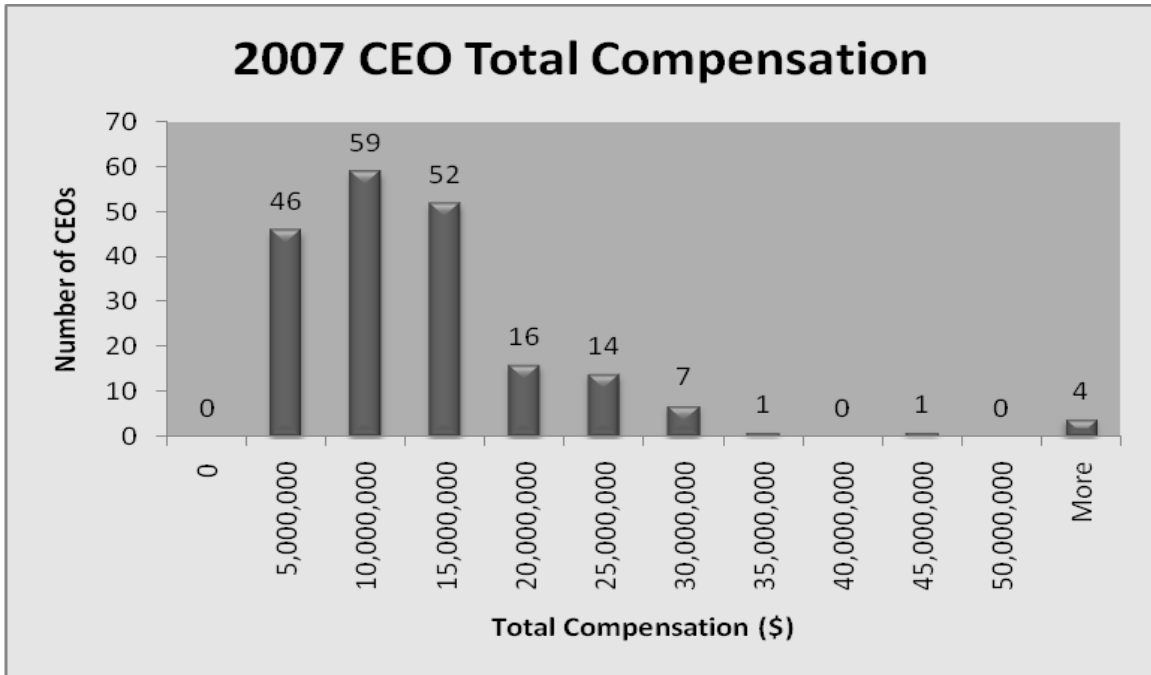
Min: \$0      Mean: \$3,852,906  
 Max: \$36,179,923      Median: \$2,774,620      SD: \$4,998,758

Figure 5 CEO Option Awards



Min: \$0      Mean: \$3,346,081  
 Max: \$50,087,100      Median: \$2,161,470      SD: \$5,557,345

Figure 6 CEO Total Compensation



Min: \$1      Mean: \$11,703,090  
 Max: \$83,785,021      Median: \$ 9,442,340      SD: \$10,179,724

**NOTES**