CEO COMPENSATION AND COMPANY PERFORMANCE: A CASE STUDY OF

THE U.S. AUTOMOTIVE SECTOR

by

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Abstract

Only a few other issues in the history of the modern corporation have generated
the amount of fury as the escalating chief executive officer (CEO) compensation. While
workers real income stagnated or even dropped over this period, there has been
unprecedented growth in total pay for top executives. The record growth in CEO pay was
accompanied with steady decline in stockholders' returns and the growing lack of
accountability at the top. This decoupling of pay and performance at the very top caused
considerable concern and public outcry, renewing the calls for compensation reform.

This case study, in part influenced by the conditions described above, looked at
the automotive sector and assessed the relationship between the CEO compensation and
company performance. The study focused on U.S. auto firms that were members of the
S&P 500 list. The period investigated were years 2006 and 2007. The pay level and the
pay mix were the dependent variables in the study. The independent variables were the
economic and accounting performance indicators, consisting of financial ratios such as
earning per share, return on assets, and shareholders equity, plus the stock price and the
company size.

This financial data on auto companies and their CEOs came from the firms' self-
reported proxy statements filed with the SEC. The study relied on this secondary data,
obtained from the commercial and public data aggregators.

The study tested five hypotheses for positive linear relationship between the CEO
pay and firm performance, utilizing the Pearson correlation coefficient, ordinary least
square regression, ANOVA, and factor analysis.

The study found one strong, positive relationship between the CEO pay levels and firm performance – company size was a predictor for the CEO pay. The other accounting and economic performance indicators exhibited no significant correlation with the CEO pay levels. Furthermore, the results showed that great majority of chief executives received hefty raises during both years of the study, despite turning some of the most dismal financial performances. Also, the study found that automotive sector's pay design is favoring cash-based compensation more than the equity-based mix found in the rest of S&P 500 companies.

Dedication

To my mother, Vinka Marin, and to my wife, Dr. Maria Marin

Acknowledgments

I would like to thank my committee members, Dr. Theodore Kariotis, and Dr. Abdul A. Kaissi for their feedback and guidance throughout this lengthy dissertation process. To my mentor, Dr. Keith Grant, I would like to extend my gratitude for his confidence in me, his patience, and his encouraging words, especially during my moments of personal crisis.

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CHAPTER 1. INTRODUCTION

Introduction to the Problem

A well-designed compensation system that is both fair and reasonable, which addresses workers as well as executives' concerns, is essential for the creation of long-term corporate wealth and prosperity. While workers' real income stagnated or even dropped over this period, there has been unprecedented growth in total pay for top executives. Consequently, the compensation ratio between the executives and their subordinates increased dramatically and reached staggering proportions. Only a few other issues in the history of the modern corporation have generated the amount of fury as the escalating chief executive officers (CEOs) compensation in U.S. companies.

Ron Gettelfinger (2007), UAW president, commented at the news conference on the enormous discrepancy between workers and executives' wages at the U.S. automakers:

> UAW members have made significant sacrifices to help auto industry employers get back on track and remain competitive. During a period of plant closings, employment reductions, and other painful changes for workers and communities, it is fair to ask whether executives are truly adding value in proportion to any compensation increases they have received . . . It does seem odd to us that as much as workers do, they cannot do enough, and as much as executives get, they cannot get enough.

Gettelfinger's comments reflected more than the adversarial union views and tough rhetoric on this issue; they, in essence, described the current condition and trends in large number of U.S. corporations. The economic data indeed supports Gettelfinger's claims. To illustrate the point, in 1992 the average total compensation of the Standard and

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Poor's 500 (S&P) company chief executive was slightly below $3 million. In a span of eight years, for example by 2000, that same averaged compensation grew to $14 million, an increase of over 400 percent.

The record growth in executive compensation was accompanied with steady decline in stockholders' returns and the growing lack of accountability at the top. Determining how much a chief executive (CEO) really makes in any given year is not an easy task. CEO pay-setting processes and remuneration designs are not standardized. Determinants used are very complex in nature and, more often than not, very subjective. Each firm must design compensation structure that has attributes which are salient to their own kind of corporate governance, market norms, set of internal and external contingencies, and theoretical paradigms that guide their evaluative criteria. Furthermore, the external factors such as the economy, regulatory constraints, industry conditions, to name just a few, all play a role in determining the top executive pay and pay mix. Some of these external factors can be isolated by focusing the study on a specific industry sector, where the impacts of such external factors are similar (Byrne, 2002).

Even more challenging are the tasks of evaluating and pinpointing the specific evidence of executive competence and quantifying their performance by matching their pay to shareholders returns and to the overall company performance in a particular time frame.

Background of the Study

Compensation is at the very center of employment exchange. Adam Smith was among the first to recognize this relationship of exchanging pay for effort. Berle and Means (1932) touched upon it as they studied the separation of ownership and control in

emerging U.S. corporations. However, the beginning of modern CEO compensation research is attributed to the general acceptance of seminal work of Jensen and Meckling (1976) on the agency theory. Prior to 1980, there were only a few studies published on the subject. Roberts (1956) work on determinants of executive compensation, Baumol (1962) focus on the managerial theories of the firm, and Lewellen and Huntsman (1970) pioneering work on managerial pay and firm's performance, were only a handful of studies that really stood out. The shortage of early research was more than made up since. The following two decades have seen an explosion in academic research on CEO compensation. The evolving research came from all branches of business science and covered all pertinent business disciplines. It extended over economics, finance, accounting, law, industrial relations, organizational behavior, and business strategy (Murphy, 1999). The spectrum of research varied from longitudinal studies that looked at trends in the industry as a whole to case studies that were very narrow and often company specific.

To say that the current U.S. automobile industry is in a crisis would be an understatement. Ruthless import competition, radical shifts in consumer preferences, and dismal sales combined to make the last decade the most difficult in the industry's history. For example, in North America, 26 percent of publicly held suppliers are financially vulnerable (Muller, 2009). Many economists attribute this to the theory of product life cycle and the natural consequence of maturity and the resultant consolidation in the industry, where weaker companies are being absorbed into large, globally diverse suppliers that focus on specific technologies or vehicle systems. Nonetheless, the current state is bleak; the future prospects for this sector are uncertain. If the industry is to

survive, the next decade will necessitate wrenching changes in its product line and financial structure as the new technologies are introduced, plants are converted and retooled, and new interactions are developed among management, labor, and government (Muller, 2009).

For this to happen successfully, the companies in this sector will depend on strong, transformational leadership. The management leadership chain starts with a progressive CEO. In fact, the chief executive is company's greatest human asset, and as is the case with any other asset, a reasonable return on that asset should be expected. Excessive, and often unwarranted, CEO rewards come at the expense of company owners, namely company stockholders. Furthermore, CEO compensation packages that are poorly designed and that have weak or no links to the company's performance adversely affect the long-term interests of the firm, its employees, and large pool of stakeholders. Robert Daines (2005a) and Jim Collins (2001) studied the relationship of executive pay and executive leadership characteristics respectively in relations to the executive skill levels. Both researchers found that firms headed by the skilled executives consistently do better than their competitors or industry piers. Skilled CEOs typically sustain or improve firm's prior good performance, or turn around previously poor performance. Not surprising, the reverse relationship was also found where unskilled CEOs consistently continued firm's poor performance or worse yet, ruined prior good performing companies. Consequently, for the industry at the crossroads, it becomes critical to evaluate the CEO performance and the remuneration composition that is designed to stimulate, induce, and reward it, all in the context of enhancing the

shareholder value. In order to propose changes a good understanding of the current state is necessary.

Statement of the Problem

The press, politicians, and pundits have pounded the public with hostile messages that CEOs are drastically overpaid, and that their pay bears no relationship to company performance (Meredith, 1992). They bluntly state that few U.S. auto executives have shown that they deserve their pay packages. Former GM Chief Executive Rick Wagoner is often cited as a case in point. Wagoner received $9.6 million in total compensation in 2006, a 75% pay raise from 2005. At the same time the GM lost $2 billion in 2006 and $10.4 billion in 2005 (Krisher, 2008). In 2007 Wagoner announced the closure of four truck plants; the same year GM posted a loss of $39 billion, and its stock price fell by 20 percent. Still, Wagoner's pay rose 64 percent, to a staggering $15.7 million (Beck & Fordahl, 2008). DaimlerChrysler AG Chairman Dieter Zetsche who received $10.3 million and Chrysler Group CEO Tom LaSorda with $5.2 million had similar dismal performance in 2006. Not to be outdone, in the same time frame, a quarter of auto suppliers failed to show profit yet continued to reward their top executives heftily.

The objective of this research was to examine the impact of company performance on CEO compensation in the entire automotive sector and evaluate if the above mentioned excesses are just the few exceptions, the outliers, or industry norm. Additional objective was to look at the company performance and evaluate which performance determinant has the highest bearing on the pay mix and pay level of the chief executive of a firm in the automotive sector. The company performance was assessed through the accounting performance variables such as earnings per share (EPS),

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return on investment (ROI), return on assets (ROA), and profit. The data on the CEO compensation amounts and mix plus the accounting performance ratio were extracted from the publicly available secondary databases.

In all fairness, company performance can depend on a number of factors and contingencies beyond the power of an individual CEO: the economy, regulatory constraints, or industry conditions, to name just a few. In order to minimize these contingencies, the study design focuses on a single industry, where external contingencies are similar.

Purpose of the Study

The primary objective of this quantitative case study was to look, from the strictly economic perspective, at the automotive industry sector of the publicly traded U.S. corporations and investigate the relationship between the chief executive officers' total compensation and firm's performance. This particular sector is made up of about 90 Tier 1 and Tier 2 corporations.

The secondary objective was to investigate CEO pay designs and to test pay mix components for significance relative to the firm's performance. The study attempted to take a snapshot in time, analyzing secondary data from years 2006, and 2007.

Rationale

There are several rationales for the study. One is that the research on this particular subject and these specific actors had been scarce and almost non-existent. This study attempts to fill the gap.

The other reason for empirically testing the relationship of CEO pay and performance is the fact that the results of previous studies have not been conclusive. The results tend to be the function of the study's design. The majority of the studies that investigated CEO pay and firm performance tend to focus on a cross section of firms across multiple industries. Most often these studies looked at the top 100 U.S. corporations, or at the entire S&P 500 company lineup. In general, researchers' methods, study designs, and statistical techniques employed varied. Yet overwhelmingly they all found weak or statistically insignificant links between CEO pay and company performance (e.g., Kerr & Bettis, 1987; Jensen & Murphy, 1990; Murphy, 1999; Gomez-Mejia, 1994). In short, over half a century of research failed to identify a robust relationship between the two variables.

However, when Velijath and Bishop (1995) first tested and then redesigned the previously done study of Murthy and Salter (1975), who originally found no significant relationship between the pay and performance, by re-focusing their study on a single industry (pharmaceuticals) they found a positive relationship between the firm's return on equity and CEO's cash compensation. Velijath and Bishop concluded that the firms in the same industry sector tend to follow the same or very similar labor market norms that link pay to performance, and face similar sets of external contingencies. If they are correct in their conclusion, then it is reasonable to expect that studies of firms in other industry sector may yield similar results and exhibit some kind of significant relationship.

The third rationale for the study lies in the premise that when it comes to pay for performance it is more critical as to how compensation package is designed rather than how much it is worth. For example, some components of the pay mix such as stock

options and stock grants are more effective when the interests of the managers and owners are considered, risk notwithstanding (Barkema & Gomez-Meija, 1998).

Research Questions

Successful management is largely about dealing effectively with dilemmas - situations where difficult choices, between two or more alternatives, have to be made. The research process, in essence, involves the collection of pertinent information (data) to address these dilemmas (Cooper & Schindler, 2003) or, from the purely theoretical perspective, to systematically add to the existing body of knowledge (Amaratunga, Baldry, Sarshar, & Newton, 2002). Both, the management dilemmas and the theoretical models must be evaluated for rigor and practicality and must be further refined for practical research undertaking. Researchers typically narrow the problem down to a more specific research question that they can hope to address or frame within the context of some theory that has been advanced to address similar problems (Cooper & Schindler, 2003). All this withstanding, the research questions primarily function is to add focus to the purpose of the study (Creswell, 2003). Table 1, p. 9, lists the research questions for this particular study.

Table 1. Research Questions

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1. Is there a relationship between the CEO's compensation and company size?

2. Is there positive relationship between the company performance and the chief executive officer's (CEO's) compensation when tested against the firm's economic performance indicators?

3. Is non-performance, or CEOs' failure, being rewarded?

4. Which components of the CEO's pay mix, if any, are significant when evaluated against the firm's economic performance indicators?

Hypotheses

While the research question does not assert a claim or belief, but merely asks "whether" (Rubba, 2005), a hypothesis, on the other hand, takes a position; it makes a claim. It is these claims or conjectural declaratives that this researcher intended to prove or disprove in the study.

There is a large body of empirical literature dealing with the firm size and its effect on the executive compensation (Ciscell & Carol, 1980; Murphy, 1985; Jensen & Murphy, 1990; Core, Holthausen & Larcker, 1999; Cyert, 2002). Majority of these studies found positive correlation between the firm size and CEO total pay, even when different criteria for firm size was used. Larger firm size usually implies more stratified organizational structure, greater difference in the pay bands as one moves up in the corporate hierarchy, added responsibility, and typically, greater ability of the larger firm to pay more. Automotive industry is mature industry, and as such it tends to be very

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hierarchical in management structure. These findings lead to the following null hypothesis:

H_01:   *There is no significant relationship between the firm's size and CEO's total compensation in the automotive industry.*

Traditional hypothesis testing required the setup of two competing, yet mutually exclusive and exhaustive, statements. The first statement was the null hypothesis, H_0, stated above. The second statement was the alternative hypothesis, H_A, stated below. Typically, the alternative hypothesis suggests that the findings or the observed effects are genuine; the null hypothesis is the indication that the rival possibility has resulted from chance. The test required to initially assume that the null hypothesis was true, followed by the probability calculation that the observed effect will occur. If this probability value was small (less than 0.05) then the result was considered as statistically significant, and consequently, the null hypothesis was rejected in favor of the alternative hypothesis, indicating that the findings did not occur by chance.

H_A1:   *There is significant positive linear relationship between the company size and total CEO compensation in the automotive industry.*

When it comes to company performance and its effect on the executive compensation the great majority of studies centered on testing or applying the principles of agency theory. Early studies focusing on the relation between firm's performance and executive pay were done by Murphy (1985 and 1986), Jensen and Murphy (1990), Abowd (1990) and Leonard (1990) to name a few. The common thread between all these studies was that virtually all firms relied on some measure of accounting profits as performance determinants to compensate their CEOs. Still, the findings of this empirical

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research were mixed at best. One explanation was confounding of variables. The other explanation for the missing association between the dependent and independent variables was the fact that most of the studies were done on the industry as a whole. This study targeted a specific industry sector and utilized several performance criteria to test the impact of performance on pay. Several hypotheses that emerged are presented below, again the null format first and then the alternative hypothesis:

H$_0$2:   *There is no significant linear relationship between the firms's earning per share and firm's CEO total compensation in the automotive industry sector.*

H$_A$2:   *There is statistically significant positive linear relationship between the firm's earnings per share and total CEO compensation in the automotive industry sector.*

It is a widely accepted notion that rewards follow or lag performance (Murphy, 1999). Rather than restating basically the same hypothesis over again, this phenomenon is investigated through statistical treatment whereby the independent variable (performance) of the prior year is correlated with the dependent variable (total compensation) of the current year.

Hypotheses 3 and 4 look at different accounting profitability indicators, namely return on equity and return on assets, and their impact on the CEO pay levels. The ROA and ROE are accounting indicators that show how effectively the firm is converting available cash into profits. The higher the ROA or ROE number, the better off the company is financially, since it is earning more and investing less. It does not take any special skills to solve a problem by throwing large sums of money at it. The challenge is

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to maximize profits with minimal amount of investment. Consequently, top executive's paramount function is to allocate company's resources wisely.

H_03: *There is no significant linear relationship between firm's return on assets and firm's CEO total compensation in the automotive industry sector.*

H_A3: *There is significant linear relationship between firm's return on assets (ROA) and firm's CEO total compensation in the automotive industry sector.*

The next hypothesis looks for the positive linear relationship between the stockholders' equity as a predictor and the CEO overall pay levels as the dependent variable. High stockholder equity typically indicates sound financial climate in the firm, i.e., a firm has a better ability to pay debt obligations, fund unplanned expenses, and cover other large sum payments.

H_04: *There is no statistical relationship between firm's return on equity and the firm's CEO total compensation*

H_A4: *There is significant statistical relationship between firm's return on equity and the firm's CEO total compensation*

The final hypothesis tests the relationship between the stock price and its impact on CEO's total compensation. Stock price, despite all its inherent deficiencies of being directly tied to the market fluctuations and investor sentiments, is still the ultimate long-term measure of company performance when it comes to the stockholders (owners). Furthermore, this variable is currently the ever-increasing component of CEO's pay mix (Murphy, 1999). Therefore, it is reasonable to assume that any gains in the share price are reflected accordingly in the total pay levels of the chief executive.

H_05: *There is no significant relationship between the stock price of the firm and CEO's total compensation levels in the automotive industry sector.*

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H$_A$5:   *There is significant linear relationship between the stock price of the firm and CEO's total compensation levels in the automotive industry sector.*

Significance of the Study

In research it is critical where and when the researcher looks since pay practices and firm performance are dynamic in nature, constantly undergoing dramatic shifts and adjustments across time. The significance of selecting the automotive sector as the target of this study is that the time and venue seem to be right. Automotive industry is currently at the cross-roads, fighting not for the glory days long gone, but for its bare survival. Its sheer size and the huge number of stakeholders that have a vested interest in this industry make it a significantly important topic of research. The automotive industry is the bedrock of American manufacturing. It has long played a pivotal role in the U.S. economy. For almost a century it was one of the largest industries in the United States. The 6.6 million total jobs created, both direct and spin-offs, generate over a quarter of a trillion dollars in payroll, or 5.6 percent of total wages in a private sector. For each direct hire there are seven spin-off jobs that are added to the U.S. industry as a whole, and which, in effect, support economic activity in all sectors of the national economy (Alliance of Automobile Manufacturers, 2008). Significant characteristics of these automotive industry jobs are that they tend to be higher paying jobs than the similar jobs in other manufacturing sectors. In fact, in year 1998, they were 39 percent higher. When compared to the average worker earnings in the entire U.S. economy (excluding agricultural workers) the automotive industry worker made 77 percent more (Murray, Mayes, & Hoffman, 1999).

Today, however, this industry is in serious trouble. The most recent industry conditions continue to be challenging. There is significant overcapacity, saturated markets, heavy pension and healthcare liabilities, and drastic production cuts. Furthermore, increases in raw materials and commodity costs, such as fuel, steel, and plastic resin had significant adverse impact on the operating results. To survive these trying times requires, among other things, a sound corporate strategy, foresight, and skilled leadership of the top management (Krisher, 2008).

In this era of company shutdowns, outsourcing, and massive layoffs it is prudent and appropriate to investigate if the stockholders are getting their return on investment from one of their most expensive assets – chief executives. Indeed, the heavy burden of executive pay on the firm has real practical significance for all the stakeholders - including the new group of stakeholders, the taxpayers - and for the economy as a whole. Bebchuk and Grinstein (2005a) recently found that the aggregate compensation paid by public firms to their top executives during 1998-2002 amounted to 10 percent of aggregate corporate earnings. At the same time pay plans have been structured in number of creative ways intended to conceal the amount of true compensation and to further decouple it from performance. For a long time the focus in U.S. automotive industry was on disparity in wages between the unionized U.S. hourly workers and those of the non-union transplants. This gap was recently found to be much less than the general public was made to believe. At the same time the huge difference was found in executive compensation when compared to Asian OEMs (Durnev & Kim, 2005). The often used mantra of automotive managers of need to acquire and retain the top talent rings hollow today, especially when viewed in the context of other industry sectors with similar tunes,

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namely the banking and financial sector. Typically, it only masks their inability to reflect on own failures.

President Barak Obama summarized it best when he said, "In America we don't disparage wealth. We don't begrudge anybody for achieving success. But what get people upset - and rightfully so - are executives being rewarded for failure, especially when those rewards are subsidized by U.S. taxpayers (Trumbul, 2009)."

The other significance of this study is its scope. The study investigates the CEO compensation and firm performance in the entire automotive sector that also includes the Tier 1 and Tier 2 suppliers, not just the attention-getting original equipment manufacturers (OEMs). The study sets out to either prove the notion that flawed compensation arrangements have been limited to a small, highly visible firms, or conversely, that the problems are widespread and systemic in the entire industry sector.

Furthermore, the added significance of the study is its unique design. The analysis attempts to add to the existing body of scientific research on the subject of executive compensation in U.S corporations by conducting a study on the relationship between CEO's pay and firm's performance in a single industry sector. While the scholarly literature abounds with the studies on the CEO compensation and their affect on the company performance, there are gaps in the research spectrum when it comes to the specific sector. This study attempts to fill some of those holes.

From the overall perspective, the study's primary significance resides in its utility. It fundamentally offers all interested parties – the scholars, the investors, the board of directors, the stakeholders, and the taxpayers – a resource by which to broaden, filter, and evaluate the publicly-available information in a manner that may ultimately lead to

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heightened understanding, more effective oversight, and more prudent compensation and investment decisions regarding the CEO pay design and corresponding firm performance. The widespread recognition of the problem might contribute to alleviating it.

Definition of Terms

Table 2, p. 17, summarizes key definitions that are relevant to the topic and which are used in this study. Variables and statistical techniques are described and discussed in detail later in the methodology section.

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Table 2. Key Terms and Definitions

Industry-specific Definitions

Original Equipment Manufacturers (OEM)	Refers to industry's brand name auto manufacturers and assemblers, such as General Motors, Ford, and Chrysler.
Tier 1 suppliers	Components and/or system manufacturers that supply the OEMs directly (e.g., seats, tires, glass)
Tier 2 suppliers	Companies that typically supply components to Tier 1 manufacturers, who in turn supply OEMs
Automotive industry	Those companies that are grouped in the Standard Industrial Classification Codes (SIC) 371 – Motor Vehicles and Motor Vehicle Equipment, and all other SIC sub-codes (e.g., 371x)

Definition of Accounting and Financial Terms

Earnings per Share (EPS)	Earnings per share. A financial ratio and indicator of company performance. EPS = (net income – dividends on preferred stock) / average outstanding shares
Return on Investment (ROI)	A performance measure used to evaluate the efficiency of an investment. ROI = (gain from investment – cost of investment) / cost of investment
Return on Assets (ROA)	An indicator of how profitable a company is relative to its total assets. ROA = net income / total assets
Net income	Company's total earnings or profit. Net income is calculated by taking revenues and adjusting for the cost of doing business, depreciation, interest, taxes and other expenses
Stock option	A privilege, sold by one party to another, that gives the buyer the right, but not the obligation, to buy (call) or sell (put) a stock at an agreed-upon price within a certain period or on a specific date.
Stock grants	The employee receives an outright award of stock, and is not required to actually purchase the shares, but these stocks are subject to vesting restrictions
Return on Equity (ROE)	Return on equity is one of the most important performance metrics. ROE = Net Profit / Average shareholder equity

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Note: Industry-specific definitions were adapted from: *2007 Annual Report*. (2007). Lear Corporation. Southfield, MI: Lear Corporation Annual Report, p.12-13.

Assumptions and Limitations

The study is dependent in its entirety on the secondary data obtained from the data aggregators. All companies, foreign and domestic, are required to file registration statements, periodic reports, and other forms electronically through the Electronic Data Gathering, Analysis, and Retrieval system (EDGAR). The executive compensation is part of the Form10-K that must be included in corporation's annual report. The first assumption is that the information in the annual filing with Security and Exchange Commission (SEC) is correct. This assumption in itself is beyond the control of the researcher. Even though the truth in reporting is mandated by law and fines are huge for failure to do so, one does not have to go far and look at Enron, Tyco, WorldCom, Peregrine, among the few, for the examples of fraudulent reporting.

The second assumption pertains to the sampling frame errors. These errors may arise when some of the elements of the target population are excluded, or included erroneously (Malhotra, 2004). Specifically, this study relies on the proxy statements that are grouped in the EDGAR database by industry through Standard Industrial Classification (SIC) codes. The U.S. government developed the classification system of four digit numerical codes which identify the primary business of the particular enterprise. These codes are assigned to business establishments to reflect their specific product, service or line of work. The purpose for the development of the classification system was to promote uniformity and to facilitate data collection, analysis, and presentation for the end users, both in government, public sector, and academia. The problem is that many of the automotive companies are conglomerates or companies that engage in other, non-automotive activities. Yet they all classify themselves under the SIC

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code of 371 (motor vehicles and motor vehicle equipment) and 3451 (establishments that primarily manufacture metal auto parts, such as body panels, hubs, and trim pieces, usually for sale to other manufacturers or for use in assembly facilities located off-site). The study assumes that since companies themselves chose the specific classification then that classification is their primary business.

The third assumption deals with the wholeness of the data. There is a belief among some of the researchers that it is impossible to capture all elements of executive compensation due to sheer magnitude and complexities involved. Mostly, these elements deal with tax benefits, perquisites that are real and substantial such as pension and severance packages, plus the perquisites that are mostly irritants to subordinates and which do not have significant and tangible financial value (Eisenberg, 2005). Once again, the assumption of the study is that data extracted is complete across all the sample elements.

The fourth assumption is based on the condition that the stock options granted to the executives were evaluated and reported correctly. Black-Scholes equation is the accepted method of such evaluations. However, there were several regulatory changes - first in 1992, then 2002, and finally in 2006 – that pertained to the methodology of stock option reporting and evaluating, and which brought some confusion during the transition periods.

The fifth assumption recognizes that the level of CEO compensation may be a function of other parameters that are not strictly based on economics and accounting performance measures. These may be strategic concepts and undertakings,

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diversification, and intraorganizational politics to name a few. However, these constructs are beyond the scope of this study.

The limitation of the study further lies in the selection of the population itself, which is comprised of only U.S. publicly-traded corporations in automotive sector. Contrary to the initial belief, the sample size will be relatively small, and consequently, it may affect the significance of the results. While the pool of the auto supplier companies is large, vast numbers of companies are privately held or are located abroad.

The second limitation of the study pertains to the non-continuous findings done on the subject in the overall S & P 500 segment, this study's benchmark group. Most of the studies done in the past that investigated the same phenomena focus on different time periods, use a wide array of statistical procedures, research design, different set of contingencies, and theoretical perspectives.

Nature of the Study

A central question for all business and research activities is what the methods, models, theories and statements that are generally referred to as knowledge, are really about. Researchers base research methodology on a set of guiding principles that stem from their epistemological orientations. These orientations shape and determine researchers' world view (operating paradigm) and their concept of reality. Stated differently, epistemological positions affect methodological approaches and strategy. While the epistemology involves the philosophy of knowledge creation, methodology is concerned with the actual practical applications of knowledge synthesis (Creswell, 2003).

This study is designed, and accordingly, it reflects this researcher's epistemological orientation to positivism and to its most common form of philosophy called critical realism. Critical realists are not absolutists. They recognize that scientific scrutiny of the phenomena, despite the best efforts put into it, is fallible and that all observations have an inherent error built in. Some of the errors are attributed to the researchers. They are influenced by their own paradigms, world views, cultural experiences, norms, and so on. Consequently, every theory, in the eyes of the critical realist, is potentially reversible. Positive knowledge claims are probabilistic, objective, causal, and validated or refuted through hypothesis testing. The positivistic approach requires a quantitative analysis of the system (Reason & Herron, 1996).

The methodology that this researcher found most fitting to his operative paradigm and which he applied in this study was the analytical approach and quantitative method. This type of method utilizes "exact' sciences such as mathematics and statistics for data analysis and result interpretation. Furthermore, the solutions obtained through the quantitative method are often verified in practice (industry) and in academia (Yeganeh et al, 2004).

While the epistemological and ontological orientations are established before the embarkment on the study, the selected methodology for this study, in retrospect, seems fitting. A look at the research questions, the studies focus on strictly economic parameters, the answers that the study seeks to find , and the theoretical underpinnings it seeks to establish, indicate that quantitative method is appropriate, and more importantly, the only correct one.

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Organization of the Remainder of the Study

Chapter 2 of the dissertation reviews the literature on executive compensation pay-setting framework and design. The purpose of this literature is to identify different pay mixes, the pay-setting processes, corporate governance, tax and legal implications that affect CEO pay mix and pay amounts. Additionally, this chapter lists the theoretical underpinnings on which compensation and performance are based. Thus, the dominant theories of executive compensation are reviewed. The last section before the listing of this study's hypotheses summarizes and classified the vast amount of pertinent research done by others that serves as benchmark and justification for this particular research.

Chapter 3 of the dissertation offers a detailed review of the methodology used in this research. It starts with the research design, and continues with identifying the target population, describing the sample and sample selection, data source, data collection and manipulation (treatment), the listing of dependent and independent variables and the plan how to test them for validity and reliability. It concludes with the description and rationale of the statistical treatments and data analysis. Any ethical considerations, if found applicable, are listed as well.

Chapter 4 presents the actual results of the data analysis. These results include both, the descriptive and inferential statistical results. Furthermore, mathematical relationships (equations) are established and presented when and where appropriate.

Chapter 5 is the final chapter of the dissertation. It consists of discussion and the summary of the study's results and findings together with the conclusions reached. The chapter concludes with a set of recommendations offered for the future research.

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CHAPTER 2. LITERATURE REVIEW

Introduction

An ongoing shift in the roles played by management, boards, and outside forces over the past several years have transformed the process by which executive compensation programs are developed. Management's longtime leadership in driving the design of pay plans has given way to much closer involvement and more stringent oversight by corporate Boards, who in turn are much more cognizant of the views of critical stakeholders, from activist shareholders and proxy advisory groups to government regulators and elected officials. As companies deal with the fallout from options backdating, spring-loading, accounting restatements, and other pay controversies, new SEC disclosure rules are providing a wider window into the working of corporate pay programs by requiring companies articulate both their structure and their underlying philosophy. This chapter will cover 10 sections. Those sections are as follows: CEO compensation, compensation strategy, the components of CEO pay, determinant of CEO performance, board of directors, laws and regulations, studies of CEO compensation, theoretical underpinning, studies of firm size and compensation, organization performance, and automotive compensation.

CEO Compensation Framework

The determinants of the executive compensation can be analyzed and interpreted through the general framework depicted in Figure 1 below. The figure shows that the CEO compensation can be studied in terms of total amount of cash pay received by a

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executive (salary and/or bonus), short and long term equity compensation (stock grants and/or options), on the correlation of executive remuneration and his/her performance, and perquisites received. The determinants affecting the CEO pay can be grouped in five general categories: structure or components of CEO pay, criteria, governance, contingencies, and theoretical underpinning (Barkema & Gomez-Mejia, 1998).

Criteria are set of factors that have direct bearing on the CEO. Firm size usually indicates complexity of the enterprise. Larger firms tend to have larger management hierarchy, more pay bands, and higher job responsibility (Bebchuk & Grinstein, 2005b). Market conditions in particular industry have the overall impact on executive pay, yet they are least impacted by the chief executive actions. The relative pay scales within the specific industry serve as benchmarks and are often relied upon when setting the executive's pay amounts and mix. CEO's personal credentials, namely his/her work experience, schooling, social status, and tenure also affect pay. Company's hierarchical structure plays a role in executive's remuneration. Typically, more structured organizations rely more on the fixed pay components in the compensation package than variable ones. Everything being equal, higher structure companies tend to pay more, if for no other reason then to keep the levels differentiated. The performance for CEOs is typically gauged through the accounting standard such as earnings per share, stock growth, and return on investment.

The governance structure primarily focuses on the ownership make-up and the active control of the firm. It involves principals, large and/or institutional shareholders, and managers. The important factors are the degree of influence they exert on the corporation in general, and more importantly, on the specifics of pay-setting policies.

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Under the law, corporations are required to have a board of directors. The board has the responsibility to represent and protect the interests of the stockholders (principals). It has a power to hire and fire CEO (Dyl, 1988). Furthermore, each board of directors is required by law to have a compensation committee. This committee is made up of outside directors. They directly impact the pay-setting process, both in terms of mix, measurement, and allocation (Overton, 2004).

Contingencies affecting the CEO's pay characteristics are both internal and external. The external contingencies primarily affect the mix of the compensation package (tax laws), the amount and performance criteria (culture), and the long term pay orientation (strategy and R&D). Internal contingencies are typically tied to performance criteria and to the corporate governance of the particular firm (Finkelstein & Boyd, 1998). The objective of this study is to isolate and remove the effects of most of the external contingencies by focusing this study on a particular industry sector, namely automotive sector in United States, where similar firms face similar external contingencies. Attaway (1998) who studied CEO compensation in computer and electronics industry, Veliyath and Bishop (1995) who focused on CEO pay and performance in healthcare industry, Sottile (2005) who looked at CEO compensation among Greenfield companies as firms went public, to name a few, made similar set of assumptions when investigating particular industry sector.

Theoretical underpinnings are operative paradigms that provide compensation models that are used to set the pay strategy or to explain the existing CEO pay structure. All will be discussed in greater detail later.

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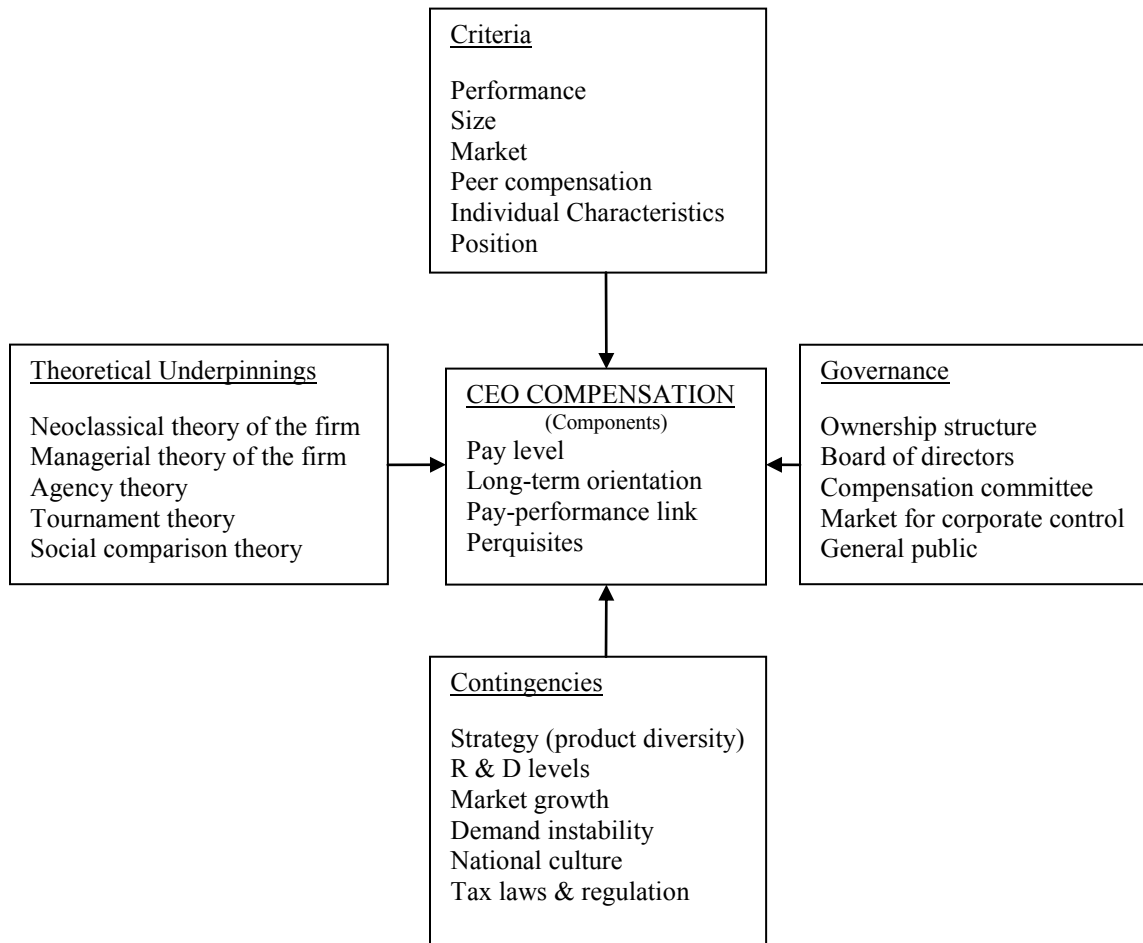
Figure 1.   A general framework for executive compensation

Source: Adapted from: "Managerial compensation and firm performance: A general research framework"
by Barkema & Gomez-Mejia. (1998).*Academy of Management Journal, 42* (2), p.140.

Compensation Strategy

An explicit and detailed executive compensation strategy is an important tool with

which to attract, retain, and reward quality executives. Before each of the components of

the total executive compensation strategy is looked at, it is critical to understand the

major factors that shape an organization's strategy and shows why the strategies are

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different at different organizations. These factors can be further subdivided into two new major groups - those factors that are of external nature and to those factors that pertain to internal nature. Davis and Edge (2004) list seven external factors that impact total rewards. These are listed and discussed below:

Industry

Executive compensation varies significantly from industry to industry in terms of mix, level of pay, incentives, benefits, and perquisites. However, base salary differences are not that significant. The largest predictor of base salary is revenue within the industry. Bonus levels vary much more and are primarily affected by the differences in industry performance.

Industry Financials

Executive pay packages are affected differently by the different growth rate in the industry, margin levels realized within the industry, and the expected return to shareholders given the degree of inherent risk. Low margin industries, for example, work hard on controlling costs and their cash flow. Consequently, they are more reluctant to design compensation plans that are heavy in cash compensations, such as high base pay or annual performance bonuses. Rather, they rely more on long term securities incentives. The same thing can be said of the start-up organizations, which typically have a finite amount of cash on hand and need it primarily for operating expenses.

Industry Stage of Development

The industry's life cycle has a significant impact on both the mix and level of executive compensation. The new industries such as information technology, biotech or software developers to name a few, typically structure their executive compensation mix

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around low cash compensation levels and significant upside opportunities through long-term non-cash incentives, primarily stock options. This is due to the fact that substantially all of the firms in this sector are small start-ups. As the market growth and revenues increase, these start-up firms will shift focus towards the higher levels of, cash compensation, with correspondingly less focus on, and lower levels of, stock option usage. On the other end of the life cycle spectrum, an industry that is mature, and often characterized to be on the decline, is the automotive industry. Industry consolidation has occurred, even global consolidation, and thus the industry is exemplified by huge, mature organizations, and company hierarchy that have been in operation a long time. In mature companies cash compensation levels are high, short-term and long-term incentives are numerous and diverse, and there are generally significant executive perquisites and supplemental benefits. This level of total rewards could not be supported, financially or culturally, in the emerging firms that were used in the example above (Davis & Edge, 2004).

Research and Development and Long-term Orientation of the Industry

A longer product or service cycle in industry correspond to a longer-term orientation and long-term focus. Consequently, this leads to a greater emphasis and use of long-term incentives. Good examples of this type of industries are the pharmaceuticals.

Executive Supply and Demand

Industry growth rates impact supply and demand for executive talent within the industry. Rapidly growing sector such as heavily technical dot-com creates shortage of seasoned executives with managerial skills. This in turn shifts the compensation scale of the entire compensation mix higher, and often to the unsustainable levels. Once the sector

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gets saturated or starts to decline, the equilibrium is re-established, once again through the same principle of supply and demand.

Degree of Competition within the Industry

The degree of competition correlates with the overall industry stage of development. Early on in their life cycle companies compete on technical development and novelty of their products. Slowly this is supplanted by quality and customer satisfaction. Finally, price becomes the most important differentiator. Price in turn places significant pressure on margins. Compensation expense, being generally one of the largest controllable costs, is used to maintain or increase profit margins.

Current and projected economic conditions

Economic condition combined with other factors and economic indicators is very significant. Booming economy typically leads to growth and expansion. This in turn leads to increased demand for executive talent. As the talent pool shrinks, the wages and compensation tends to rise. In contrast, in the down economic period firms try to keep fixed costs down. As a result, there is little base salary movement. Furthermore, the supply of labor in a down economy is on the rise and the demand is low. This keeps compensation in check.

In addition to seven major external factors, there are five internal factors that have significant effect on the total executive compensation levels and mix (Davis & Edge, 2004). These are: (1) organizational competitive position within industry and its method of competing, (2) firm stage of development, (3) firm financial position, (4) level of talent needed to compete, and (5) firm's ability to attract and retain talent needed.

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The Components of CEO Pay

The assortments of plans that make up the total chief executive compensation program are structured differently from firm to firm, reflecting differences in strategies and in corporate governance philosophy. Each firm chooses a mix of compensation elements that will most appropriately meet its objectives and reinforce its values relative to the importance of individual and team performance and risk and reward sharing. Furthermore, compensation plans' variances are the function of firm's organizational constraints, competitive practices, importance of various job functions in impacting results, and firm's ability to tolerate variations in pay (Tauber & Levy, 2002). However, the purposes of each compensation element are reasonably consistent across organizations and over time. Table 3 summarizes these purposes and the intended effect that they have on the company and on the executive.

Table 3. Purposes of Compensation Mix Elements

Pay Element	Firm Perspective	Executive Perspective
Base Salary	• Facilitates attraction and retention of talent • Provides basic financial security • Provides yardstick for measuring magnitude of other pay elements	• Supports basic lifestyle • Provides basic level of financial security
Short-Term Incentives (Bonus)	• Rewards attainment of business plan • Encourages improvement • Focuses organizational priorities • Reinforces performance-driven culture	• Rewards performance relative to others • Rewards progressive improvement in results • Provides regular measure of success or progress
Long-Term Incentives (Stock Options and/or Stock Grants)	• Rewards growth in real value of the company • Rewards attainment of strategic goals • Encourages risk taking • Enhances executive retention	• Balances rewards with risk • Provides capital accumulation opportunity
Benefits and Perquisites	• Provides tax-effective compensation • Enhances executive retention • Conserves executive time	• Protects against financial catastrophe • Provides appropriate secure retirement income • Recognizes status

Note: Adapted from "*Executive compensation*" by Y.D. Tauber and D.R. Levy, Bureau of National Affairs, Washington D.C., 2002, p. 11.

While the purpose of the compensation elements within the company remains

relatively steady, the mix of the compensation elements varies greatly with the position

and responsibility within the firm. In addition, the percentage of the mix within the

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executive group has been undergoing a shift toward the more incentive-based
compensation elements. Figure 2 indicates that the variable portion of the executive
compensation often comprises about 50 percent of the total pay mix. In fact, the salary
portion of the pay package for the typical CEO has been steadily declining to just slightly
over 21 percent in the past year. Long-term incentives (option grants and restricted stock
awards) have been on the steady rise and account now for over 60 percent of mix. Heavy
emphasis on these long-term incentives has been the main culprit in the escalating pay
levels of top executives (Tauber & Levy, 2002).
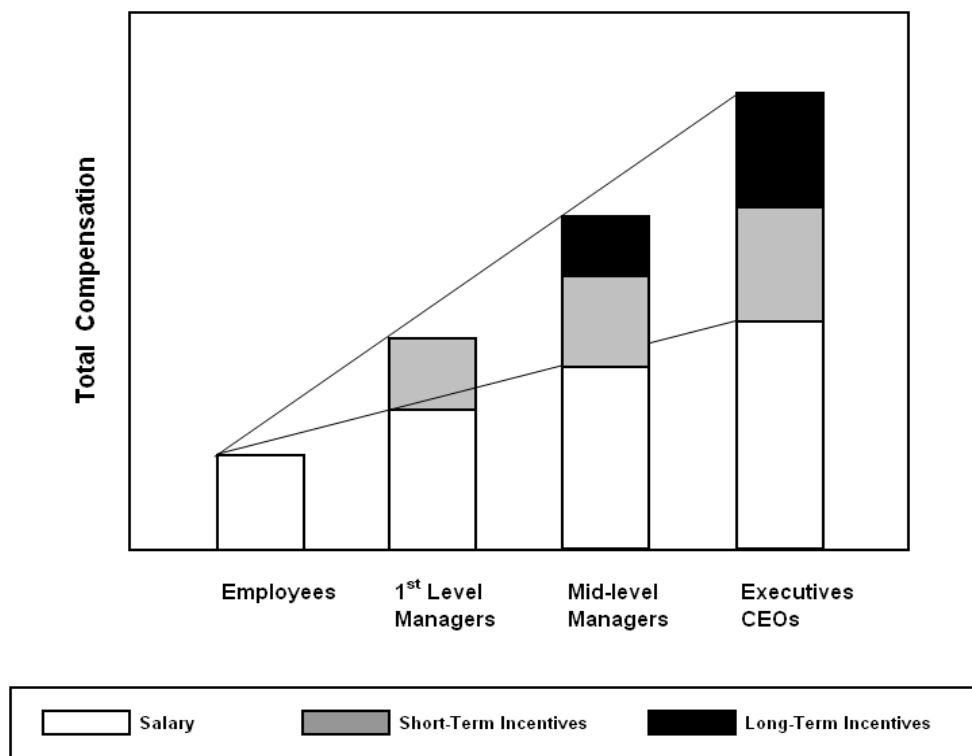
Figure 2. Compensation mix by organizational level

Note: Adapted from "*Executive compensation*" by Y.D. Tauber and D.R. Levy, Bureau of National
         Affairs, Washington D.C., 2002, p. 6.

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Base Salaries

Base salary is a merit-based cash compensation component of the total CEO's remuneration mix. Executive employment contracts almost always specify base salary and often provide for the automatic annual raises. Competitive benchmarking is typically used to determine base salaries. Benchmarking involves the use of general industry salary surveys supplemented by thorough analyses of targeted industry and management pay structure among the market peers. The determinants influencing this component are executive tenure, experience, education, age, skill levels, organizational size and complexity, market competition for top talent, and firm's ability to pay.

The importance of base salary, even though this component is steadily decreasing in a total compensation mix, is significant because it serves as a yardstick for most other components of compensation. For example, bonuses are typically expressed as a percentage of base salary. Similarly, option grants are calculated based on a multiple of base salary. Furthermore, salary levels are part of the equation which defines pension and severance benefits. Thus, each dollar increase in base salary has direct repercussions on many other components in the total compensation plan.

Annual Bonus Plans

Bonus plans are almost universal components of executive compensation mix in U.S. for-profit corporations. They are supposed to be based on prior year performance and are paid annually. Executive bonus plans can be described in terms of their basic performance components: measure, standards, and the structure of the pay-performance relations. Typically, no bonus is paid until the threshold performance is achieved. This threshold performance is expressed as a percentage of the performance standard. Target

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bonus is paid when the performance standard is reached. Accounting profits typically serve as the measurement of performance (Murphy, 1999). Like base salary, bonuses are direct cash compensation element of the total remuneration package.

Stock Options

Stock options are financial contracts that have pre-specified price, pre-specified term, and pre-specified expiration date. The recipients, in this case CEOs, are given the rights under pre-specified conditions mentioned to buy company share or stock, and once vested, to sell it at will. Stock vesting occurs over time. Typically 25 percent becomes exercisable in each of the four years after they have been granted. Expiration term is usually 10 years. These stock options that are given to the executives are non-tradable. They are forfeited if the executive leaves the firm before the options had become vested.

On one hand, managerial rewards based on the stock options provide a direct connection between the increase in manager's compensation and share price appreciation, since the net gains obtained from exercising options directly correlate, dollar for dollar, with the increase in the price of the stock. But on the other hand, stock options lose incentive value once the stock price falls sufficiently below the exercise price that the executive perceives little chance of exercising. Declining share price is not as effective incentive tool as is the share price that is appreciating in value. This loss of incentive is frequent reason, or justification, for re-pricing of the stock options following the grant (Hemmer, Matsunaga, & Shevlin, 1998).

In addition to the clear financial incentives, stock options are even more popular component of the reward mix due to their favorable tax implications, both to the recipient and to the issuer. Hence, stock options are form of deferred compensation through which

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a recipient can manipulate his/her taxable income by controlling the amount and time frame of exercisable options.

Black-Scholes (1973) formula is the best known and most widely used method for figuring out the firm's cost of granting stock options to the executives.

Restricted Stocks

Twenty-eight percent of Standard & Poor's 500-company chief executives received the restricted stock grants in 1992. That percentage steadily increased and it now stands at around 33 percent. These grants account for an average of 22 percent of CEO's total compensation mix (Murphy, 1999). The restricted grants typically come up with the forfeiture clause whereby they are surrendered back under certain conditions such as insufficient employee longevity or untimely termination and departure.

This stock restriction contains intrinsically favorable tax and accounting benefits. In general, CEOs do not pay taxes on the shares received until the restriction lapse, and the cost to the firm is amortized over the vesting period at the price that was in effect at the grant date. The average vesting periods, i.e., times until the restrictions are lifted, for restricted stock grants varies between the companies and between the industries - typically, it falls between two and four years (Kole, 1997).

Perquisites

There are numerous perquisites granted to CEOs. Some are granted to reinforce the rank and authority of the position and typically come with small financial burden to the company. These consist of items such as preferred parking spaces, company car, chauffer, memberships to exclusive clubs, and so on. These perquisites seem to be the most visible and often serve as the irritants to the subordinates. However, there are

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substantial perquisites that come with a huge price tag. These are frequently referred as silver and gold parachutes and encompass severance and retirement packages. For example, top company executives are routinely the beneficiaries of expanded and supplemental retirement packages. These supplemental plans are non-qualified for tax purposes. They vary greatly between the companies – some are based on credited years of service and not on actual years of service, others are based on inflation or company performance. This compensation is often ignored in research because it is difficult, often impossible, or at best arbitrary, to convert the future payments into current annual compensation. Furthermore, these payments are frequently not disclosed because the retired recipients are no longer company executives. These retirement plan contracts are complex in design, and even when reported on the filed proxy statements offer a challenge to the analysts to determine plans' actual present value. This lack of transparency and vagueness of disclosure has labeled these plans the ultimate form of hidden, yet substantial compensation (Murphy, 1999).

Determinants of CEO performance

Business leaders are under strong and unrelenting pressure to perform. Though few top executives are actually fired, the business press reports almost weekly on business leaders who have chosen to resign for failing to meet expectations. In addition, executive pay programs and pay levels are under pressure, and not just for abuses. There is a basic demand for a return on the investment by owners. But, before any performance criteria are adopted by the board and corresponding reward contract is put in place, it is necessary to examine the key responsibilities of the top executives (Davis & Edge, 2004).

CEOs typically set the vision, strategy, and leadership of an organization. They reap the glory (and financial rewards) during the good times and are expected to shoulder the blame when company performance drops. In today's competitive and rapidly changing business environment being just successful in not good enough. Collins (2002) and his team posits that good organizations have to advance even further and become great organizations. To achieve this long-term goal, transformational leadership at the very top of an organization is paramount. Table 4 lists the organizational leadership framework with CEO responsibilities, capabilities, and ultimately, the results. The results are the criteria that ultimately matters to the principals (stockholders, i.e., owners), boards, and future investors. The great results don't just happen – they are the product of great leadership framework.

Designing an effective CEO compensation to achieve, or provide incentives in order to achieve desired results, is not a straight-forward science. Sometimes it is as much an art as it is a rational discipline. Companies use a myriad of performance metrics – all of which can be customized to fit a company's circumstances and management style. Nonetheless, the long-term stock performance may be the paramount and ultimate yardstick of a chief executive's performance. This is not, by any means, the only measurement used by the board of directors in assessing how well the top executive is doing. While accounting and economic "hard" numbers play a critical role in determining short and long-term remuneration, the "soft" metrics are sometimes just as influential. The soft metrics may involve parameters such as customer satisfaction, research and development initiatives, exceptional leadership skills in challenging industries (e.g., automobiles and labor unions), productivity and/or process improvements, and so on.

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Organization's age – mature enterprise versus start-up – also play a role. Indeed, any number of factors may affect how CEOs are evaluated by their boards. Table 5 summarizes the most frequently used performance measures.

Table 4. Leadership Framework

Level	Responsibility	Capability	Results
1 (CEO)	Create a framework Identify opportunity Sell the vision Articulate risks Select leaders	Create effective strategy Seize opportunity Inspire others Build effective relations Negotiate effectively	Shareholders returns Growth Investment efficiency Talent pool, current leader
2	Set standards Evaluate opportunity Asses risks Develop leaders	Apply strategy Identify opportunity Provide direction Build consensus Model behaviors desired Inspire others	Operating efficiency New business start-up Future leaders talent pool
3	Develop business plans Staff efficiently Execute opportunities Control risks Identify future leaders	Identify value drivers Balance competing interests Monitor progress Evaluate behavior Create results	Business plan execution Process improvements Develop leaders

Note: Adapted from "*Executive compensation: The professional guide to current issues and practices*"
by M. L. Davies and J. T. Edge (2004). Windsor Professional Information Publishers, p. 4.

Table 5. Frequently Used Financial and non-Financial Measures

Financial Measures	Percent	Non-financial Measures	Percent
EPS - Earnings per share	40.8	Individual objectives	12.2
ROE – Return on equity	30.6	Productivity	10.2
Net income	18.3	Quality targets	10.2
Share price	10.2	Environmental compliance	8.1
ROA – Return on assets	10.2	Process improvement	8.1
Profitability	10.2	Product development	4.1
Gross margins	8.1	Safety	< 2
Operating income	6.1	Inventory turnover	< 2
EVA	4.1	Distribution center expansion	< 2
Cash flow returns	< 2		
Budget targets	< 2		
Cost reduction	< 2		

Note: Adapted from "Corporate governance and the information gap: The use of financial and non-financial information in executive compensation" by E. Schiehll and P. Andre, 2003, *Business Journal Online*, p. 5.

In general, the financial metrics blend several targeted numbers such as sales and earnings to the more complex results that deal with success or failure of dispositions or acquisitions (Bhagat, Carey & Elson, 1999). They include figures such as EPS, ROE, ROA, return on capital, revenue growth, cash flow and EBITDA, or gross earnings.

Few economists disagree that earnings growth is the most critical accounting metric. It is an indicator of how well a CEO is running the business. It provides a summary measure of value added to the firm over a given period. For full understanding of this indicator it is important to compare earnings to historical values or to benchmark it against the similar firms or industry sectors (Carter et al., 2007).

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Guay (2008) states that the overwhelming numbers of the financial incentives given to CEOs are stock-price based. Accordingly, these chief executives hold disproportionately large portfolios of company stock and company stock options. Thus, their wealth is closely tied to shareholder performance. Large numbers of CEOs' compensation packages simultaneously include annual bonuses. These cash based pay elements are typically based on firm's accounting performance measures such as earnings per share, corporate income, and returns on assets and equity. Add to this a long-term performance plan that typically involves restricted stock shares, which is evaluated through both, longer-term measures such as progressive growth in earnings per share and/or ROI, and short-term measures such as the stock price. Each metrics from this enormous pool of financial metrics helps to paint a different picture of CEO performance. However, in the end, regardless of performance metrics used, the ultimate performance determinant is long-term stock price growth. Therefore, it is not surprising that compensation based on restricted equity grants held for the long term is growing in popularity.

Regardless of the metrics, there is currently greater transparency and fewer mystiques associated with CEO's reward and performance process. The new government regulations require firms to disclose how they measure performance and how they turn those measures into executive pay. Annual proxy statements filed with the SEC after December 2006 must adhere to the new disclosure requirements that are now in effect.

Board of Directors

Now that pay components and performance criteria has been identified, the study turns to the individuals that actually come up with the reward contract, namely the board of directors. The highest governing authority at any publicly traded U.S. firm is the board of directors. The primary responsibility of the board of directors is to, through the existing management structure, protect the stockholders' interests, safeguarding their assets, and ensuring respectable return on their investment. Furthermore, acting as a primary internal control mechanism, the board of directors plays a significant role in safeguarding shareholder interests by designing executive compensation contracts and monitoring CEOs' behavior (Hermalin & Weisbach 2003; Murphy 1999). Other responsibilities of the board consist of evaluating the attractiveness of and pay dividends, recommendation on stock splits, overseeing share repurchase programs, approving firm's financial statements, and recommend or strongly discourage acquisitions and mergers.

Shareholders elect board of directors for multiple-year terms. Often these directors are part of the upper management, or outsiders with a vested interest in the firm, or independents who posses keen business ability or critical expertise that can be beneficial to the firm. Once elected, board of directors receives annual salary, stock options, additional pay for each meeting they attend, and various other benefits, which varies from firm to firm.

There is no specific, fixed number of directors that sit on the board. It can vary considerably between firms. Some firms have only half-a dozen directors; others have over twenty. SEC requires that U.S. corporations have a board of directors, whose makeup exhibits independence, meaning that at least fifty percent of the directors cannot

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be employed or directly associated by the company. The intent of the regulation is to minimize the conflict of interest and maximize unbiased decision-making.

Mandated by law, the boards of directors' tasks include the establishment of two key committees, the audit committee and compensation committee. The audit committee selects and hires an outside independent auditing firm to generate company's financial statements and reports. However, the ultimate responsibility for the accuracy and the use of fair and reasonable estimates and accounting practices in those reports lies with the board of directors as well as with the CEO. Ultimately, the board and the CEO must sign the audit reports and SEC filings.

It is compensation committee's responsibility to set top executive's pay levels and pay mix. Pay mix is typically comprised of merit-based base pay, annual incentive-based bonus, and long- and short-term incentives that are securities-based. In recent years this pay-setting process and the unjustifiably absurd levels of CEO pays that resulted from this process has come under heavy criticism. Shareholders are crying foul. The CEO compensation packages go well over what is required to attract and keep top talent. Even poor CEO performance is often heftily rewarded. All these excesses come at the expense of the company, its employees, its shareholders, and its stakeholders.

The effectiveness of the board of directors and their ability to govern is a function of corporation's particular ownership structure. In an owner dominated firms the board is marginalized and the owner, in essence controls the corporation. In firms where no dominant shareholder or investor exists, the board of directors must act and protect these shareholders (fiduciary responsibility) at all time. This may sometimes involve firing the CEO, making changes to the corporate structure that are unpopular with management, or

turning down acquisitions because they are too costly. In rare and extreme case, the owner or the controlling shareholder may occupy both key positions in a firm – the CEO and the Chairman of the Board. In such a case members of the board are analogous to a lame duck in politics and are at the will of the owner. Nevertheless, these directors still have responsibilities mandated by law and SEC that they have to fulfill (Kennon, 2008).

Laws and Regulations Affecting CEO Compensation

The CEO compensation reference work would be incomplete without a review and discussion of current and anticipated changes in corporate governance. There is consensus that too many governance regulations and processes were flawed in the past, not necessarily causing, but allowing and often resulting in corporate abuses, including fraud (Davis & Edge, 2004).

The Sarbanes-Oxley Act

The first three years of the new millennium (2000-2002) were disastrous for American business ethics. The unrestrained corporate greed and perceived corporate omnipotence created the conditions and culture in which several large corporate frauds occurred. They involved corporate giants such as Enron, Tyco, WorldCom, and Peregrine. These frauds resulted in over $500 billion in market value declines (Farrell, 2005). The public trust in corporate reporting practices, and ultimately, in financial markets was declining rapidly. Subsequently, enough critical mass was created in public outcry that Congress had to act; and it did. On July 30, 2002 Congress passed the Sarbanes-Oxley Act, which introduced the most far-reaching reforms of American business practices since the Great Depression (Bumiller, 2002). The Act addresses the

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entire corporate reporting supply chain that includes officers, directors, managers, auditors, accountants, security analysts, and legal staff. Furthermore, Sarbanes-Oxley Act set a non-negotiable timeline for compliance.

The Act itself is arranged into eleven general titles. Titles are further subdivided into sections. Each title identifies the actor, while the specific responsibility is spelled out in corresponding sections. As far as corporate compliance is concerned, the most important sections within these titles are 302 (responsibility for financial reports), 401 (accuracy of financial statements), 404 (management assessment of internal controls), 409 (real time disclosures), and 902 (attempts and conspiracies to commit fraud offenses) (Sarbanes-Oxley Act of 2002, 2002).

The Act places certain mandatory obligations and responsibility on key corporate actors. Both, the chief financial officer (CFO) and chief executive officer (CEO), are required to certify each financial statement filed with Stock and Exchange Commission (SEC). Furthermore, the law punishes any executive who coerces, manipulates, influences, and misleads the company auditors. Likewise, the law requires officers to promptly report their trading activity to SEC.

As a result of Sarbanes-Oxley, audit committee must be independent and one member of the committee must be a financial expert. The law gives audit committee added authority, and through it, increased liability. In essence, the intent of the law was to engage the board and its audit committee to a greater degree in monitoring the firm's activity.

In Sarbanes-Oxley, Congress put some requirements on SEC. This agency must issue minimum standards of conduct for company attorneys regarding the reporting of

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violations of security laws and breaches of fiduciary duty from firm's management or officers. Similarly, SEC is tasked with issuing rules and regulations designed to protect securities analysts from retaliation and threats and to ensure their objectivity and independence.

Finally, the Sarbanes-Oxley Act created Public Company Accounting Oversight Board (PCAOB), which effectively ended audit profession's self-regulation. The new board was charged to set the new standards for the profession, monitor and audit the auditors, ensure that there is no conflict of interest between the parties by prohibiting auditing firms in offering any other services to the clients, and to certify and register public accounting firms that audit public corporations (Prentice, 2003).

Through Sarbanes-Oxley Act, Congress took constructive action against corporate fraud. Large in scope, the Act is still not an all-encompassing panacea that will solve all business improprieties. Nonetheless, there are several good reasons for which the Act may be applauded. It minimizes existing conflict of interests between the actors by reducing the self-serving bias. Furthermore, the Act significantly increased already steep penalties on the existing rules and added new ones, equally draconian, in order to deter illegal corporate behavior. Finally, the Sarbanes-Oxley Act sends a message to the business community regarding the law's resolve to establish order and honesty in this domain (Prentice, 2003).

NYSE and NASDAQ Rules

In November 2003, the Securities and Exchange Commission (SEC) approved significant changes to the listing standards of the NYSE and NASDAQ that were intended to enhance corporate governance and bolster investor confidence following a

number of well-publicized corporate failures mentioned in the previous section, among U.S. public corporations. These standards supplement rather than replace, the corporate governance reforms adopted by the Commission and pursuant to the Sarbanes-Oxley Act of 2002 (Reda, Reifer, & Thacher, 2007). The listing of newly-adopted standards is extensive. Below is a partial list of some of the key requirements: (1) corporate boards must be made up of majority of independent directors, (2) the compensation and board nominating committees must be comprised entirely of independent directors, (3) the non-management board directors must participate and be a part of regular executive sessions, (4) the executive sessions to be presided by an independent director, (5) company must publish specific governance guidelines and code of conduct and ethics, and (6) require shareholder approval of stock option plans or grants to officers, directors or CEOs.

In addition, the rules would tighten the definition of director independence, require additional audit committee charter provisions, require approval by stockholders of all equity-based compensation plans, and require that CEOs attest to the accuracy of financial disclosures (Reda, Reifer, & Thacher, 2007).

Latest SEC Rules

In 2006, the SEC unveiled new rules for disclosing and reporting CEO compensation. The new disclosure rules apply to companies that have a fiscal year end of Dec. 15, 2006, or later. These new set of rules go further than ever before in revealing total executive compensation, making transparent previously hard-to-find, or unreported, information such as pension and estimated severance package totals. The new disclosure rules will not only show components of compensation previously hidden but will clarify elements of compensation already disclosed. Thus, the new rules now require companies

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to disclose the present value of accumulated pension benefits, showing the total lump sum amount of money an executive would receive in retirement.

Similarly, firms must disclose any termination agreements that will trigger payment with executives as it relates to the severance benefits. Finally, each compensation item that is not categorized and that exceeds $10,000 now has to be separately identified and quantified in a footnote and listed in column "All Other" on the proxy statement (Trumka, 2010).

Theoretical Underpinnings

Theoretical underpinnings cover the prevailing economic or behavioral paradigms that pertain to corporations and to the executive compensation. They provide remuneration models that are used to set the compensation strategy or to explain the existing CEO pay structure. The scope of inquiry on the subject of CEO compensation is broad, ranging from longitudinal studies to classical statistical methods. The studies were undertaken from the economic, social, political and behavioral perspectives. What have emerged are five bodies of theory, each providing a unique explanation or model of executive compensation. These theories are: neoclassical theory of the firm, managerial theory of the firm, agency theory, tournament theory, and social comparison theory. This section evaluates these dominant contemporary compensation theories that are unique to the CEO compensation, and discuss how these theories are used in establishing executive compensation policies within the U.S. corporations.

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The Neoclassical Theory of the Firm

The neoclassical theory of the firm states that the goal of the firm is to maximize profits, and consequently, shareholders' wealth. Profit maximization is achieved only if one can produce goods at the lowest possible cost. Steiber (1987) suggests that profit maximization model should be used as a standard of efficiency against which all other business endeavors and behaviors can be judged. Furthermore, neoclassical theory's strives to understand price-guided resource allocation. This is in contrast to other economic theories where resource allocation is management-guided. According to the theory, the firm is not central to the transformation of resources. It is a proverbial "black-box", into which resources go in and goods come out, with little attention paid to the actual processes that were used in this transformation. Under perfect competition, the transformation accords with the dictates of known technology and prices. Management's influence on the process is minimal. Neoclassical theory is focused on specialization, not on managed coordination. The theory has no serious treatment of business ownership. This is not surprising in a theory whose core model presumes full knowledge and, therefore, no risk (risk becomes relevant if information is imperfect). The theory relies on internal and external corporate control mechanisms to ensure the rights of the principals and top management. These mechanisms, such as take-over threats, corporate governance schemes, and executive labor market, are used to fulfill and enforce the contracts between the parties. Thus, the incongruence between pay and performance is remedied through the market's self correcting mechanisms. The executive compensation should be determined by marginal productivity - an increase in CEO pay should be proportionate to his/her contribution to the increase in output.

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In the absence of agency problems, all individuals associated with an organization can be instructed to maximize profit or net market value or to minimize costs. Corporate owners (principals) achieve this through a system or rewards and punishment, which closely mimic the market rates, in compensating individuals according to the level of their performance. These rewards, on top of base salary, include bonuses, stock-ownership, and promotions. The punishment - usually the declining compensation - is designed to discipline those that are not working toward the optimal output, and serves as a notice to adopt alternate course of action.

The premise of the neoclassical theory is that there is a positive relation between the firm performance and executive compensation. An underlying assumption is that executives are hired to maximize principals' goals, and that those that perform the best are rewarded the most.

The Managerialist Theory of the Firm

The managerialist theory of the firm foundation lies on the early work of Berle and Means (1932) who wrote that the Marxist view of class relations has been fundamentally and irreversibly undermined over the course of the twentieth century by the reallocation in power and wealth away from owners to managers within an organization. Capitalist business elites derived their power from their personal wealth, in the form of their business assets. Their ownership of business enterprises was the basis of their wealth and power. Managerialist theorists claim that all this changed with the development of large-scale industry, and they hold that ownership in large companies has become increasingly irrelevant to business decision-making. Furthermore, they claim that the firms have grown in size and complexity and have expanded beyond the resources of

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their original owners. Consequently, this required capital to be raised from a much larger number of individuals through the stock exchange and the investment system. Additionally, shareholdings in large companies have been dispersed among ever larger pools of people and, as a result, no individual, family, or group is able to own significant controlling amounts of shares in these large corporations. These changes resulted in separation of company ownership from company control, and ultimately led to the old elite of capitalist owners being replaced by new elite, the managerial controllers (Scott, 1996). Managerial theories of the firm, as developed by Baumol (1962), Marris (1964) and Williamson (1966), claim that managers would seek to maximize their own utility such as salary, perks, power, prestige and security, rather than maximize company's profit.

In regards to executive compensation, the management theory of the firm holds that the primary determinant of CEO pay structure should be the corporate growth, i.e., increasing the size of the corporation. That way the corporation can compete, afford and acquire the best available managerial resources, including the top executives (Roberts, 1959; Dunlop, 1975; Baumol, 1967).

The managerial theory of the firm also recognizes that organizational framework of the firm expands as the firm grows. New levels are created in the corporate hierarchy pyramid. Each level in a pyramid is characterized, among other things, with specific compensation packages.

Simon (1959) argued that executives are able to extract more rewards from larger, hierarchical firms, since the size and structure of these firms allows them to directly develop an appropriate norm pattern of salary differentials (pay bands). Given position in

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the hierarchy and corresponding authority that stemmed from that position, salary differences among top executives become a function of the number of executive levels under them - the greater the number of organizational levels, the higher the pay at the top.

Growth is often accompanied by diversification, complexity, vertical integration, and more elaborate organizational structure. Since compensation plans are based on the amount of control that the top executive exerts over the firm, managerialists largely support the value of growth and expansion. They assert that a close association exists between firm size and managerial compensation. The top management is virtually in total control of the decision-making process. Therefore, it is reasonable to expect that these executives should be compensated more substantially for the added complexities of their jobs. Indeed, the research by Baumol (1967) and Marris (1963) confirmed that executives' primary goals were company growth and expansion when their remuneration was linked to these specific determinants. Increasing sales or corporate diversification through mergers and acquisitions are therefore linked to higher pay. Executives are not paid to maximize shareholder interests since there is no link between compensation and a firm's profitability (Loomis, 1982).

Power and prestige derived from running large and diversified firms are often added reasons for CEO to favor enlarging the company and to set further expansion as his/her paramount objective. Without being forced to maximize profits by the internal processes of shareholder control, or by the external constraints of the marketplace, CEOs are increasingly free to select and pursue their own goals (example, corporate citizenship).

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Economist, such as Zeitlin (1974), who does not adhere to the managerialist theory, argues that while it is true that personal shareholdings have, indeed, become a less important feature of large scale business enterprise, it is financial institutions, not propertyless managers that have succeeded them and yield real business power. He sees managers in today's corporation as referees, making decisions between competing interests in the firm such as shareholders, employees, consumers, and society at large.

Agency Theory

Typically associated with the work of Michael Jensen and William Meckling who in early 1970s defined, tested and formalized the theory, the underlying agency problems in corporate governance have roots that go much deeper and can be traced all the way back to Adam Smith and the emergence of modern economics and free-market theory. Smith expressed concern that directors, who manage other people's money, will not do it with the same degree of vigilance and diligence as they would if they watched over their own money (cited in Jensen & Meckling, 1976, p.35). Berle and Means were the first researchers in the twentieth century to formally examine the agency problems in modern corporations. They first identified, and then addressed in great detail, the special relationship that existed between the owners and top managers of large, public corporations. Specifically, they described the changes in the structure of the corporation, where the principal property owners surrendered or exchanged their wealth to those in control (agents) and consequently, become simply the recipients of the wages of capital (Berle and Means, 1932, 2). The final formative period for the agency theory happened in the late 1960s and early 1970s. During those times economists such as Wilson (1968) and Arrow (1971), investigated risk bearing and risk sharing among individuals and groups,

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respectively. Their work focused on the risk-sharing phenomena and problems that arise when collaborates' attitudes toward risk diverge. The proponents of the Agency theory, namely Jensen and Meckling (1976) and Ross (1973), expanded on this risk-sharing literature to add other agency problems such as different goals and different division of labor that frequently arises among the partners.

The fundamental basis of the Agency theory lies in the contractual view of the firm. The theory is directed at and it addresses the agency relationship in which one party, the owner or principal (stockholder), delegates work to another, an agent (or in this particular case, the CEO), who in turn takes action on behalf of a principal. Often the agent has better information on how his/her actions affect outcomes than the principal. Furthermore, the principal in a large, complex corporation lacks the resources, know-how and mechanisms to monitor the agent. Consequently, the interests, goals and actions between the two parties diverge. The theory is supposed to resolve two problems that can occur in agency relationship: (1) the conflict in the desires or goals between the agent and the principals, and (2) risk sharing, which arises when an agent and the principal have different perceptions and attitudes toward that risk (Eisenhardt, 1989).

Modern agency theory has evolved along two lines: positivist and principal-agent. Both dichotomous branches share a common unit of analysis such as the contract between the agent and the principal, and most of common assumptions about the people, organizations, and information. They differ in style, mathematical rigor, and dependent variable. Positivist research has focused almost exclusively on the special case of the Board of Directors/CEO relationship in the large public corporations. In contrast, the principal-agent theory has broader focus. In addition to the corporate governance, the

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theory has found relevance in accounting, finance, political science, marketing and sociology. This branch of the agency theory is more theoretical, and strives toward contract optimization between the agent and the owner (Eisenhardt, 1989).

The executive compensation model based on the agency theory seeks to commonize the agent's goals to those of principal's through incentive contracts. The premise is that closer the agent's incentives are aligned to the efforts, the greater the efforts will be, and consequently, those efforts would translate in greater outcomes of the corporation, and ultimately, to rewards for the principals. It is the mix of the incentives rather than the absolute amounts that is paramount in the CEO compensation structure (Jensen & Murphy, 1990). The mix is predominantly based on the variable, nonrecurring incentives such as bonus pay and /or stock options that are added on top of base salary. This structure tends to more closely link CEO compensation to company's performance (Grossman, 1995). Currently, stock options comprise over 50% of CEO's total compensation mix (Murphy, 2002). When the risks are higher, managers seek greater non-incentive proportion in their total compensation (Antle & Smith, 1985). Most of the studies find mild positive correlation between the CEO compensation levels and company performance (Murphy, 1985; Abowd, (1990); Mehran, 1995). That correlation is enhanced when the pay mix is comprised of higher percentages of variable incentives, such as stock options or stock grants.

Compensation plans do influence executive behavior, and through it, company performance. They also add significant costs to the corporation (Noe, Hollenbeck, Gerhart, & Wright, 2003). Jensen and Mecking (1976) claim that there is equilibrium

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point between the amount of incentives offered to the agent and marginal benefits to the firm. Consequently, it is board of directors' responsibility to set it, gauge it, and update it.

Tournament Theory

Tournament theory was postulated by economists Lazear (1992) and Rosen (1986) in their attempt to align microeconomic theory with observed reality as it related to U.S. corporations and executive salary structure.

The theory describes certain situations where compensation differences are based not on marginal productivity - those that add more valuable contributions to the outputs are paid more than those that contribute less - but instead based upon relative differences in performance between the executives. The level of a one's skill is less important than how he/she ranks relative to others with whom he/she competes. Individuals are frequently promoted not on merit or for being the best at their jobs but for being only better than their rivals (O'Reilly et al., 1988). It is an inward-looking process resembling a lottery where managers pool part of their expected compensation to create a prize that would go to the best one. Using sport of tennis as an analogy, a tennis champion does not have to be so much better than the other finalist. The champion has to be just good enough to beat the other finalist - by a single point is sufficient – to claim the grand prize, which is often twice the amount of the second place prize (Hartford, 2006).

Another unique feature of the tournament theory is that it eliminates external market and industry factors, of which managers have no control, from consideration when evaluating performance.

To further attract and stimulate "competitors" the theory postulates steep salary gradient between the pay levels. The compensation hierarchy often resembles tournament

structure, with disproportionally higher rewards toward the top. The essence of the tournament theory argument is that this unequal and significantly higher pay should serve something of a prize that makes the higher position attractive and which motivates individuals to go for it and to try to achieve it (Shaughnessy, 1998).

The critics of the theory say that when rewards are used as the only motivational factor, most individuals become less efficient. This is especially true when the rewards are unfairly decided (Kohn, 1998). Even if it did work, it would only apply to the selected few that have a reasonable shot at getting the job. The vast majority would actually be demoralized since they have no chance of winning the prize (they are not in the tournament) regardless of how well they perform.

The Social Comparison Theory

Social comparison theory provides yet another model or criterion for explaining CEO compensation. In essence, the theory suggests that the compensation levels of those that do evaluating and pay-setting may play a role in determining the pay levels of the one being evaluated. To better understand executive pay, in addition to the economic factors and labor market dynamics, we need to look at the social and psychological settings in which decisions about that pay are made. Decisions about the amount and mix of CEO remuneration are made by a compensation committee of a corporation's board of directors. Typically, the process starts by committee members reviewing the benchmark report on executive compensation in particular industry or market sector, compiled by outside consulting firm who, needless to say, was hired by the CEO. Benchmark usually implies comparison standard done on those deemed "best in class." This report and its recommendations are used only for reference by the committee. The committee's

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discussion on how much the CEO should be paid is often driven by peer group comparison. The outside board members who typically comprise the compensation committee are, more often than not, chief executives of another company in related industry. Hence, their best gauge for what a CEO should be paid is their own compensation package. According to O'Reilly, Mein & Crystal (1988, p.261), this peer-group comparison "sets the first number of the pay amount and then you adjust off that." Furthermore, same researchers found that - after controlling all other compensation factors such as company size, CEO performance and tenure – the more the compensation committee members were paid, the more the CEO would make. Specifically, they found that CEO could get equivalent pay raise if he/she doubled the company's return on equity, or if he/she appointed someone on the compensation committee who made $100,000 more annually in salary.

Reciprocity and a feeling of indebtedness to the CEO also play strongly in determining the top executive pay. Majority of the outside board directors that make up the compensation committees were, at one time or another, appointed to or recommended for those plum board positions by the CEO. This theory has empirical support from Gomez-Mejia & Wiseman (1997) who found that those board members who were appointed by the existing CEO were on the average 12 percent more generous in their salary recommendation and approval for that particular CEO then the committee members who did not owe their position to that CEO.

Social status of the CEO relative to the social status of the compensation committee is often a factor. Social status here refers to actions and characteristics of an individual such as the education level, elite schools attended, noted accomplishment in

the community, membership in various social organizations, and pedigree. With all other performance determinants being equal, the studies show (O'Reilly et al., 1988) that if CEO was perceived as being of higher social status than the compensation committee members, he/she tended to be compensated higher. The opposite was also found to be true.

Studies on CEO Compensation and Company Performance

As seen from Figure 3 on the following page, the last quarter of a century has seen an explosion in academic research on executive compensation. From one to two studies per year prior to 1985, the number of studies has grown almost exponentially since then. Early studies primarily focus on executive pay and company size and/or company profits. They included pioneering work by Roberts (1956), Baumol (1962), Ciscel and Carroll (1980), and Lewellen and Huntsman (1970).

Interestingly, the amount of research seems to increase whenever there is a spike in overall CEO compensation. Likewise, academic activity is more pronounced during economic downturns rather than during economic booms. The heightened interest in academic research parallels popular media coverage of the subject and the regulative activity of the government. This seems to reinforce the general feeling that during "good economic times" few care how much the CEOs make (Bebchuk & Fried, 2004).

The published literature on the CEO compensation and company performance has been immense in both, scope and content. It spanned economics, accounting, finance, strategy, law, organizational behavior, and several other businesses, social and scientific disciplines and fields of study. Table 6 lists most of the key studies and at the same time it gives the flavor of the magnitude of the topic.

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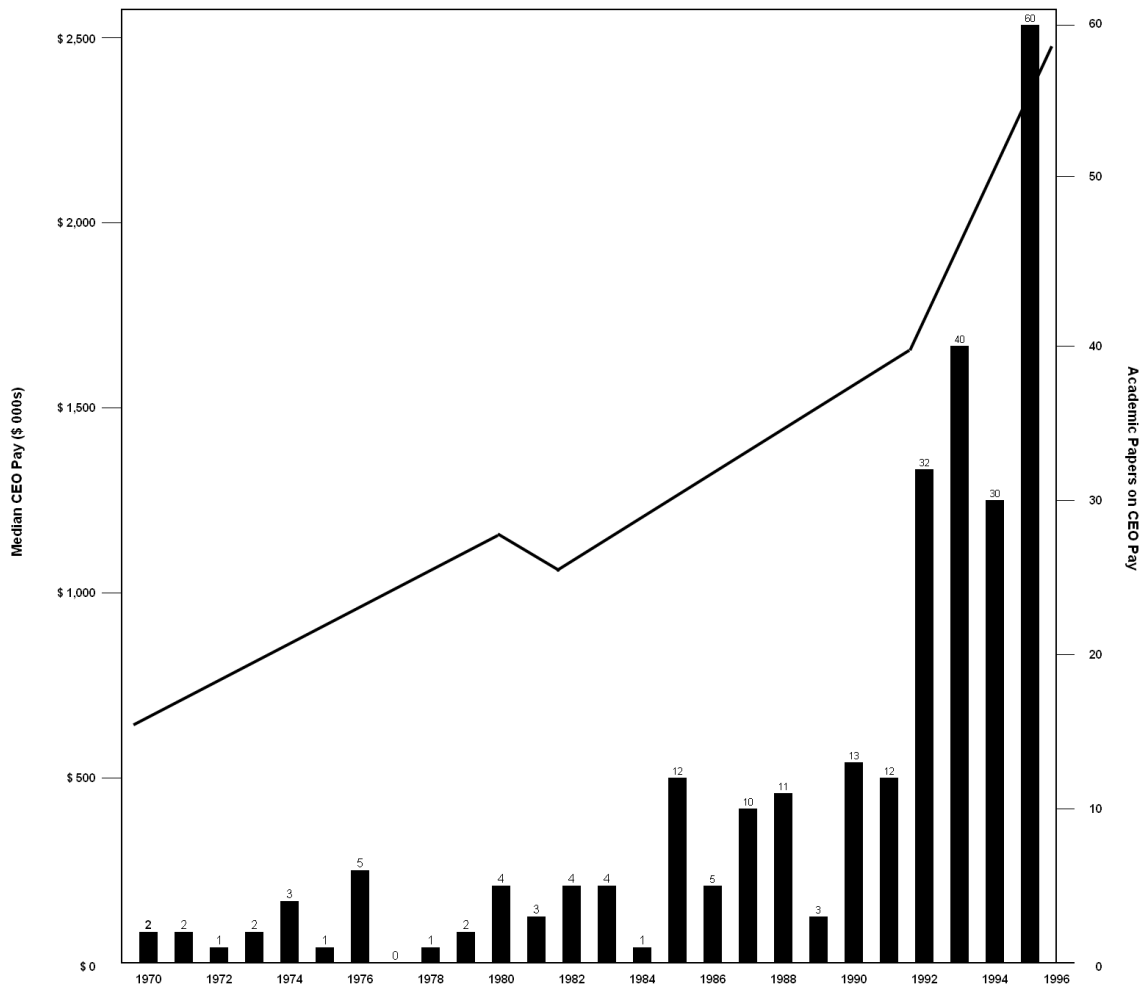
Figure 3. Number of academic papers published on CEO compensation

Note: Adapted from "*Executive compensation*" by K. J. Murphy (1999). Handbook of Labor Economics. Amsterdam: North Holland, p. 76.

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Table 6. CEO Compensation Factors and Corresponding Research

Factor	Studies on the Topic
Agency Theory	Bertrand & Mullainathan (2000), Elston & Goldberg (2001), Bebchuk & Fried (2003), Wright & Kroll (2002), Tosi, Katz & Mejia (1997), Banning & Tosi (1999), Banning & Tosi (1997), Tosi, Katz & Mejia (1997), Goldberg & Idson (1995), Roth & O'Donnell (1996), Parks & Cohnlon (1995), Eisenhardt (1988), Garen (1994), Jones & Butler (1992), Eisenhardt (1989), Tosi & Mejia (1989)
Tournament	Main & Crystal (1988), Rajagopalan & Finkelstein (1992), Singh & Harianto (1989)
Managerial Discretion	Finkelstein & Boyd (1998), Hambrick & Abrahamson (1995), Salanick & Pfeffer (1977), Finkelstein & Hambrick (1990), Hambrick & Finkelstein (1987), Haleblian & Finkelstein (1993), Tosi & Werner (1995), Carpenter & Golden (1997)
Board of Director Control	Daily, Johnson, Ellstrand & Dalton (1998), Bebchunk, Fried & Walker (2002), Denis & McConnell (2003), Hallock (2002), Anderson & Bizjak (2001), Dykes (2003), Westphal (1997), Barkema (1996), Lorsch (1995), Westphal & Zajac (1995), Boyd (1993), Baysinger & Hoskesson (1990), Hermalin & Weisbach (1988), Pfeffer (1972)
Firm Performance	Mehdian & Vogel (2003), Young & Buchholtz (2002), Boschen, Duru, Gordon & Smith (2002), Garvey & Milbourn (2003), Eldenburg & Krishnan (2003), Core, Guay & Verrecchia (2003), Sigler (2003), Gregoriou & Rouah (2002), Prakash, Sethi & Namiki (1986), Murphy (1985), Antle & Smith (1986), Gomez-Mejia, Tosi, Hinkon (1987), Chaubey & Kulkarni (1988), Leonard (1990), Abowd (1990), Dillard & Fisher (1990), Hotchkiss (1990), Aupperle, Figler & Lutz (1991), Bromiley (1991), Gomez-Mejia (1992), Rhoades, Rechner & Sundaramurthy (1998), Moskowitz (1998), MacGuire & Dow (1998), Tosi & Gomez-Mejia (1994), Hill & Stevens (1995), Leonard (1994), Veliyath (1995), Rajagopalan (1996), Prasad (1974), Redling (1981), Greenberg & Leventhal (1976), Heller (1995), Andrews (1996)
Incentives	Lindrner (1998), Wallace Jr. (1973), Zajac & Westphal (1994), Delacroix & Saudagaran (1991), Lewis (1980), Harris & Raviv (1979), Greenberg & Liebman (1990), Jensen & Murphy (1990), Lewellen, Loderer & Martin (1987), Riordan & Sappington (1987), Winn & Shoenhair (1988), Baker, Jensen & Murphy (1988), Nalebuff & Stigllitz (1983), Weitzman (1980)"
Shareholder Wealth	Santerre & Neun (1986), Shen & Cannella Jr. (1997), Rumelt (1991), Brickly, Bhagat & Lease (1984)
Risk Sharing	Bloom & Milkovich (1998), Aggarwal & Samwick (2003), Miller, Wiseman & Gomez-Mejia (2002)Shavell (1979), Beatty & Zajac (1994), Gossman (1995), Gaver & Gaver (1995), Gaver & Gaver (1993), Reinganum (1985), Kerr & Bettis (1987)
Profit	Antgle & Smith (1985), Gomez-Mejia (1994), Gilson & Vetrsuypens (1993), Roberts (1959)
Organization Structure	Lambert, Larcker & Weigelt (1993), Balkin & Gomez-Mejia (1990), Venkatraman & Grant (1996), Hansen & Wernerfelt (1989), Zajac (1988), Pearce, Stevenson & Perry (1985), Eisenhardt (1985), Pfeffer (1981), Gupta (1980), Mahoney (1979), Beyer & Trice (1979), Galbraith (1974)

Note: Adapted from "*Influences of discretion in chief executive officer compensation in international corporations*" by K. N. Granberry (2005). DBA dissertation, Nova Southeastern University, p. 41.

The exponential increase in CEO research is only rivaled by the increases in CEO compensation. In 1982, CEOs were paid 82 times the average of blue-collar workers; in 2004, they were paid more than 400 times those salaries. The trend continued into the next two years. In 2006, the average CEO of a Standard & Poor's 500 company received $15.06 million in total compensation (Hodgson & Ruel, 2008). This represented an 11.5 percent increase in CEO pay over 2005 (Daines, 2005b).

Executives at the top U.S.-based auto companies also received record compensation packages in 2006, a year in which two-thirds of their companies failed to post profits (Collier, 2006).

Frydman and Saks (2005) offered a long-term historical perspective on the escalating executive compensation. They studied CEO compensation in large firms from 1936 to 2003. They found that the structure of CEO pay has undergone a steady transformation during the past five decades. The stock options and long-term incentives have steadily increased in overall compensation mix over that time. In order to explain these trends in the level and structure of pay, the researchers focused on the impact of tax policy and the growth in the market value of firms. The study's conclusion was that the progressive taxation in the past restrained CEO compensation from keeping pace with the firm size in terms of market compensation. Furthermore, the study offered an excellent summary of CEO compensation over time, normalized to year 2000 dollars. The results are presented in Table 7. Table 8 puts those amounts in perspective by comparing it to the pay multiples of average workers.

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Table 7.   Average Real Value of CEO Total Compensation

Period	(In Millions of Yr 2000 $$)				
	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
1936 -1939	.36	.52	.84	1.23	1.74
1940 – 1945	.41	.58	.81	1.13	1.61
1946 -1949	.36	.52	.73	1.01	1.53
1950 -1959	.39	.56	.76	1.09	1.60
1960 -1969	.46	.61	.84	1.20	1.69
1970 -1979	.48	.66	.95	1.39	1.98
1980 -1989	.60	.90	1.42	2.12	3.12
1990 -1999	.99	1.48	2.60	4.73	8.64
2000 -2003	1.23	2.07	4.25	9.84	20.4

Note: Adapted from "Historical trends in executive compensation 1936-2003" by C. Frydman and R. E. Saks. (2005). *Finance and Economic Discussion Series*, p. 44.

Table 8. Total CEO Compensation Relative to Average Wages

Period	Ratio of CEO Compensation to Average Workers	
	Level	Growth Rate
1936 -1939	82	--
1940 – 1945	66	-3.9
1946 -1949	49	-6.4
1950 -1959	47	-0.4
1960 -1969	39	-1.9
1970 -1979	40	0.3
1980 -1989	69	5.6
1990 -1999	187	10.4
2000 -2003	367	7.0

Note: Adapted from "Historical trends in executive compensation 1936-2003" by C. Frydman and R. E. Saks. (2005). *Finance and Economic Discussion Series*, p. 42.

Present levels of discourse on the topic of CEO compensation and firm performance was further exacerbated by the perception of a decoupling of executive pay and stockholder return. While there has been a record growth in CEO's total compensation, there has been a steady decline in shareholder returns. For example, from 1999 to 2003, the Standard & Poor 500 Index declined 6.7% while CEO compensation grew at an annual rate of 5.6% (Wall Street Journal, 2004). Yet, most of Americans are not envious of CEO pay, and they do not find it difficult to support high executive pay provided that such pay reflects firm performance. But what troubles most Americans is the growing lack of accountability at the top and the fear that, because of this, the U.S. corporations are loosing their competitive edge, both domestically and globally. Profitable Japanese companies like Nissan and Toyota frequently levy subtle accusations that U.S. car companies' competitiveness is hindered by its excessive executive compensation practices (Murphy, 1995).

Traditional executive pay practices that are stirring today's controversy were established in the 1960s and 1970s. They were designed for an economy that was characterized by continuous and steady growth in large corporations. The economy and the economic forces have changed since. The old pay-setting practices fail to provide meaningful and appropriate incentives in this new economic environment (Hall & Liebman, 1998).

Today corporations are rapidly modifying and/or replacing their old pay-setting practices and aligning them to the current conditions. This was further hastened by the new legislative mandates which required greater corporate transparency and accountability to shareholders. The increased attention to corporate governance by the

legislators has brought under the spotlight once again the compensation practices of senior executives and the need of linking of these practices to firm performance (Sottile, 2005).

Thirty years ago Mahoney (1979) pointed out that no comprehensive theory of employee compensation exists - only segmented theories or models that focus on specific aspects of compensation and behavior, and each approach answers a specific question that is unique to the specific approach. What has changes since then is that we now have even more segmented approaches (Bloom & Milkovich, 1998).

Studies on Firm Size and Compensation

This section focuses on the literature related to the firm size and its effect on the CEO compensation design. Of all the independent variables typically investigated when performing top executive remuneration research, firm size seems to be the only statistically significant predictor of CEO pay level and mix. Consequently, researchers often use it as a control variable when designing CEO compensation studies.

Simon (1975) is credited with performing seminal research on the relationship CEO compensation and firm size. Rather than focusing his assumptions and explanations on the economic parameters of compensation (pay equals marginal contribution), Simon presented the sociological underpinnings for the relationship between firm size and executive pay. He proposed a theory that predicted a positive correlation between the firm's size and CEO pay. Since then, researchers have overwhelmingly validated Simon's theory - e.g., Jensen and Murphy (1990), Core, Holthausen and Larcker (1999), and Cyert, Kang and Kumar (2002) among others - regardless of the parameter of size

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used. Typically, size is defined in terms of number of employees, assets, sales, or market capitalization, with later two being used most frequently.

On of the earlier studies on CEO compensation using sales as the measure of company size was conducted by Ciscel (1974). The study relied on the secondary data from *Forbes* and *Fortune* and zeroed in on the 250 largest corporations in United States. Through series of simple correlations, the study found that executives' compensation is closely tied to the growth and size of the mature corporations.

In 1981 Agarwal designed a mixed methods study to investigate relations between firm size and executive compensation in the insurance industry. The sample size consisted of 168 companies. The independent variables were job complexity, human capital, and firm's ability to pay; the dependent variable was cash-based compensation. Through survey and secondary data Agarwal found that as job complexity increased so did the executive compensation. In the same study positive correlation was found between compensation and employer's ability to pay. Lastly, executive compensation was positively impacted by work experience. Surprisingly, education had no impact on the executive levels of pay.

Gomez-Mejia, Tosi, and Hinklin (1987) looked at ownership structure in conjunction to company size and the effects on the executive pay. The firm's size was measured in terms of sales and net profit. Their sample was made up of 71 randomly selected manufacturing firms. The researchers found that executives in externally controlled companies (boards) received greater levels of compensation for equivalent performance, and lower levels for scale of operations, than their counterparts in firms without dominant stockholders.

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Mallette, Middlemist, and Hopkins (1995) investigated the relationship between company size, this time based on market valuation, and executive cash compensation, made up of base salary and bonus. They relied on the secondary data from the data aggregator and the proxy statements filed with SEC by the companies. The key result of the study was that company size is a significant predictor of executive cash compensation, i.e., the larger companies tended to pay their chief executive more than the smaller firms.

Firms can grow in many different ways. Besides the most obvious, the increase in sales, firms grow by issuing new equity to finance acquisitions and mergers and capital investments or by avoiding dividends or stock repurchases. Bebchuk and Grinstein (2005b) studied one of the above scenarios – the relations between CEO compensation and their prior performance and firm-expansion decision. Their study relied on ExecuComp database and the dataset that encompassed all the S&P 500, Mid-cap 400, and Small-Cap 600 companies. Together, this amounted to more than 80% of the total market capitalization of U.S. public firms. The key findings were that CEO compensation is positively correlated with the net amount of shares issued. Furthermore, the study found that past stock returns are correlated with current CEO pay only to the extent that they contribute to expanding firm size. These links between current CEO compensation and past decisions to expand the firm provides CEOs with incentives to issue new shares, or avoid distributions, even at the expense of shareholder returns.

Organizational Performance Literature

Measures of organizational performance are primarily rooted in economic and market factors. While some researchers, such as McGahan (1999), argued that there is no single best measure to gauge the performance of the top executive, others such as Kaplan and Norton (1992) observed that a mix of different measures yields the best understanding of this complex relationship. Regardless of the number of performance indicators used, there is still no consensus in the academia as to the accepted performance criteria. Scholars have used different definitions of company performance when investigating the relationship between CEO pay and firm performance. Nevertheless, over time, three performance groupings have emerged as the dominant criteria of firm performance. These are stockholders equity (book value of the firm), firm's stock performance (return on common stock and change in market value), and profitability indicators made up of accounting factors such as profits, earnings per share (EPS), and return on investment or assets.

Research specifically designed to seek the correlation between stockholders equity and CEO performance has produced mixed results. Most studies found no relationship or, at best, very mild positive relationship.

If one is to believe the agency theory, CEOs have every reason to believe that they should expect significant and proportional rewards based on the financial returns to the stockholders, i.e., rise in the stock price. However, several key studies such as Kerr and Bettis (1987), Hill and Phan (1991), and Gilson and Vetsuypens (1993), that investigated this link came up short – their results were inconclusive or they found no statistically significant relationships.

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Murthy and Salter (1975) relied on a sample of 53 CEOs in order to test the compensation practices as they related to firm's organizational strategy. Their goal was to discover how differences in various corporate profits affected executive pay characteristics. The researchers found that 35 executives showed no significant relationship between their total pay and their firm's return on equity. Furthermore, 21 executive exhibited no relationship when gauged against the profitability parameter of EPS.

O'Reilly, Main and Crystal (1988) studied the three models of pay-setting and pay design for the top executives. These models were marginal product theory, tournament theory, and the social comparison theory within the external board's directors. Data was collected from 105 firms then regresses onto ROE, sales, size, and assets, using CEO compensation as dependent variable.

Study's findings showed that sales only had significant impact on CEO compensation. Other performance determinants had small negative coefficients (ROA, firm size), or were positive but insignificant (ROE). Importantly, the study found positive relationship between the CEO pay and the pay of the board of directors, for a range of specifications. These findings lead to the conclusion that CEO pay setting is mostly established through social comparison.

Leonard (1990) studied the effects of executive compensation mix and its effect on performance in 439 large U.S. firms. The study took place between 1981 and 1985.

Most important finding of the study was that annual bonuses are positively associated with higher average return on equity (ROE). However, bonuses had no impact on the changes in ROE. Other key findings were that, on one hand, ROE is typically

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lower in the firms with the long-term incentive plans. On the other hand, these firms tended to have higher growth. Furthermore, lower ROE and higher growth were found in firms characterized by high degree of hierarchical structure.

The variance of executive pay within the company in relations to firm's subsequent change in return on equity (ROE) showed no significant correlation. Thus, firm performance was not improved through higher equity.

In a large study that involved 1295 chief executives Jensen and Murphy (1990) studied the impact of firm's net income (profit) on the CEO compensation, which in this particular study was defined as a composite of salary and bonus. Their results indicated that CEO pay levels do correlate with the changes in accounting profits and with the total company sales. Furthermore, they found no relations between the CEO pay and market and industry performance.

Similar to Jensen and Murphy, Miller (1995) also looked at the firm performance using firm profit as the predictor of CEO compensation. The researcher relied on secondary data obtained from *Forbes*, which encompassed over 30 industry groups and spanned a period of seven years. Miller's findings were that there were no statistically significant relationships between the net company profits and CEO pay.

Main (1992) was interested in the extent to which top executive's compensation was tied to firm's performance. The study attempted to use the sensitivity and effect of this interplay to predict future performances. Unfortunately, no significant correlation between pay-performance sensitivity and subsequent firm performance was found. Nevertheless, the study was able to find the predictors for the shareholder wealth and for the increase in sales based on CEO pay.

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Main, O'Reilly and Wade (1993), designed a study to test for the presence of tournament theory predictions on the reward structure in over 200 large corporations through the survey of CEO compensation packages in those firms. The key findings of the study were: (1) the percentage of pay increase to promotion rises sharply as one moves up the management structure or executive hierarchy. The researcher found this phenomena consistent with the tournament theory, (2) positive relationship was found between the firm performance and both, average executive pay and variance in executive pay when return on assets (ROA) was used as performance criterion.

Veliyath and Bishop (1995) investigated the return on equity in relations to CEO compensation in one industry sector, namely publicly traded pharmaceutical firms. The study found positive correlation between pay and performance. Firms with high returns on equity tend to reward their top executives with higher cash compensation. Moreover, these firms exhibited greater generosity to granting stock options to their CEOs.

Akhigbe, Madura, and Tucker (1995) examined the relationship between several accounting-based measures of firm performance and CEO compensation. Their sample (350) was drawn from the population of 800 publicly traded firms reported in *Forbes*. The study's results were mixed – return on assets (ROA) was significant and positively correlated; return on equity (ROE) and EPS were statistically insignificant and did not correlate. This lead the researchers to conclude that there is no link, or mild link at best, between corporate performance and CEO pay.

Madura, Martin, and Jessel (1996) performed similar study except their population of interest was a pool of small, publicly traded companies. The predictors investigated were the averaged return on equity and present return on equity. The

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researchers found no significant association between the firms' performance and CEO pay. These results were in contrast to previous study done by Jensen and Murphy (1990).

In a more recent study Boschen, Duru, Gordon, and Smith (2003) investigated the long-run effects of good firm's accounting performance on CEO pay. They found that good firm performance is initially associated with higher CEO compensation, but the rewards are short-lived. The initial positive effect soon reverses and CEO pay either stagnates or decreases in later years. Thus, the CEO's net gain from the good accounting performance is zero in a long run. On the other hand, the study found, that good stock price performance had a much more significant and longer-lasting affect on the CEO pay.

Finally there are some studies that are only peripherally related to the firm performance and which have impact on the CEO compensation.

Murphy (1986) undertook a huge 10-year long study of 992 large U.S. companies examining the compensation of 1488 CEOs to test whether learning or incentives (agency theory) is the appropriate underlying economic theory in a multi period and vastly different environment.

The tenure with the organization was classified into three progressively higher bands. The study included only salary and bonus as the compensation mix; no stock options or other benefits were considered. Key results were somewhat surprising - earnings growth decreases with experience.

Similarly, there is a positive and statistically significant link between compensation and firm performance. However, this relationship declines with tenure.

Lambert, Larcker and Weigelt (1993) looked at the compensation structure in 300 large, for-profit organizations. They identified the management structures of the firms

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that were largely split according to the four hierarchical levels. Levels ranged in rank, pay and complexity from plant manager to corporate CEO. Pay data was collected for managers at each level of management hierarchy. This data, besides base pay and annual bonus, included stock options and stock grants. They found that the pay band spreads that characterized each level increased up the hierarchy. Results were significant since they provide limited support for tournament theory.

Literature on CEO Compensation in Automotive Industry

The academic research on the CEO compensation and firm performance in automotive sector is scarce at best, to virtually non-existent. Yet local newspapers and business magazines are full of articles dealing with the dismal conditions of the industry, external and internal contingencies that plague the companies in this particular sector, bankruptcies, takeovers, Chapter 11 filings, and bleak predictions for the future. These articles' intent is to inform on the conditions, without any inferential data analysis and hypothesis testing to give it academic validity. Nevertheless, they address company performance in general terms, and list CEO compensation for a particular time period in relative terms. They, in essence, serve as beacons for the future academic studies.

The negative side of the popular media reporting is that it tends to focus extensively only on the Big Three companies, and marginalizes the other companies in this sector.

General Motors CEO's total compensation in 2006 was 9.57 million. In 2007 it rose 64 percent to about $15.7 million. In both years the excessive compensation was driven by option grants. GM paid its top executive $1.6 million in salary on top of $1.8

million in bonus compensation (non-equity incentive) and nearly $0.7 million in perquisites or other rewards, which included such items as insurance benefits, personal protection and security, and airplane expenses. During this time GM reported a record $39 billion net loss (Bailey, 2007). The irony is that GM's CEO has spent an entire career watching his employer lose market share, shareholder value and money.

Ford Motor Co reported that its CEO had earned more than $22 million in 2007. At the same time the company had posted a $2.7 billion loss (Bailey, 2007). If these numbers seem ridiculous, they were worse in 2006. That year Ford's CEO realized total compensation worth $39.1 million, without earning a dollar for the company (Collier, 2006).

The Big Three are not alone where executive pay tends to defy gravity. In 2003 for example, industries 32 top executives representing automakers, suppliers, and dealer groups, received a median compensation worth $2.6 million. This represented an increase of 19 percent from the prior year. The median bonus for the group was $830,956, in itself up 185 percent from the previous year (Sedgwick, 2003).

Other examples, Magna's CEO took home $40.1 million in 2007; American Axle's CEO banked $10.1 in the same year; Visteon's CEO earned $10.8 million. What these firms have in common today is the fact that they are in a fierce battle to survive and not going "belly up."

With such a shaky CEO performance it is logical to question why automotive executives' compensation remains so high. The companies claim they base it on supply and demand, i.e., many large firms require top notch talent and the market cannot supply it. Furthermore, they justify the high compensation for those key positions based on the

high risk involved. While this explanation may be partially true, it is not the whole thing. Syed (2008) cites that it is the board of directors and the social comparison theory that is the main culprit of the escalating CEO pay in this sector. Many CEOs have direct or significant influence on the board composition. These board members are then given the power to design and set the CEO pay. Additionally, in this intertwined sector, there are number of CEOs who sit on other firm's board. They benchmark each other (social comparison theory), and consequently, design compensation packages in similar, yet ever escalating fashion.

CHAPTER 3. METHODOLOGY

Statement of the Purpose

The objective of this research was to examine and analyze the impact of the company's performance on the CEO's compensation in a specific industry sector. The target sector (population) of this study was the automotive industry at a specific point in time. The time frames selected for the study were years 2006 and 2007.

Additional objective of this analysis was to look at the pay-setting design and pay-setting mechanisms, namely pay levels and pay mix, and evaluate which determinants of firm performance have the highest bearing on the CEO rewards.

Research Questions

The research questions in Table 9, p. 76, state the researcher's reason for doing the study. As is often the case in many of the academic research undertakings, these research questions involved making tradeoffs between rigor and practicality. Consequently, the research questions were formulated to meet the feasibility criteria in terms of availability of data, data relevancy, time constraints, and research cost. Furthermore, the attempt was made to devise the questions that are interesting in scope, novel in a way as to lead to new findings by confirming, refuting, or extending previous findings, and lastly, that are relevant - both from an academic perspective as well as practical perspective - to the current state of affairs in the economy and the automotive sector in particular.

Table 9. Research Questions

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1. Is there a relationship between the CEO's compensation and company size?

2. Is there a positive relationship between the company's performance and the chief executive officer's (CEO) compensation when tested against the firm's economic performance indicators?

3. Is non-performance, or CEOs' failure, being rewarded?

4. Which components of the CEO's pay mix, if any, are significant when evaluated against the firm's economic performance indicators?

Hypotheses

Hypothesis describes in operational terms exactly what the researcher think will happen in the study. Hypothesis serves to refine and express the general research question into very specific variables that researcher can measure and test in a consistent and clear way. More specifically, hypothesis is a statement of the relationships among the variables that are intended to be studied (Gay, 1996).

Hypotheses have theoretical underpinnings and partially rely on what previous researchers have found. This historical and methodological foundation served to make hypotheses scientifically reasonable predictions.

The hypotheses, both null and alternative, which were explicitly stated in Chapter 1, are summarized in Table 10, p.77.

Table 10. Summary of Null and Alternative Hypotheses

Null Hypotheses	Alternative Hypotheses
$H_0 1$: There is no significant relationship between the firm size and CEO total compensation in the automotive industry.	$H_A 1$: There is significant positive linear relationship between the company size and total CEO compensation in the automotive industry.
$H_0 2$: There is no significant linear relationship between firms's earning per share and firm's CEO total compensation in the automotive industry sector.	$H_A 2$: There is statistically significant positive linear relationship between the firm's earnings per share and total CEO compensation in the automotive industry sector.
$H_0 3$: There is no significant linear relationship between firm's return on assets and firm's CEO total compensation in the automotive industry sector.	$H_A 3$: There is significant linear relationship between firm's return on assets (ROA) and firm's CEO total compensation in the automotive industry sector.
$H_0 4$: There is no significant linear relationship between firm's stockholder's equity and firm's CEO total compensation in the automotive industry sector.	$H_A 4$: There is significant linear relationship between firm's stockholders' equity and firm's CEO total compensation in the automotive industry sector.
$H_0 5$: There is no significant relationship between the stock price of the firm and CEO's total compensation levels in the automotive industry sector.	$H_A 5$: There is significant linear relationship between the stock price of the firm and CEO's total compensation levels in the automotive industry sector.

Research Design

Scientific research is a discipline comprised of both a methodology and an epistemology. To most people scientific research is just a method of acquiring information, the familiar list of observing, hypothesizing, testing, and generalizing. While this process is the methodology of science, it is not all there is to science. Science, and subsequent scientific research, is a philosophical system, a knowledge protocol, a way to think about the world and it is a way that is different from other approaches to thinking about the world and about reality (Arbnor & Bjerke, 1997).

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This research operative paradigm is based on positivism, a philosophical construct based on an objectivist epistemology. The principal tenets of positivism hold that knowledge can only come from affirmation of theories through strict scientific method. The positivistic approach requires a quantitative analysis as the research methodology (Yeganeh, Su, Virgile, & Chrysostome, 2004).

Hence, the methodological approach used in this study was a quantitative analysis. This approach seeked the econometric relationship between the chief executive pay and company performance in the automotive sector. The conceptual framework of the study's design is given in Figure 4, p.79.

The study relied on the secondary (archival) data, selectively extracted from the huge government database (EDGAR). The government database is in essence a data aggregator, storing and filing companies' self-reported financial (and other) statements. Secondary data was appropriate for this type of study – it is generally considered to be both valid and reliable.

The sample of the study was created from the population that also resided in the database. The population under investigation was the automotive sector and was classified by the government-assigned SIC codes. All the companies in this sector were identified and extracted, then grouped together and randomized. Thus, the random sample also came from this particular population.
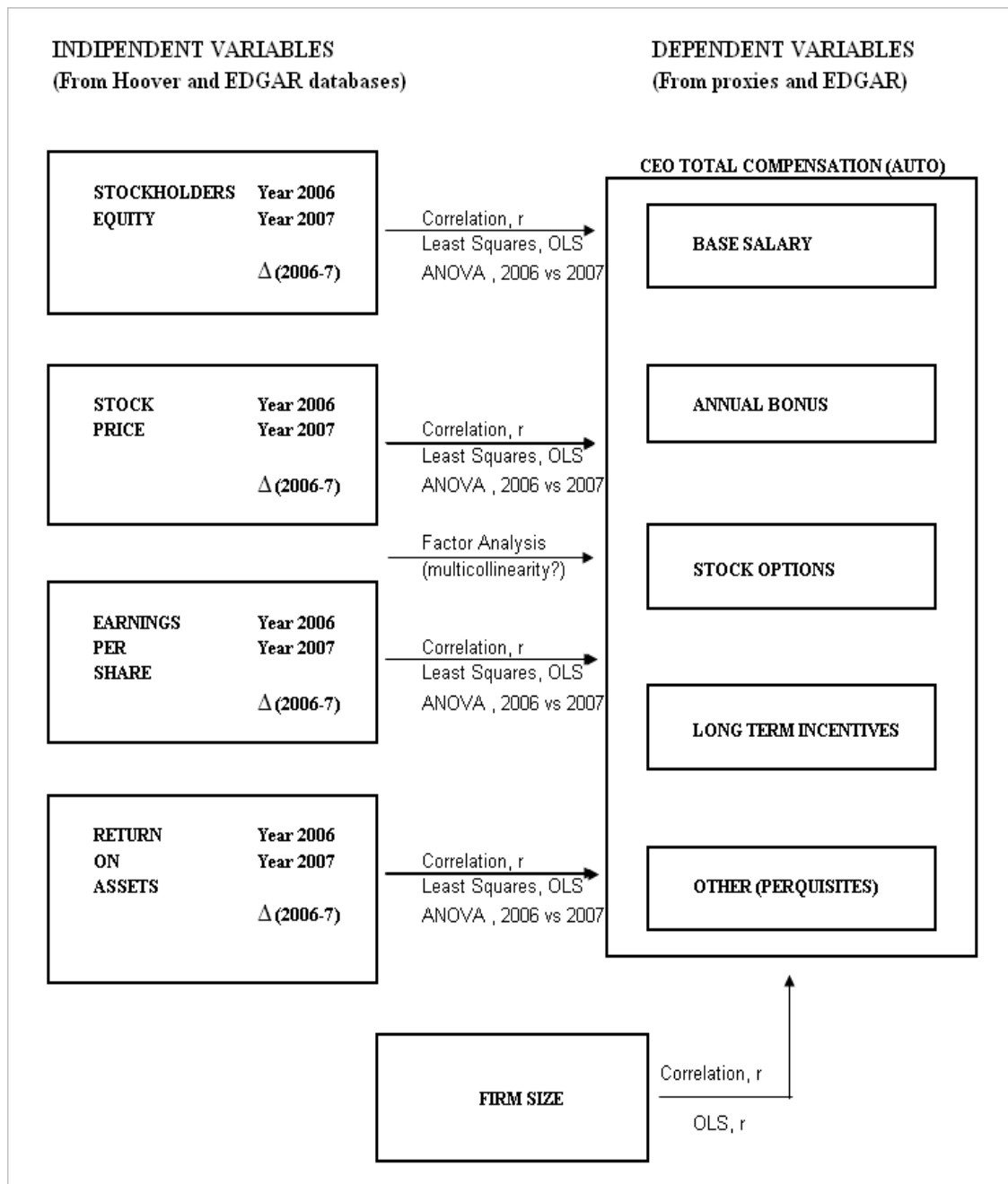
Figure 4: Conceptual framework

Similarly, the executive compensation data was obtained from the same database. This was a company-specific data that involved CEO compensation elements such as base salary, annual bonus, stock option grants, restricted stock grants, and perquisites. There were two sets of this data, one for the fiscal year 2006 and the other for the year 2007.

The performance data, namely financial ratios (EPS, ROE, ROA, profits) and company's stock price, shareholders equity and market capitalization was obtained from the balance sheets and income statements located in company's annual proxy filings, which are also part of EDGAR database. Historic annual stock price and the number of outstanding shares were obtained from other online secondary databases such as Hoover and/or Forbes.

Data analysis consisted of both descriptive statistics and inferential statistics. Descriptive statistics presented averages, percentages, and dispersion in variables under study. Inferential data analysis consisted of correlation analysis (Pearson product-moment), a statistical technique that will measure the amount of association between the dependent and independent variables. An Ordinary Least Squares (OLS) multiple regression model was used to test the hypotheses and to explain or predict the variability between the variables. OLS was also the technique that generated the regression equation, which mathematically expressed the relation between the dependent and independent variables. Analysis of variance (ANOVA) was used to test for the statistical difference in means between the two groups - year 2006 and year 2007 group variables. In addition to these three statistical techniques, a factor analysis was performed in order to avoid problems with variable confounding such as multicollinearity.

The tool used to crunch the numbers was SPSS version 14, a dedicated statistical analysis software package.

Sample

The target population for this study consisted of all publicly traded U.S. automotive companies. This population included the OEMs, as well as Tier 1 and Tier 2 suppliers. The population data were extracted from EDGAR database through four-digit Standard Industrial Classification (SIC) codes. It is important to note that these SIC codes are being phased out and are being replaced by new economic activity classification system, the North American Industry Classification System (NAICS). Table 11, p.82, shows the SIC codes and the corresponding NAICS codes that were used in EDGAR database to search and extract the target population.

The unrefined population size that was obtained directly from the database consisted of about 75 publicly traded U.S. automotive corporations.

Separate list was kept of the company names that were extracted. The final list was then sorted alphabetically. Every second company from that list was selected and used in the study. In essence, this step was necessary in order to randomize the sample. Consequently, this yielded a random sample with size of about 32 companies.

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Table 11. SIC Codes Used in EDGAR Database to Extract the Study's Sample

SIC CODE	NAICS	Economic Activity Classification and Description
3711	336211	Motor vehicle body
3711	336112	Light truck and utility vehicles
3711	336111	Automobile manufacturing
3714	336399	All other motor vehicle parts manufacturing
3714	336350	Motor vehicle transmission and power train parts
3714	336340	Motor vehicle brake systems
3714	336330	Motor vehicle steering and suspension components
3714	336312	Gasoline engine and engine parts
3694	336322	Other motor vehicle electrical and electronic equipment
3691	335911	Batteries
3645	336321	Vehicular lighting equipment
3585	336391	Motor vehicle air-conditioning
3465	336370	Motor vehicle metal stamping
3011	423130	Tires
2592	336311	Carburetor, piston, piston ring, and valve
2531	336360	Motor vehicle seats, seat frames
2399	336360	Motor vehicle seating and interior trim
2396	336360	Automobile trimmings, textile

The sample had the additional inclusion criteria that had to be met in order to be included in the study. First and foremost, the compensation and performance data had to be available for the given company in a selected time period (years 2006 and 2007). Secondly, the company had to be headed by the same CEO during that period. This criterion was particularly significant since the main objective of the study was to link specific executive's performance with his/her pay. The companies that satisfied these criteria are listed in Appendix A.

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Setting

The setting for this study was a particular time period, specifically critical years 2006 and 2007, in which automotive industry in United States faced really challenging times. For many companies it was a sheer battle of survival. Ironically, the study did exclude year 2008, when the real financial meltdown in the industry, and in the economy as a whole, occurred. This time period was selected for several unrelated reasons.

First, those two years (2006 and 2007) were heavily scrutinized by the media, unions, and stockholders for frequent CEO compensation excesses and relatively poor company performances. This case study attempted to prove or dispel these characterizations through a systematic scientific analysis.

The second reason, dealing with the exclusion of 2008 data, is simple and obvious. The data was not available yet when this research had commenced. Companies typically have until the second quarter of the next year to file their proxy statements with SEC. Thus, 2008 data was not available until some time in the spring or summer of 2009.

The third issue deals with shortness of the study's setting, i.e., not expanding the study into earlier years. The primary reason for such a design lies in the SEC's new rules for disclosing and reporting that were unveiled in 2006. These new rules are very specific and they make transparent previously hard-to-find, or unreported, information such as pension and estimated severance package totals. Furthermore, the new rules remove the ambiguity in stock option valuation, the biggest single element of contention among the earlier researchers. The new rules required firms to apply the same estimating techniques to the awarded securities. This options valuation is accomplished through the application

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of rather complex Black and Scholes equation (Black & Scholes, 1973). The new SEC rules became effective in 2006.

Variables and Measures

The selection of independent and dependent variables in a particular study are functions of research design and the research questions that the researcher is trying to address. Some studies treat executive compensation as outcomes, i.e., as the dependent variable, and provide answers to questions as to what performance criteria effects the differences in CEO pay. Other studies look at compensation systems as causes and treat compensation components as the independent variable. These studies are designed to answer questions about how pay levels and pay mix affect executive's organizational performance through behavior and attitude changes (Gomez-Mejia & Balkin, 1992).

This study focused on executive compensation as an outcome and treated performance determinants as predictors. Therefore, the dependent variable was CEO total compensation. This dependent variable was made up of five distinct components: base salary, annual cash bonus, stock options, long term incentives (restricted stock grants), and perquisites. Each component was previously defined and explained in Chapter 2. The first four components of the dependent variable can be further categorized into two sub-groups: the cash-based, short-term variables consisting of base salary and of annual bonus, and a long-term, equity incentives made up of stock options and restricted stock grants. Regardless of the classification, the entire mix of the dependent variable was comprised of values which were scalar in nature and, because of it, rendered themselves to sophisticated statistical treatment.

The independent variables for this study were the company size and econometric performance parameters of the firm. The performance parameters were grouped into three general categories: profitability variables, stock performance variables, and shareholders equity. Similar categorization was used in studies by Dyl (1988), Tosi and Gomez-Mejia (1994) and Attaway (1998).

This study used earnings per share (EPS), return on equity (ROE), and return on assets (ROA) as the indicators of firm's profitability. EPS was calculated ratio of company's net income (profit) divided by the number of shares outstanding. Among the investors this ratio is the single most important predictor of share price. EPS can be manipulated by the company in order to affect the quality of the ratio, through practices such as ignoring the capital, using accelerated depreciation, withholding payments, and changing inventory valuation (Attaway, 1998). ROE and ROA are two more stable ratios than the EPS, obtained by dividing firm's net income by shareholders equity and assets respectively. Both are measures of corporation's profitability. ROA tells how efficiently the management is using its assets to generate profit, while ROE is a measure which reveals how much profit a firm generated on the total amount of money invested. While ROA and ROE are on the surface very similar, there is a significant differentiator, the concept of debt leverage, which affects the ROA. Only when there is no debt, ROE equals ROA. What this means is that if ROA is positive and debt is under control, improving ROE indicates a sign of good times and successful management. Conversely, if ROA is declining, a rise in ROE could be a sign of troubles ahead (Commins, 2001).

Stock performance independent variable is typically measured by changes in stock price. Although stock price is a critical component of firm's performance, it is not a

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good measure of firm's performance. Stock price tends to move with the overall sentiment of the market, and is readily influenced by external contingencies and is deeply interwined with overall economic structure that have little or no bearing to the firm's actual performance.

Stockholders equity is the book value of the company. It represents the difference of company's total assets to total liabilities. Company's assets come from couple of sources - the initial and subsequent investments, and from its operations' retained earnings. In mature firms retained earnings comprise the largest component. Stockholders equity is important factor because it directly relates to company control, exercised through the voting rights of the stockowners.

The last independent variable that was used is the firm size. The size of the company can be measured in terms of several different parameters such as annual sales, number of employees, and the book value of the firm. This study will measure the size of the firm based on market capitalization, i.e., on a product of the share price and the number of shares outstanding. The importance of using the firm size as the independent variable in this study will be to prove or refute the view that suggests that executives have an incentive to enlarge the size of their firm for greater financial gains (Baumol, 1962, Scleifer & Vishny, 1990).

The dependent and independent variables, together with their units of measure, are summarized in Table 12, p.87, and Table 13, p. 88, respectively.

Table 12. List of Dependent Variables

Variable Name	Description	Definition	Measure
Year_C	Fiscal year	The fiscal year of the data. It is company specific. In most companies fiscal year equals calendar year	Actual, full year
Exec_Name	CEO's name	The full name of the CEO - first, middle, and last	Actual (nominal)
Co_Name	Company name	The current name of the company	Actual
Salary	Base salary	The dollar value of the base salary earned by the named CEO during the fiscal year	Thousands
Bonus	Bonus	The dollar value of a bonus earned by the named CEO during the fiscal year	Thousands
Stock_Awd	Stock awards	Value of stock-related awards (e.g. restricted stock, phantom stock, common stock equivalents etc.) that do not have option-like features. Valuation is based upon the value of shares that vested during the year. This is the cost recorded by the company on its income statement as well as any amounts that were capitalized on the balance sheet for the fiscal year. It is distinct from the grant date fair value	Thousands
Option_Awd	Options awards	Value of option-related awards. Valuation is based upon the value of options that vested during the year. The amount here is the cost recorded by the company on its income statement plus any amounts that were capitalized on the balance sheet	Thousands
Noneq_Inc	Non-equity incentive compensation	Value of amounts earned during the year pursuant to non-equity incentive plans and based on satisfying performance criteria	Thousands
Pension_Chg	Change in pension value	Composed of above-market or preferential earnings from deferred compensation plans and of aggregate increase in actual value of defined benefit and actual pension plans during the year	Thousands
Other_Comp	All other compensation	Other compensation received by the executive including perquisites and other personal benefits, termination or change-in-control payments, contributions to defined contribution plans (e.g. 401K plans), life insurance premiums, gross-ups and other tax reimbursements, discounted share purchases	Thousands
Total_SEC	Total compensation - as reported in SEC filings	The sum of the salary, bonus, stock awards and options, non-equity incentives, pension change, and all other compensation	Thousands
tcomp(A1)	Total compensation - stock/options valued using grant date fair value	Same as Total_SEC, except that stock and option awards are valued using the grant date fair value of the award instead of the amount charged to the income statement	Thousands

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Table 13. List of Independent Variables

Variable	Description	Definition	Measure
Year_P	Fiscal year	The fiscal year of the performance data.	Actual, full year
Co_Name	Company name	The current name of the firm	Actual
Sales	Base salary	The Net Annual Sales as reported by the company	Millions
Net_Inc	Net income	Profit after extraordinary items and discontinued operations	Millions
EPS	Earnings per share	The earnings per share (primary), excluding extraordinary items and discontinued operations	Actual
ROE	Return on equity	The Net Income divided by the average of the most current year's total common equity and the prior year's total common equity, then multiplied by 100	Percentage
ROA	Return on assets	The Net Income before extraordinary items and discontinued operations divided by Total Assets. This quotient is then multiplied by 100	Percentage
Mkt_Val	Market Value or Market cap	The close stock price for the fiscal year multiplied by the company's common shares outstanding	Millions
S_Price	Stock price	The close price of the company's stock for the fiscal year	Actual
Empl	Employees	The total employees as reported by the company	Thousands
SH_Eqt	Stockholder's equity	The sum of common stock, capital surplus, redeemable preferred stock, nonredeemable preferred stock, and treasury stock adjustments	Millions

Data Collection

The study's design relied on the secondary data, or archival research. In this type of research the researcher is one step removed from reality that he/she is attempting to study. Both, the pay data and the CEO compensation data exist independent of the researcher. Nevertheless, it is real data, provided by the principals of the study under strict government mandates and guidelines. This is a cost effective and time saving method of data collection. It has the same inherent validity and reliability associated with direct data collection. Archival data has an added advantage, the permanence of the data, which is relevant to the future researchers because it enables them to accurately replicate the study if they choose so or need to. This re-verification is in accordance with the positivistic research paradigm (Denscombe, 2003).

The executive compensation data were obtained from the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system database. The Securities and Exchange Commission's (SEC) EDGAR database is the worlds most important and valuable source of information on corporate activities, and includes the full text of a large number of company disclosure reports on company finances and operations. The database performs automated collection, acceptance, indexing, and validation of submissions by U.S. public companies, which are required by law to file forms with the SEC on the periodic basis. Its primary purpose is to increase the efficiency and fairness of the securities market (EDGAR, 2009).

In addition to EDGAR, there are several commercially available data aggregators, such as ExecuComp (from Standard & Poor) and Hemscott, who serve as the specific source of CEO pay data.

Once in EDGAR database, the researcher had to manually search for the target company (sample element). The search can be done on company name, company's ticker symbol, central index key (CIK) number, or file number. Once the desired company is retrieved, the researcher was presented with myriad of information, including among many other things the financial information on CEO pay. The federal securities laws mandate full disclosure about compensation paid to CEOs, CFOs and certain other high-ranking executives of public companies. Furthermore, the law requires that these filings be clear, concise, understandable, and that they include information about the firm's policies and practices. This information was found in company's annual proxy statement, on Form 10-K of company's annual report, company's current report on Form 8-K, and on registration statements filed by the firm in order to register securities for sale to the public. However, the simplest place to look up information on CEO pay was in annual proxy statements.

In the annual proxy statement, a company must disclose information regarding the amount and type of compensation paid to its CEO. A company also must disclose the criteria used in their pay-setting decisions. Furthermore, firms are also required to show the degree of the relationship that existed between the company's compensation practices and corporate performance.

The Summary Compensation Table, the cornerstone of the SEC's required disclosure, provided in a single location, a comprehensive summary of a company's executive pay-setting practices. It listed the total CEO's compensation paid for the past three fiscal years. The Summary Compensation Table was further augmented by other tables, footnotes, and disclosure statements containing even more specific information on

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the components of compensation such as information about grants of stock options and stock appreciation rights, long-term incentive plan awards, pension plans, and specific details about the employment contracts (Security and Exchange Commission, 2009).

From the Summary Compensation Table the researcher had to manually retrieve the pertinent data on the CEO pay such as base salary, annual bonus, stock options, restricted stock grants, and so on, categorize it, and input it in a spreadsheet (Excel) that was later uploaded into statistical analysis software such as SPSS. Using manually collected archival data from annual proxy reports is a common and accepted method used by researchers investigating CEO pay (Buck et al. 2003, McKnight & Tomkins, 2004).

Company performance data was obtained via similar procedures. Annual proxy statements in addition to CEO Compensation tables also include company's balance sheets and income statements. Other publicly available databases have information on stock price performance for the given year. Used in tandem, the extracted information was manipulated to obtain financial performance ratio, number of shares outstanding, company size, etc.

Data Analysis

The analysis of data involved both descriptive and inferential statistics. The descriptive statistics such as mean, percentages, and dispersion together with basic graphs were used to provide simple summaries and describe the basic features of the sample and measures that were part of the study. Inferential statistics were used to determine relationship and association between the dependent and independent variables.

Additionally, inferential statistics were used to test the study's several hypotheses. These tests are listed in Table 14. Each statistical method and its use are described below.

Table 14. Hypotheses and the Corresponding Statistical Tests

Null Hypothesis	Corresponding Statistical Tests
H_01: There is no significant relationship between the firm size and CEO total compensation in the automotive industry.	The Pearson Product Moment Correlation Coefficient Ordinary Least Square multiple regression
H_02: There is no significant linear relationship between firm's earning per share and firm's CEO total compensation in the automotive industry sector.	The Pearson Product Moment Correlation Coefficient Ordinary Least Square multiple regression Factor analysis if needed (multicollinearity)
H_03: There is no significant linear relationship between firm's return on assets and firm's CEO total compensation in the automotive industry sector.	The Pearson Product Moment Correlation Coefficient Ordinary Least Square multiple regression Factor analysis if needed (multicollinearity)
H_04: There is no significant linear relationship between firm's return on equity and firm's CEO total compensation in the automotive industry sector.	The Pearson Product Moment Correlation Coefficient Ordinary Least Square multiple regression Factor analysis if needed (multicollinearity)
H_05: There is no significant relationship between the stock price of the firm and CEO's total compensation levels in the automotive industry sector.	The Pearson Product Moment Correlation Coefficient Ordinary Least Square multiple regression Factor analysis if needed (multicollinearity)

The Pearson Product Moment Correlation Coefficient (PPMC) was used to measure the amount of linear association between the dependent and independent variables, i.e., the association between CEO compensation (dependent variable) and company performance (independent variable). The PPMC coefficient is defined as the sum of products of standard scores divided by the degrees of freedom. It ranges in value from -1 to +1. Negative values signify inverse relationship between the two variables while positive values of the coefficient indicate direct positive relationship. Zero implies

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that there is no linear relationship between the independent and dependent variables (Norusis, 2005).

Ordinary least square (OLS) linear regression was used to predict or to explain the value of one dependent variable (total compensation) from the value of one or several independent variables (firm performance variables). The OLS multiple regression ultimately leads to the linear regression equation of the form:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 \ldots$$ where Y is the dependent variable; X_1, X_2, and X_3 are the independent variables; b_1, b_2, and b_3 are the beta coefficients of the independent variable (slope); a is the y-intercept.

Analysis of variance (ANOVA) is used to test the hypothesis that the means among two or more groups are equal. In this particular study ANOVA tested the means of the year 2006 group and year 2007 group. The null hypothesis for ANOVA, by definition, is that the mean of the dependent variable is the same for all groups. The ANOVA test procedure ultimately generated an F-statistic. This was then used to obtain the p-value. The p-value is the criteria for the rejection or acceptance of the null hypothesis - if p-value is less than 0.05 the null hypothesis was rejected. Conversely, if p-value was found to be greater than 0.05 the study accepted the null hypothesis.

Factor analysis had a dual purpose. First, it was used to classify variables by detecting the structure in the relationship between the variables. Second, it was used to eliminate problems of variable confounding (multicollinearity) by transforming a large number of correlated variables into smaller groups of variables that were uncorrelated.

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When variables are highly correlated they tend to be measuring the same property or condition. As a consequence, it becomes difficult to assign the proper contribution of each variable in the multiple regression model.

Validity and Reliability

Reliability and validity are intrinsic concepts of the quantitative methodology and tools of the positivist epistemology. The concepts reside or are the result of other empirical notions that characterize quantitative methods such as universal laws, truth, objectivity, deduction, fact and mathematical data to name just a few. Consequently, quantitative research limits itself to variables that can be measured or counted (Winter, 2000).

In quantitative research this type of validity is described as construct validity. The construct is the initial research question or hypothesis that establishes the criteria as to which data to collect and how to go about collecting it. The constructs of this study was CEO compensation and company performance. Researchers utilizing the quantitative methods actively try to affect the interaction between data and construct in order to validate their studies, through specific statistical tests (e.g., ordinary least square, ANOVA), in order to support or reject this construct (Cronbach & Meech, 1995).

The validity is further subdivided into internal and external validity. In internal validity it is critical to establish whether the findings are directly attributed to the phenomena being investigated or whether the findings are the result of unaccounted variables. Thus, for the inferential tests to be valid, correlation and causality had to be established beforehand.

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In this study confounding variables of the firm's performance relative to the pay mix presented potentially the greatest threat to the internal validity. The condition is typically exhibited during correlation analysis whereby several variables may show very high "r" value. When such a condition was found, it was remedied by performing factor analysis. Through this statistical treatment the highly correlated variables was then reduced into smaller uncorrelated groups. Firm's size and its effect on CEO pay exhibited such a relationship.

Another threat to the internal validity might have come from the collected data itself. As stated, the study's sample was chosen based on the company's SIC number. Diversified companies engage in several different endeavors, some of which are completely unrelated to the automotive sector. Consequently, they may be less impacted by external contingencies than the companies that are not diversified. In such a case that particular sample element was really not the true representative of the population being investigated.

Reliability implies accuracy in measurement or in reporting. It must be present in order for the study to be valid. Threats to reliability in this particular study may come from the unintentional, and sometimes intentional, errors in the proxy statements filings. Historically, the most often cited culprit of error is the improper valuation of stock options.

Ethical Considerations

Ethical considerations in data collection, treatment, and reporting must always be present when developing a research design. The benefits of the study should be proportionate to the potential risks involved. In order to provide subject confidentiality, the data should be stripped of any personal identifiers. In essence, data used in a study should be openly accessible or sufficiently obscured.

While the above statement is primarily focused on the clinical settings and on controversial and sensitive individual subject matter, it also applies to certain secondary datasets where permission of the original source is required. However, publicly available secondary data on the CEO's compensation and on the firm's performance is a matter of public record, easily accessible without any special consent, and typically requires only expedited ethical review by the research ethics boards (example, IRB). Nevertheless, it is always a good practice, and the one that this study will follow, not to list individuals' names, i.e., anonymize the subjects, since there is no special or specific need for it. The term CEO that was used in the study is an all-encompassing, referring to the aggregate of all chief executives in the automotive sector. The same held true for the firm's performance – no firm was listed by name.

Besides ethical board review, in studies that rely on secondary data, it is unethical to engage in additional, new data collection in order to augment or expand the original database. The secondary data may already come with biases built-in unknown to the researcher, or data may not fit exactly the research question of the study. Intentionally not reporting or statistically not accounting for these shortcomings is also unethical, and consequently, it was not used.

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CHAPTER 4: RESULTS

Introduction

This chapter opens with a description and an assessment of the integrity of the data used as samples in this study. A summary of the inclusion criteria, data bias, and the reliability of the variables extracted from the secondary database pertaining to the automotive sector are presented. For qualitative evaluation and as a point of reference, some key parameters from the automotive sector are compared to the rest of industry for a specified year. The remainder of this chapter presents the study's descriptive results, hypothesis tests, correlations, and multiple linear regression analyses.

Sample Characteristics

The study's design from the onset relied on the secondary data for both, the CEO compensation and for company performance parameters. The primary source of this information was EDGAR, a publicly available, government data aggregator. Other databases, such as Hoover, ExecuComp, and *Forbes*, were also utilized.

The primary identifiers used to extract the companies in the automotive sector were the SIC codes. There is an inherent problem with SIC codes. They were never designed to describe a firm's specific type of business. Instead, SIC codes primarily describe the processes that are used by a firm. Hence, SIC codes tend to describe similar manufacturing processes, rather than the summative things that are being produced (Klein, 1998). It is this idiosyncrasy that gives rise to situations where you have the leading seat and interior producers classified under the furniture and upholstery 2531 SIC code. A better self-classification system, NAICS (North American Industry Classification

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System) is being put in place to replace SIC. However, many databases still archive the company information under the former system. Table 15 depicts the overall total and the purged or refined number of the extracted automotive companies.

Table 15. Sample Frequencies from Extraction from EDGAR Database

SIC Code	SIC Description	EDGAR Database	US-based Only	S&P 500 List
2531	Seats and Furniture Upholstery	7	4	3
3011	Tires & Rubber	10	4	3
3585	Industrial Machinery	30	10	5
3711	Motor vehicles and passenger car bodies	52	10	8
3713	Truck and bus bodies	5	5	0
3714	Auto parts and equipment	176	42	13
	Totals	280	75	32

The overall extracted list of companies was further reduced by the very specific inclusion criteria. Table 16, p. 99, lists the frequencies and the criteria used.

The foreign companies were excluded from the final sample primarily due to the fact that these foreign business entities fall under different set of laws and regulations than the U.S. companies. Furthermore, the CEO compensation levels, mix and design vary widely from one country to the next. Different economic, cultural, legal, and social forces formulate their operative paradigms when it comes to determining the chief executive's pay and pay mix.

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Table 16. Sample Selection

Compensation, Years 2006 & 2007; Performance, Years 2005 & 2006	Frequency	Percentage
Foreign-based companies were excluded outright	205	n/a
Total number of US-based corporations	75	100%
Companies eliminated based on criteria below:		
Not part of S&P 500 during years 2006 and 2007	30	40.0%
Company not listed for both years, 2006 and 2007	7	9.3%
Different CEO in years 2006 and 2007	4	5.3%
Compensation or performance data missing in database	2	2.7%
Sub-total, excluded	43	57.3%
Final sample, included	32	42.7%

The other important inclusion criterion was that the sample company be part of the S&P 500. Larger companies tend to have different operational dynamics and organizational structures than the smaller companies. Furthermore, the sample data of the larger companies tends to be more complete, readily available, and it renders itself for qualitative comparisons to the other sectors of the industry. The overwhelming majority of research literature on the CEO compensation and company performance strictly focuses on the S&P 500 companies.

Since this case study defined the boundaries of this particular investigation in terms of size and scope by selecting the time frame to be the years 2006 and 2007, any missing key data elements require the particular potential sample to be excluded. Similarly, the intent of the study was to study the performance and the compensation of a particular CEO in that time frame. Therefore, if the same CEO was not running the particular company in those two consecutive years, that sample was also eliminated.

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<center>Descriptive Statistics</center>

Descriptive statistics provide a useful backdrop to highlight and contrast the automotive companies' CEO compensation pay levels and mix together with the key company performance indicators. Table 17 shows CEO compensation matrix for the year 2006. The compensation summary for the year 2007 is given in Table 18, p. 101. The samples were pooled to include the data from years, 2006 and 2007, in Table 19, p. 101.

Table 17. CEO Compensation for the Year 2006

Year 2006	Salary ($ 000)	Bonus ($ 000)	Non –eqty Incentive ($ 000)	Stock Award ($ 000)	Options Award ($ 000)	Pension Change ($ 000)	Other ($ 000)	Total Compens. ($ 000)
Mean	830.4	408.3	1,188.4	1,129.6	1,026.3	794.5	469.9	5,951.6
Mean (exc. 0)	885.8	1,306.7	2,112.6	1,807.4	1,492.8	1,271.2	469.9	5,951.6
Median	902.0	0.0	299.6	289.3	218.5	135.7	114.7	4,473.8
Maximum	1,500.0	3,900.0	8,162.1	6,120.4	4,580.5	4,140.4	7,208.1	23,114.7
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	3.3	340.0
Min (exc. 0)	265.8	64.3	51.5	44.5	5.1	23.0	3.3	340.0
Std. Dev.	385.9	951.5	2,106.6	1,753.2	1,405.8	1,210.4	1,318.0	5,311.5
n = 32								

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Table 18. CEO Compensation for the Year 2007

Year 2007	Salary ($ 000)	Bonus ($ 000)	Non –eqty Incentive ($ 000)	Stock Award ($ 000)	Options Award ($ 000)	Pension Change ($ 000)	Other ($ 000)	Total Compens. ($ 000)
Mean	968.0	436.7	2,108.2	1,369.4	1,467.2	949.5	505.2	9,800.9
Mean (exc. 0)	968.0	1,270.4	2,810.9	1,752.8	1,956.3	1,446.9	505.2	9,800.9
Median	1,000.6	0.0	980.6	837.4	439.4	178.7	169.4	6,981.6
Maximum	2,000.0	4,006.2	9,520.2	6,296.0	7,511.6	4,156.1	4,656.8	41,289.2
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	11.3	1,186.2
Min (exc. 0)	278.8	64.3	51.5	44.5	5.1	23.0	11.3	1,186.2
Std. Dev. n = 32	402.6	1,022.5	2,622.1	1,623.2	2,095.0	1,314.0	970.5	8,974.6

Table 19. CEO Compensation for Years 2006 and 2007

Pooled Years 2006 - 2007	Salary ($ 000)	Bonus ($ 000)	Non –eqty Incentive ($ 000)	Stock Award ($ 000)	Options Award ($ 000)	Pension Change ($ 000)	Other ($ 000)	Total Comp. ($ 000)
Mean	899.2	422.5	1,648.3	1,249.5	1,246.7	872.0	487.6	7,876.3
Mean (exc. 0)	928.2	1,287.7	2,511.6	1,777.1	1,734.6	1,361.2	487.6	7,876.3
Median	963.1	0.0	658.6	511.9	326.6	153.5	135.1	5,510.7
Maximum	2,000.0	4,006.2	9,520.2	6,296.0	7,511.6	4.156.1	7,208.2	41,289.2
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	3.3	340.0
Min (exc. 0)	265.8	26.0	215.1	40.1	5.1	0.8	3.3	340.0
Std. Dev. n = 32	397.3	979.9	2,404.5	1,680.3	1,783.7	1,255.6	1,148.3	7,568.2

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The second part of descriptive statistics deals with the organizational performance. The performance of the automotive firms was assessed using a market-based metrics. The data was extracted from EDGAR, Hoover, and ExecuComp databases and are presented in Table 20 for year 2005, Table 21, p. 103, for year 2006, and Table 22, p.103, for the pooled data encompassing the fiscal years 2005 and 2006.

Table 20. Organizational Performance for the Year 2005

Year 2005	Units	Mean	Median	Maximum	Minimum	Std. Dev.
Sales	million $	18,132.8	3840.5	190,215.0	185.2	44,090.4
Net Income	million $	(345.4)	11.7	1,440.0	(10,567.0)	1,997.5
EPS	actual, $	(1.3)	0.8	6.6	(20.6)	6.4
Common Equity	million $	1,429.7	686.3	14,597.0	(6,245.0)	3,834.0
ROE	percent	(1.5)	12.0	327.4	(255.4)	97.9
ROA	percent	(0.2)	1.8	11.9	(26.0)	9.9
Market Value	million $	3,210.7	990.4	13,793.8	32.1	4,178.2
Dividend Yield	percent	2.5	1.8	15.5	0.0	3.2
Close Price	actual, $	25.0	19.5	69.2	0.3	19.9
Shares Outstanding	million $	167.2	70.3	1,864.1	12.6	336.2
Stockholders' Equity	million $	1,405.9	573.9	14,597.0	(6,245.0)	3,836.3
Shareholder's Return	percent	(13.0)	(11.7)	106.0	(96.7)	38.3
Employees	thousands	55.1	17.5	335.0	0.9	81.4

Table 21. Organizational Performance for the Year 2006

Year 2006	Units	Mean	Median	Maximum	Minimum	Std. Dev.
Sales	million $	18,508.3	4,633.7	207,349.0	279.3	44,485.1
Net Income	million $	(575.0)	8.9	1,496.0	(12,613.0)	2,468.4
EPS	actual, $	(0.8)	0.4	6.1	(10.4)	4.4
Common Equity	million $	16.9	483.3	7,355.0	(12,055.0)	3,096.9
ROE	percent	0.3	12.7	58.6	(118.0)	41.6
ROA	percent	(2.0)	0.8	13.9	(71.2)	15.7
Market Value	million $	3,817.8	1,634.9	17,375.6	41.7	5,220.2
Dividend Yield	percent	1.3	1.1	4.3	0.0	1.3
Close Price	actual, $	25.6	20.1	75.1	0.6	21.3
Shares Outstanding	million $	171.7	72.2	1,892.5	18.5	340.5
Stockholders' Equity	million $	52.1	439.8	7,355.0	(12,055.0)	3,080.2
Shareholder's Return	percent	53.1	15.5	1,212.7	(80.6)	215.0
Employees	thousands	48.7	18.0	283.0	1.1	73.1

Table 22. Organizational Performance for Years 2005 and 2006 (pooled)

Years 2005-2006	Units	Mean	Median	Max	Min	Std. Dev.
Sales	million $	18,259.3	3,982.5	207,349.0	185.2	43,956.1
Net Income	million $	(456.2)	11.7	1,496.0	(12,613.0)	2,230.3
EPS	actual, $	(1.0)	0.7	6.6	(20.6)	5.4
Common Equity	million $	757.8	564.9	14,597.0	(12,055.0)	3,516.3
ROE	percent	(1.3)	11.9	327.4	(255.4)	76.5
ROA	percent	(1.1)	1.5	13.9	(71.2)	13.1
Market Value	million $	3,446.5	1,108.2	17,375.6	32.1	4,673.9
Dividend Yield	percent	1.9	1.5	15.5	0.0	2.5
Close Price	actual, $	25.2	19.3	75.1	0.3	20.1
Shares Outstanding	million $	168.5	70.3	1,892.5	12.6	335.9
Stockholders' Equity	million $	729.0	559.7	14,597.0	(12,055.0)	3,518.0
Shareholder's Return	percent	19.6	0.7	1,212.7	(96.7)	156.7
Employees	thousands	48.9	17.5	335.0	0.9	76.9

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The study's design intentionally selected the CEO's compensation to be the dependent variable and the performance indicators to serve as independent variables. Thus, the executive pay is a function of firm's performance. Consequently, the performance parameters precede the compensation parameters by a fiscal year. Stated differently, rewards follow actions. It is for this reason that the performance parameters are extracted, analyzed, and matched with compensation data at a prior fiscal year (year minus one).

Now that simple descriptive parameters for the automotive sector, both in terms of CEO compensation and in firm performance, have been calculated, a descriptive or qualitative comparison is made between the entire U.S. industry that makes up S&P 500 and the automotive sector. The comparison of the key parameters is given in Table 23.

Table 23. Comparison between Automotive Sector and the S&P 500

GROUP	YEAR	AGE	YR CEO	SAL & BONUS ($ 000)	OTHER ($ 000)	STOCK GAINS ($ 000)	TOTAL ($ 000)	PCT S & B	PCT OTH	PCT STK
S&P 500	2006	55.5	7.7	3,514	2,191	5,970	11,675	30.1%	18.8%	51.1%
Auto	2006	57.7	7.6	2,427	1,264	2,156	5,847	41.5%	21.6%	36.9%
S&P 500	2007	55.7	7.3	3,695	4,501	7,593	15,789	23.4%	28.5%	48.1%
Auto	2007	58.7	8.6	3,513	1,455	2,837	7,805	45.0%	18.6%	36.3%

Inferential Statistics

Normality

Inferential statistics are primarily concerned with hypotheses testing and making inferences between the test sample and the parent population. These tests are based on multivariate statistical techniques, whose underlying derivation and application relies on the condition that both dependent and independent variables used in the study are truly representative of the sample and the population from which they were drawn. To insure this variable validity, the multivariate statistics requires three tests to be performed on the variables used in the hypotheses testing: (a) linearity, (b) heteroscedasticity, and (c) normality. The first two tests are performed as part of specific hypothesis test. The normality tests are discussed below.

Normality refers to the shape of the data distribution - a bell-shaped curve - for an individual metric variable and its relative correspondence to the normal distribution. The normal distribution itself is theoretic distribution frequency of variable data obtained or observed when the number is infinite and variation is subject only to chance factors. A fundamental supposition in multivariate analysis is the normality of data. Large variations or deviations from the normal distribution will render all resulting statistical tests invalid. Normality is absolutely required for the F and t statistics (Hair et al., 1995).

Histograms and normal probability plots are two commonly employed methods to test for variable normality. Histograms categorize variable's frequency counts and graphically display this distribution. They provide a simple diagnostic test for variable normality. However, this simplicity is offset by the validity and reliability issues when the sample size is small. Small sample size also characterizes this study. Hence, an

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additional verification method, namely a normal probability plot, was constructed as a check for the validity of the histograms. Some researchers consider these plots a more reliable tool in normality testing than the histogram (Hair et al., 1995).

Appendix C depicts the histograms for the variables used in the inferential statistics of this particular case study. The normal curve has been generated by SPSS software and superimposed on the variable's data distribution to facilitate the visual examination and determination of normality. The histograms show that earnings per share, net income, return on equity, return on assets, and stockholders' equity approximates a normal distribution, while total compensation, sales, market value, employees, and the stock price reflect significant deviation from the normal curve.

The normal probability plot compares the collective distribution of actual variable data values with the collective theoretical normal distribution. The variable data are plotted against this theoretical normal distribution in such a way that the data points should form an approximate straight line. The theoretical normal distribution plot is a straight line where slope equals one. In normal distribution, the line representing the actual data distribution closely corresponds to the theoretical diagonal. Departures from this straight diagonal indicate departures from normality.

The normal probability plots for each of the study's variables are shown in Appendix D. Close examination of those graphs tends to indicate that earnings per share, net income, return on equity, return on assets, and stockholders' equity approximates a uniform distribution. However, examination of the graphs for total compensation, company sales, market value, number of employees, and the stock price revealed departures from the theoretical (diagonal) line, seems to indicate a departure from

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normality. To address this deviation, these variables were transformed by taking their base 10 logarithms. Following the transformation, each of the transformed variables exhibited normality. The histograms and the normal probability plots of the transformed variables are shown in Appendix E and in the Appendix F, respectively.

Correlations

The correlation analysis is one of the most ubiquitous and most useful statistical techniques. A correlation, expressed as the Pearson correlation coefficient, is a single number that measures and describes the degree of linear relationship between two or more variables. The values of the coefficient range from -1 to +1. The absolute value of the number indicates the magnitude or the strength of association and the consequent correspondence to the linear relationship. The sign indicates direction of the association. Positive sign indicates that the two variables are increasing together. Negative sign shows divergence between the variables. The p-value is significance indicator when testing samples from a given population. The basic notion of p-value is to assess the probability that the association seen in the data (correlation) would have been seen by chance, i.e., if in fact there is no relationship between the variables.

Table 24, p. 108, and Table 25, p. 109, summarize the Pearson correlation coefficients, the p-values, and the sample size for the independent variables and the dependent variable of total CEO compensation. Only Table 24, depicting the correlation coefficients of the independent variables that pertained to company size showed any significant and moderately strong association with the CEO's total compensation. Table 25 focused on other indicators of performance besides company size, such as net income (profit), earnings per share, returns on equity and assets, stock price and stockholders'

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equity. While there were some mild and moderate associations between these performance indicators, no significant correlation was found between this set of independent variables and the overall CEO compensation.

Table 24. Correlation Matrix – Compensation & Performance Variables (Company Size)

	log_total_comp	log_sales	log_mkt_value	log_employee
log_total_comp	1.000 p = n/a n = 64	0.542 ** p = 0.000 n = 64	0.508 ** p = 0.000 n = 64	0.518 ** p = 0.000 n = 64
log_sales	0.542 ** p = 0.000 n = 64	1.000 p = n/a n = 64	0.621 ** p = 0.000 n = 64	0.957 ** p = 0.000 n = 64
log_mkt_value	0.508 ** p = 0.000 n = 64	0.621 ** p = 0.000 n = 64	1.000 p = n/a n = 64	0.521 ** p = 0.000 n = 64
log_employee	0.518 ** p = 0.000 n = 64	0.957 ** p = 0.000 n = 64	0.521 ** p = 0.000 n = 64	1.000 p = n/a n = 64

** Correlation is significant at the 0.01 level (2-tailed)

Close examination of the company size related correlations relative to the CEO total compensation variable in Table 24 unveiled a potential problem of multicollinearity. Collinearity is a situation in which there is a high multiple correlations occurring when the independent variables are regressing on each other, providing very similar information, and making it difficult for the researcher to separate the effects of the individual variables (Norusis, 2005). This condition requires an added test for the impact of collinearity through the calculation of variable tolerances and variance inflation factor (VIF). Tolerance measures the strength of linear relationship among independent

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variables. It is calculated by subtracting the portions of particular variable's variance

attributed to other predictors from the value of 1. The VIF is the reciprocal of the

tolerance value. Hence, a high tolerance value, or conversely a low VIF value, indicates

minimal or low intercorrelation among the variables (Hair et al., 1995).

Table 25. Correlation Matrix – Compensation and Performance Variables (all others)

	Log_tcomp	Net_inc	EPS	ROE	ROA	Log_price	SH_eqty
Log_tcomp	1.000 n = 64	-0.127 p = 0.318 n = 64	0.120 p = 0.346 n = 64	0.196 p = 0.171 n = 50	0.191 p = 0.131 n = 64	0.242 p = 0.054 n =64	0.182 p = 0.150 n = 64
Net_inc	-0.127 p = 0.318 n = 64	1.000 n = 64	0.574 ** p = 0.000 n = 64	0.306 * p = 0.031 n = 50	0.244 p = 052 n = 64	0.231 p = 0.066 n = 64	0.110 p = 0.388 n = 64
EPS	0.120 p = 0.346 n = 64	0.574 ** p = 0.000 n = 64	1.000 n = 64	0.609 ** p = 0.000 n = 64	0.585 ** p = 0.000 n =64	0.432 ** p = 0.000 n = 64	0.115 p = 0.367 n = 64
ROE	0.196 p = 0.171 n = 50	0.306 * p = 0.031 n = 50	0.609 ** p = 0.000 n = 64	1.000 n = 50	0.655 ** p = 0.000 n = 50	0.386 ** p = 0.006 n = 50	-0.024 p = 0.871 n = 50
ROA	0.191 p = 0.131 n = 64	0.244 p = 052 n = 64	0.585 ** p = 0.000 n =64	0.655 ** p = 0.000 n = 50	1.000 n = 64	0.603 ** p = 0.000 n = 64	0.294 * p = 019 n = 64
Log_price	0.242 p = 0.054 n =64	0.231 p = 0.066 n = 64	0.432 ** p = 0.000 n = 64	0.386 ** p = 0.006 n = 50	0.603 ** p = 0.000 n = 64	1.000 n = 64	0.389 ** p = 0.001 n = 64
SH_eqty	0.182 p = 0.150 n = 64	0.110 p = 0.388 n = 64	0.115 p = 0.367 n = 64	-0.024 p = 0.871 n = 50	0.294 * p = 019 n = 64	0.389 ** p = 0.001 n = 64	1.000 n = 64

** Correlation is significant at the 0.01 level (2-tailed)
 * Correlation is significant at the 0.05 level (2-tailed)

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Table 26 lists the tolerances and VIF values for the performance variables pertaining to firm size, such as the company's total sales (log of sales taken to normalize the variable), number of employees and the market valuation of the firm. Norusis (2005, p. 269) states that multicollinearity may be a problem when tolerances are small and less than 0.1 in value. Both, the company total sales (tolerance = 0.063) and the total number of employees (tolerance = 0.074) fit the above criteria and they indeed do exhibit multicollinearity.

Table 26. Test of Multicollinearity of Independent Variables Pertaining to Company Size

log_tcomp (dependent variable)	Tolerance	Variance Inflation Factor (VIF)
log_sales	0.063	15.933
log_employees	0.074	13.436
log_market_value	0.549	1.821

Hypothesis 1

H_A1:   *There is significant positive linear relationship between the company size and total CEO compensation in the automotive industry.*

H_01:   *There is no significant relationship between the firm size and CEO total compensation in the automotive industry.*

Hypothesis one tests for a linear relationship between company size and CEO's total compensation using Pearson Product Moment correlation and least square regression analysis. Company size can be measured in several different ways. This study chose to investigate the company's market valuation, total annual sales (revenue), and the total number of employees as the potential predictors of chief executive's total pay. Market valuation is also often referred to as market capitalization or market cap and it denotes a

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product of the number of shares outstanding and the current stock price. Needless to say, there are other predictors of size - company's total assets being one – that were not considered in this research. All three independent variables and the dependent variable (total pay) mentioned above violated the statistical test of normality. This violation was removed by transforming those variables into base-10 logarithms.

The full output of the fully specified multiple regression model is in Appendix H. The regression summary is presented in Table 27.

Table 27. Regression Summary for Hypothesis 1 Testing

Variable	Coefficient	t-value	Significance	Tolerance
Constant	2.627	4.919	0.000	
log_sales	0.062	0.242	0.810	0.063
log_employee	0.177	0.679	0.500	0.074
log_mkt_val	0.203	2.202	0.032	0.549
N = 64				
F-Ratio = 10.614	Sig. = 0.000	Reject H_0	Accept H_A	
Multiple R = 0.589				
R-squared = 0.347				
Adjusted R-squared = 0.314				

The correlation coefficient for the variables is 0.589. This is the degree of association for the dependent and independent variables used in the regression. The R-square listed in table above is 0.347. This value indicates that roughly 35% of the total variation in CEO pay is explained by variables associated with the company size. Using multiple variables in the model reduces this variation (Adjusted R-squared = 0.314)

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The F-statistic is an additional test of the overall significance of the regression model. The F ratio for the model was found to be 10.614. This ratio exceeds the F-critical value and is significant at $p = 0.05$ level. This seems to indicate the CEO pay is a function of at least some of the variables, which pertained to the company size.

In formulating the mathematical model of the regression, the two variables whose t-values exceeded the significance value of $p<0.05$, namely log_sales (0.810) and log_employees (0.500), were omitted in the equation. The predictive linear equation is:

$$log\_total\_comp = 2.627 + (0.203) (log\_mkt\_value)$$

Hypothesis 2

H_A2:   *There is statistically significant positive linear relationship between the firm's earnings per share and total CEO compensation in the automotive industry sector.*

H_02:   *There is no significant linear relationship between firms' earning per share and firm's CEO total compensation in the automotive industry sector.*

Once again the study relies on the Pearson Product Moment correlation and on the least square regression analysis to tests for a linear relationship between the CEO's total compensation and firm's earnings per share (EPS). When the variables used in this test were analyzed for normality, which is a prerequisite for the t and F statistics, the CEO's total compensation had to be transformed via base-10 logarithm. The independent variable, EPS, exhibiting compliance to normality, was used in its original format. The full output of the fully specified regression model is in Appendix I. The regression summary is presented in Table 28 on page 113.

Table 28. Regression Summary for Hypothesis 2 Testing

Variable	Coefficient	t-value	Significance	Tolerance
Constant	3.712	65.778	0.000	
EPS	0.010	0.946	0.346	1.000

N = 64

F-value = 0.901   Sig. = 0.346

R = 0.120   Criteria p < 0.05   Accept H_0 Reject H_A

R-squared = 0.014

Adjusted R-squared = -0.002

The bivariate linear regression found no linear relationship between the CEO's pay levels and his/her company's earnings per share. Both, the t-statistics and F-value failed to find any significance at $p < 0.05$ levels. A simple way to summarize how well an estimated regression line fits the observed data is to calculate the correlation coefficient between the observed and predicted values (Norusis, 2005, p. 219). This calculation is represented by symbol R in the table above. Its value of 0.120 suggests extremely low or no correlation at all. The square of the correlation coefficient R, R-squared, shows the proportions of the variability in the CEO's total pay that is explained by the differences in EPS variable. In this particular hypothesis test approximately 1.4% of the variability in pay is explained by EPS. Similarly, when the additional correlation was performed on the individual pay components, such as bonus, stock awards, option grants and pension, and on the EPS variable, no significant associations were found.

Hypothesis 3

H_A3:   There is significant linear relationship between firm's return on assets (ROA) and firm's CEO total compensation.

H_03:   There is no significant linear relationship between firm's return on assets and firm's CEO total compensation.

Identical to the procedure employed to test hypothesis 2, the test of hypothesis 3 also uses the Pearson Product Moment correlation and the least square regression analysis to test for a linear relationship between the CEO's total compensation and firm's return on assets (ROA). ROA is an important performance indicator since it tells how efficiently the management is using its assets to generate profit. When ROA is positive the debt is typically under control. Conversely, declining ROA, coupled with the rise in returns on equity (ROE), could be a sign of troubles ahead.

As was the case with EPS, the independent variable ROA passed the test of normality and no additional treatment or transformation was necessary. The total CEO compensation was transformed into its logarithmic form.

The full output of the regression model is included in Appendix J. The summary of the regression analysis is presented in Table 29, p. 115.

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Table 29. Regression Summary for Hypothesis 3 Testing

Variable	Coefficient	t-value	Significance	Tolerance
Constant	3.709	67.438	0.000	
EPS	0.006	1.529	0.131	1.000

N = 64

F = 2.339   Sig. = 0.131

R = 0.191   Criteria p < 0.05   Accept H_0 Reject H_A

R-squared = 0.036

Adjusted R-squared = -0.021

Based on t-values and F-value statistics, with significance value at $p < 0.05$ level of 0.131, the analysis must accept the H_0 hypothesis, and reject the H_A hypothesis, which stated that there was a positive and significant linear relationship between the CEO pay and firm's ROA. Specifically, 3.6% of the variability in executive total pay is explained by the ROA predictor variable.

Hypothesis 4

H_A4:   There is significant linear relationship between firm's stockholders' equity and firm's CEO total compensation.

H_04:   There is no significant linear relationship between firm's stockholders' equity and firm's CEO total compensation.

Stockholders equity is the book value of the company. It represents the difference of company's total assets to total liabilities. It is basically the bottom number on the firm's balance sheet. It is different from the market cap because it is based on tangible holdings and not on the volatile fluctuations of the stock price which, together with the

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number of shares outstanding, characterize the market capitalization, or worth of the firm. Company's assets come from couple of sources - the initial and subsequent investments, and from its operations' retained earnings. In mature firms retained earnings comprise the largest component. Stockholders equity is important factor because it directly relates to company control, exercised through the voting rights of the stockowners.

Since the study is investigating the linear relationship between the top executive's total compensation and firm's stockholder equity, once again the analytical method of choice is the Pearson Product Moment correlation and the least square regression analysis. The full regression analysis is presented in the Appendix K, and the summary of the analysis in Table 30.

Table 30. Regression Summary for Hypothesis 4 Testing

Variable	Coefficient	t-value	Significance	Tolerance
Constant	3.685	65.707	0.000	
EPS	0.0000229	1.529	0.150	1.000

N = 64

F = 2.124	Sig. = 0.150			
R = 0.182	Criteria p < 0.05		Accept H_0	Reject H_A
R-squared = 0.033				
Adjusted R-squared = 0.018				

The analysis indicates that we cannot reject the null hypothesis, and once again accept the fact that there is no positive linear relationship between CEO's pay and firm's stockholders' equity. Only 3.3% of the variability in CEO's total pay is explained by the stockholders' equity independent variable.

Hypothesis 5

H_A5:   *There is significant linear relationship between the stock price of the firm and CEO's total compensation levels.*

H_05:   *There is no significant relationship between the stock price of the firm and CEO's total compensation levels.*

The final analysis takes a look if the firm's stock price is a significant predictor of the executive compensation levels. Even though the stock price fluctuates daily and is by far the most volatile predictor in the overall performance matrix it is a very important indicator since it valuation directly impacts the owners of the company, namely the stockholders. The stock price used in the analysis is the fiscal year end price. While majority of firms' fiscal year coincides with the calendar year, there are few exceptions in this study's sample. Nevertheless, the value of the stock and CEO's pay are from the identical time frame.

The original independent variable, stock_price underwent the logarithmic transformation in order to meet the normality requirement of the regression analysis. As previously stated, the CEO's total compensation was also transformed by using base-10 logarithm.

The Pearson Product Moment correlation and the least square regression analysis was used to tests for a linear relationship between the CEO's total compensation and firm's stock price.

The full regression analysis is presented in the Appendix L, and the summary of the analysis in Table 31, p. 118.

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Table 31. Regression Summary for Hypothesis 5 Testing

Variable	Coefficient	t-value	Significance	Tolerance
Constant	3.464	26.110	0.000	
EPS	0.199	1.964	0.054	1.000
N = 64				
F = 3.854	Sig. = 0.054			
R = 0.242	Criteria p < 0.05		Accept H_0	Reject H_A
R-squared = 0.059				
Adjusted R-squared = 0.043				

As was the case with the three predecessors, the regression analysis could not establish the linear correlation between the stock price and the CEO's pay, and consequently, could not reject the null hypothesis and accept the alternative hypothesis.

Even though the significance level almost matched the criteria of $p < 0.05$, only 5.9% of variability in CEO's total pay is explained by the stock price variable.

Summary

Chapter 4 began with an examination of the integrity of the data used as sample in this research. The sample characteristics consisting of the inclusion criteria, selection, frequencies, data bias, and the reliability of the variables were presented.

Descriptive statistics followed the sample characteristics section, and they included both, the compensation parameters and the performance indicators. The compensation parameters were the dependent variables in this study and they involved data on chief executive salary, bonus, non-equity incentives, stock and options awards, pension value change, and other forms of income that were not itemized. The

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performance indicators were the predictors or the dependent variables, and they consisted of data on company's annual sales or revenues, net income or profit, EPS, ROE, ROA, market capitalization, dividend yield, stock price, stockholders equity and the company size in terms of number of employees on the payroll. The mean, median, minimum, maximum, and dispersion were calculated for each dependent and independent variable. The procedure was followed for each year separately (2006 and 2007) and for the pooled data (2006 and 2007 combined).

Inferential statistics began with the variable test for normality. Histograms and normal probability plots were made for each independent and dependent variable that was used in the hypothesis testing and that eventually became part of the correlation or regression analysis. Where deemed necessary, several variables had to undergo transformation to meet the requirement of normality. The total compensation, sales, stock price, market capitalization, and the employee variables were transformed by taking base-10 logarithm of their original values and re-tested for normality requirements.

Correlation analysis was the next section of the inferential statistics. The correlation matrix with the Pearson coefficients and p-values was developed to assess the association between the independent and dependent variables. Collinearity was a definite problem is this type of analysis. Thus, a test of the multicollinearity was performed on the suspected variables.

The chapter concluded with the hypotheses tests utilizing the Pearson Product Moment correlation and the least square regression analysis, both bivariate and multivariate. The investigation involved finding the significant positive linear relationship between the CEO pay levels and performance variables such as the company

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size, EPS, ROA, stockholders' equity, and the stock price. One of the five research hypotheses was supported. Only company size was a significant predictor of CEO's pay levels.

CHAPTER 5. DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

The final chapter of this study summarizes the purpose of the study and the research questions that drove it. Furthermore, it presents the synopsis of the research methodology. Most importantly, this chapter presents and discusses the empirical findings of this research, plus their implication and significance. In an effort to improve upon the current and previous research, the chapter ends with a number of limitations encountered and offers some suggestions for future research into the area of executive compensation and company performance.

Research Problem Summary

This case study was primarily conducted for the following reasons: (a) to analytically investigate the relationship between the chief executive compensation and firm performance in a specific industry, namely automotive sector; (b) to examine the compensation design through the CEO pay mix; and (c) improve recognition of the existing problems in this particular sector by examining economic performance indicators for the sample firms.

To meet the above objectives, this case study explored the following research questions:

1. Is there a significant positive linear relationship between the company size and total CEO compensation in the automotive industry?

2. Is there statistically significant positive linear relationship between the firm's earnings per share and total CEO compensation in the automotive industry?

3. Is there a significant linear relationship between firm's return on assets (ROA) and firm's CEO total compensation in the automotive industry?

4. Is there a significant linear relationship between firm's stockholders equity and firm's CEO total compensation in the automotive industry?

5. Is there a significant linear relationship between the stock price of the firm and CEO's total compensation levels in the automotive industry?

Research Methodology Summary

The study relied on the secondary or archival data, selectively extracted from the government database (EDGAR). The government database is in essence a depository for public companies' self-reported financial proxy statements. In addition to EDGAR, commercially available ExecuComp and Hoover databases were utilized, together with the publically available *Forbes*, *Fortune*, and *Business Week* data. Secondary data was appropriate for this type of study – it is generally considered to be both valid and reliable (Miller, 1995).

The sample for the study was created from the population that also resided in the EDGAR database. The population under investigation was the automotive sector and was classified by the government-assigned SIC codes. Initially, all the 280 companies in this sector were extracted before they were purged through the sample acceptance criteria. One criterion allowed only the U.S. based firms (75 in total); the second criterion reduced the sample size to 32 by requiring the firms to be part of S&P 500 companies mix, i.e., only larger firms.

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Similarly, the executive compensation data was also obtained from the same database for years 2006 and 2007. This was a company-specific data that involved CEO compensation elements such as base salary, annual bonus, stock option grants, restricted stock grants, and perquisites.

The performance data, namely financial ratios (EPS, ROE, ROA, profits) and company's stock price, shareholders equity and market capitalization was obtained from the balance sheets and income statements located in company's annual proxy filings. Historic annual stock price and the number of outstanding shares were obtained from online secondary databases such as *Hoover* and/or *Forbes*.

The selection of independent and dependent variables in a particular study are dictated by the research questions that the researcher is trying to address and, consequently, they become the function of the research design. This study focused on executive compensation as an outcome (dependent variable) and treated performance determinants as predictors (independent variables).

The variable data that was obtained for the years 2006 and 2007 on the 32 firms was pooled together and averaged in order to increase the sample size, reduce variability, and ultimately to provide a superior indicator than the individual annual measurements. This method was successfully employed before by number of researchers on similar studies (Attaway, 1998, p. 142; Gomez-Mejia, Tosi & Hinkin, 1987, p. 58).

Hypotheses refined the general research questions into very specific variables that were measureable and testable, i.e., rendered those variables to quantitative data analysis.

Data analysis consisted of both descriptive statistics and inferential statistics. Descriptive statistics presented averages, percentages, and dispersion in variables under

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study. Inferential data analysis consisted of correlation analysis (Pearson product-moment), an Ordinary Least Squares (OLS) multiple regression, Analysis of variance (ANOVA), and Factor analysis.

<div align="center">Study's Findings</div>

Study's findings centered on providing the answers to the research questions that were formulated in the form of null and alternative hypotheses through the use of quantitative analytical techniques and inferential statistics. The results of these hypotheses tests are summarized in Table 32.

Table 32. Research Hypotheses and Conclusions Reached

Hypothesis No.	Hypothesis Statement	Conclusion
1	There is significant positive linear relationship between the company size and total CEO compensation.	Supported
2	There is statistically significant positive linear relationship between the firm's earnings per share and total CEO compensation.	Not supported
3	There is significant linear relationship between firm's return on assets (ROA) and firm's CEO total compensation.	Not supported
4	There is significant linear relationship between firm's stockholders equity and firm's CEO total compensation.	Not supported
5	There is significant linear relationship between the stock price of the firm and CEO's total compensation levels.	Not supported

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Hypothesis 1, which states a belief that the larger firms pay significantly more their CEOs than the smaller firms, was supported. A strong correlation was indeed expected. Numerous studies on the CEO compensation and firm performance, such as McGuire, Chiu, and Elbing (1962), Ciscel (1974), Ciscel and Carroll (1980), Gomez-Mejia, Tosi, and Hinkin (1987), and Attaway (1998) to name a few, have found substantial evidence that company size has a major positive impact on the CEO pay. The research attributes this phenomena on the presence of more hierarchical levels in the large firms, firms' attempt to maintain appropriate salary differential between the levels and wider pay bands. Also, often it is just a matter of economics - the larger companies just have more money to pay more due to higher revenues.

Hypothesis 2 stated a belief that CEOs who achieve higher earnings per share (EPS) should be compensated more than those whose firms exhibited lower EPS. Unfortunately, no positive correlation was found. Among the investors this ratio is the single most important predictor of the share price. It is important to emphasize once again that the investors are de facto owners of the firms. They realize gains on their investments only if the share price goes up in value. CEOs' primary job is to see that this happens. However, EPS can be easily manipulated by the firm, for whatever reasons, in order to affect the valuation of this ratio. Some of the practices employed involve the use of accelerated depreciation, withholding accounts payable, ignoring capital, and changing inventory valuation (Attaway, 1998). While a belief that positive and higher EPS should be a good predictor of CEO pay was intuitive and completely plausible, the large body of

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researchers point out that they found no significant positive correlation between pay and EPS (Murphy, 1995; Milkovich & Newman, 2002).

Hypothesis 3 tested the premise that positive and significant return on assets (ROA) should show a positive linear relationship with CEO overall compensation. After all, ROA tells us how good our business is. Specifically, ROA tells the investors how much profit a company generated for each $1 in assets. The lower the profit per unit of assets, the more asset-intensive the business is, and more money must be reinvested into the business for earnings generation to continue. Auto industry is extremely asset-intensive, often requiring expensive machinery and/or equipment to generate profit. Nevertheless, no positive correlation was found for hypothesis 3 for the desired level of significance.

Hypothesis 4 expressed a belief that positive association existed between the stockholders' equity and CEO compensation. Once again the data analysis resulted in the rejection of this hypothesis. This particular performance parameter is instrumental in identifying the financial strength and risk of the business. The negative measure is a predictor of overleveraged firm. A high or increasing stockholder's equity ratio is a good sign, signifying the firm can meet its debt obligations, fund unplanned expenses, and weather other large sum payments. It is not unreasonable to expect the CEO to strive for those goals, and consequently, to be properly rewarded for it once achieved.

The last premise, hypothesis 5, looked for and expected to find a positive correlation between the stock price and CEO compensation. The share price, in addition to external forces and investor sentiments, is frequently subject to executive manipulation through stock splits, new issues, and stock repurchases. This performance parameter has

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the largest and most direct impact on the CEO pay because CEO's pay mix is typically composed heavily of equities. Any increase in the stock price would lead directly to the increase in CEO's compensation. Surprisingly, that was not the case in this particular study – no positive correlation was found.

In addition to the inferential analysis, the descriptive statistics provide even clearer picture of the decoupling between the CEO compensation and company performance. Table 33 shows these relationships.

Table 33. Compensation and Performance Changes for Years 2006 and 2007

Compensation:								
	Salary	Bonus	Noneqty Incentive	Stock Award	Options Award	Pension Change	Other	Total
Mean, 2006	830.4	408.3	1,188.4	1,129.6	1,026.3	794.5	469.9	5,951.6
Mean, 2007	968.0	436.7	2,108.2	1,369.4	1,467.2	949.5	505.2	9,800.9
Change, %	16.6%	7.0%	77.4%	21.2%	43.0%	19.5%	7.5%	64.7%

Performance:								
	Sales	Profits	EPS	ROE	ROA	Market Value	Divid. Yield	Stkholders Equity
Mean, 2005	18,132.8	-345.4	-1.28	-1.54	-0.19	3210.7	2.497	1405.9
Mean, 2006	18,508.3	-575.0	-0.78	0.26	-1.96	3817.8	1.303	52.1
Change, %	2.1%	-66.4%	38.9%	116.9%	-951.6%	18.9%	-47.8%	-96.3%

While the overwhelming majority of performance indicators for the years 2005 and 2006 were negative, the CEO compensation was aggressively going up. It is not surprising by looking at the numbers above that inferential statistics could not find any significant links between the performance and pay. Even though this case study was only a brief snapshot in time, the results are appalling: the CEOs are being rewarded for non-performance. What exacerbated the situation even further were the facts that automotive

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industry was at the crossroads, fighting for sheer survival. Yet these dismal performances were heftily rewarded.

Incredibly, in 2007, a year in which so many firms had dismal performance, only 5 out of 32 (15.6%) CEOs saw a decrease in their total pay. When only those pay components which are supposed to be directly linked to performance are looked at - namely salary and bonus - 6 out of 32 (18.8%) CEOs received less cash than in the preceding year. The bonus component of executive compensation is particularly troublesome, losing its primary function and essentially becoming meaningless in the pay incentive structure as the reward for success and merit, i.e., achieving performances over and beyond.

The CEO compensation mix in the automotive sector is slightly skewed toward the cash-based components and away from equities when compared to the other industries on the S & P 500 list. Figure 5 below shows both, the automotive executive's pay components and S & P 500 firms average compensation mix.
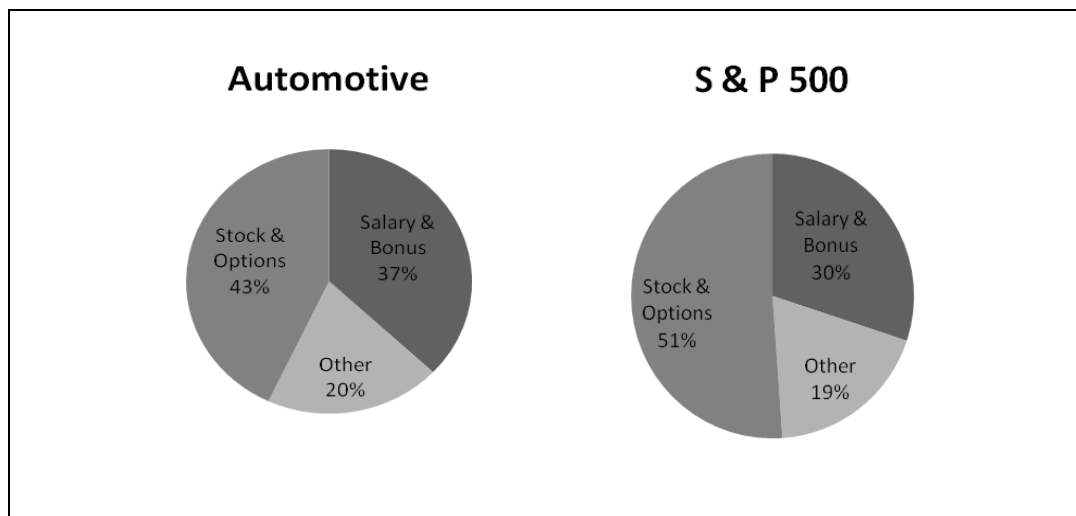

Figure 5. CEO total compensation mix

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Higher percentages in cash components such as salary and bonus are typical of the mature, hierarchical companies. Emerging firms on the other hand prefer pay designs that are heavier in equities. Their belief is that equities better satisfy the agency theory among the managers and, consequently, better link between the pay and performance (Jensen & Murphy, 1990).

<div align="center">Implications and Recommendations</div>

As the U.S. auto industry as a whole struggles to survive, leading OEMs already on public life support, coupled together with the public outcry about excessive CEO compensation in general, the chief executive's compensation design and pay levels will have to change radically. The old models and practices of these large corporations historically relied on benchmarked data from their peers in similar industry for pay design, pay mix and pay levels. Needless to say, this compensation strategy is out of touch with present day economy and market realities. Being competitive in terms of compensation while at the same time disregarding firm's performance indicators, leadership qualities linked to pulling companies out of recovery, and without the vision and strategy for the extended prosperity in the future, is not enough. The recipe for rational CEO pay-setting mechanism must start with the board of directors. The board's guiding principle and their operative paradigm must be based on the fact that stockholders are the owners, not pawns, and that they foremost are entitled to firms' rewards. After all, this is board's fiduciary responsibility towards the stockholders. Simply put, in regards to CEO pay, this implies limiting compensation to reasonable and sustainable levels, linking pay to performance, and keeping both the design and

disclosures simple and transparent, in terms of how it's measured and why (Hodgson, 2008).

A better model, addressing the true risk and reward propositions, already exists. It is a private equity-backed pay setting approach whose popularity and acceptance in recently growing in corporate America. This is a simple compensation model based on modest salaries and bonuses, larger mix of stock options, reduction in various severance arrangements making the CEO effectively an employee-at-will, and required chief executive's personal investment in the firm. The long-term equity incentives are the primary drivers of this model, especially when the plan is heavy-laden with premium-priced stock options. They encourage proper reward while discouraging the unnecessary risk. CEO's personal investment in the company strongly encourages him/her to think and act like a shareholder (Dolmat-Connell, 2009).

Limitations, Opportunities, and Suggestions for Further Research

Extracting CEO compensation data from the publicly available databases, and even commercially available data aggregators, is not an easy task. The problem lies in the content and format of the companies' proxy statements released to the shareholders and to the regulators. They seem to be intentionally designed to hide, obscure, and confuse. The strategy employed by the companies' reports is to put as much compensation information in paragraphs using as many words and as few numbers as possible. The Stock and Exchange Commission pay disclosure reforms of 1992 required companies to use a Summary Compensation Table, which made CEOs' pay components such as salary, bonus and perk information easy to find. However, other components of the chief

executives' total compensation remained obscured by the language difficult to read and interpret. In 2006, the SEC overhauled the reporting standards once again, addressing the pay components such as executive pension, exercising of the stock options, restricted stocks, and severance packages. They forced the companies to estimate those aspects of pay via prescribed accounting practices and to report them in the same compensation tables. 2006 was the first year when the new reporting procedures took effect. That and the subsequent years were marred by numerous proxy report revisions, refilling, and addendums.

Even though significant effort was made in the initial planning and design stages of the study to anticipate and control the potential complications, this case study is by no means devoid of number of limitations. The sample selection, driven by the strict inclusion criteria, limited the population, and the subsequent sample selection, to the automotive sector among the 500 largest U.S.-based corporations. This condition reduced the generalizability of the findings towards the entire auto sector. Findings can only be applied to the bigger companies while smaller, non-S & P 500 firms are excluded from study's inferences. However, this inclusion criterion is not unique in this type of research. The Fortune 500 and S&P 500 companies are common populations utilized by numerous researchers. Still, future research should take a look at these smaller companies and assess if the same dynamics drive the top executive pay-setting mechanisms.

Similarly, further research should be performed on the companies in other industry sectors to see if there are unique industry effects that determine that industry's CEO pay and gage their performance, which this study did not capture. The good

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potential candidates would be the firms in the upper echelons of the S&P 500 list of companies, such as banking, energy, and high-tech sectors.

The choice of and the total number of predictors or independent variables that pertained to the company performance was definitely a potential limitation. There are several dozens of valid performance indicators for a researcher to choose from. Table 5 on page 40 lists the names and frequencies of the more popular measures used in this type of research. This study used three out of five most popular ones, namely EPS, ROA, and the stock price (company size and stockholder's equity were the additional two parameters used). Nevertheless, some key performance measures such as profit, ROE, cash flow and gross margins were omitted or only marginally covered through the descriptive statistics. Future research should investigate the predictive potential of these left-out measures. Furthermore, there are several other key indicators that do not fall in the general category of financial measures, such as research and development, productivity improvements, quality targets, customer satisfaction, and safety to name a few, but may be critical in the overall well-being of the company, and consequently have a large impact on CEO compensation. Therefore, this area of non-economic parameters could serve as a focal point for some future study.

Typically, accounting, economic, and market based measures of performance utilized for this study are highly time sensitive and time dependent. Research commonly utilizes two, three, five years, or even longer period averages of these measures. This particular case study took a snapshot in time as it assessed the performance parameters for the years 2005 and 2006. The scope and the extent of the study were limited by time and resources constraints. A longitudinal study on the same subject may provide a more

accurate assessment of the relationship between the CEO compensation and firm performance.

Finally, there is the opportunity to expand the scope of the inquiry beyond the CEOs by including compensation amounts and mixes of the entire top management team and the board of directors. The data is also readily available in firms' proxy statements, filed with SEC. This type of expanded study would be helpful in determining the theoretical perspective of compensation and the mechanism which drives the pay-setting process.

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APPENDIX A: Population and Sample List

List 1. Entire population extracted from EDGAR through specified SIC codes

SIC 2531, n = 7
BE AEROSPACE INC
JOHNSON CONTROLS INC
KNUSAGA CORP
LEAR HOLDINGS CORPORATION
MAGNA LOMASON CORP
SIMULA TRANSPORT EQPT CORP
VIRCO MFG CORPORATION

SIC 3011, n = 10
AMERITYRE CORP
BANDAG INC
CHINA ENTERPRISES LTD
COOPER TIRE & RUBBER CO
DANAHER CORP
ECOTYRE TECHNOLOGIES INC
GOODYEAR TIRE & RUBBER CO
PLASTIC SPECIALTIES & TECH
SWEETSKINZ HOLDINGS INC
TITAN TECHNOLOGIES INC

SIC 3585, n = 30
AAON INC
AMERICAN STANDARD INC
CONSTANT ENVIRONMENT, INC.
DECTRON INTERNATIONALE INC
DICUT INC
EMERALD CAPITAL HOLDINGS INC
ENERGY VISION INTERNATIONAL,
ENGINEERED SUPPORT SYSTEMS
FEDDERS NORTH AMERICA INC
GOODMAN GLOBAL INC
HUSSMANN INTERNATIONAL INC
INT. COMFORT PRODUCTS
INT. THERMAL PACKAGING INC
KYSOR INDUSTRIAL CORP /MI/
LANCER CORP /TX/
LENNOX INTERNATIONAL INC
MARGAUX LIQUIDATION CORP
MESTEK INC
NYCOR INC /DE/
PACIFIC SANDS INC
POWERCOLD CORP
RAYTEC CORP
SCOTSMAN INDUSTRIES INC
SPARKLING SPRING HOLDINGS LTD
SPECIALTY EQPT COMPANIES INC
TECUMSEH PRODUCTS CO
THERMO POWER CORP
TRANE INC.
UNITED DOMINION HOLDINGS INC
YORK INTERNATIONAL CORP

SIC 3711, n = 52
AKTIEBOLAGET VOLVO \PUBL\
ANDOVER ENERGY HOLDINGS, INC.
ARVIN INNOVATIONS, INC.
ASIA AUTOMOTIVE ACQUISITION
ATHEY PRODUCTS CORP
BLUE BIRD CORP
BRILLIANCE CHINA AUTOMOTIVE
BRILLION IRON WORKS INC
COACH INDUSTRIES GROUP INC
COLLINS INDUSTRIES INC
CONSORTIUM G DINA GROUP INC
DAIMLER CHRYSLER CORP
EAGLE PICHER HOLDINGS INC
ELECTRIC MOTO CORP
FABCO AUTOMOTIVE CORP
FEDERAL SIGNAL CORP /DE/
FIAT S P A
FORD MOTOR CO
GENERAL MOTORS CORP
GISSER AUTOMOTIVE CONCEPTS
GREEN OASIS ENVIRONMENTAL
GUNITE CORP
HAMMONDS INDUSTRIES, INC.
HONDA MOTOR CO LTD
INTERNATIONAL TRUCK & ENGINE
ISDERA NORTH AMERICA, INC.
JAII MANAGEMENT CO
KANDI TECHNOLOGIES CORP
KROLL OGARA HOLDINGS INC
MASON HILL HOLDINGS INC
MCII HOLDINGS USA INC
MONACO COACH CORP /DE/
MOTIVNATION, INC.
MOTOR COACH INDUSTRIES INT
NAVISTAR INTERNATIONAL CORP
O GARA CO
OSHKOSH CORP
PACCAR INC
REYNARD MOTORSPORT INC
SCHWETSCHENAU MARK T
SMC CORP
SPARTAN MOTORS INC
STAGECOACH GROUP PLC
T3 MOTION, INC.
TATA MOTORS LTD/FI
TONGXIN INTERNATIONAL LTD
TOYOTA MOTOR CORP/
TRANS MAX TECHNOLOGIES INC
TRUCK COMPONENTS INC
TURBEVILLE PAMELA J
USTIAN DANIEL C
WABCO HOLDINGS, INC.

SIC 3713, n = 5
BNS HOLDING CO
MILLER INDUSTRIES INC/TN
OBSIDIAN ENTERPRISES INC
POINDEXTER (JB) & CO INC
SUPREME INDUSTRIES INC

SIC 3714, n = 176
ACCURIDE CORP
ADVANCED ACCESSORY SYSTEMS
ADWEST WESTERN AUTOMOTIVE
AETNA INDUSTRIES INC
AMERICAN AXLE & MFG HOLDINGS
AMERIGON INC
ANDERSON INDUSTRIES INC
ARLEN CORP
ARVIN INDUSTRIES INC
ARVINMERITOR INC
ATWOOD AUTOMOTIVE INC
AUGAT INC
AUTOCAM CORP/MI
AUTOLIV INC
AUTOMOTIVE PERFORMANCE
AVATAR VENTURES CORP.
BAILEY CORP
BALLANTRAE CORP
BESTOP INC
BONDED MOTORS INC
BORGWARNER INC
BOWLES FLUIDICS CORP
BOYDS WHEELS INC
BREED TECHNOLOGIES INC
BRISAM CORP
CAPCO AUTO PRODUCTS CORP
CHAMPION PARTS INC
CHINA AUTOMOTIVE SYSTEMS INC
CLARCOR INC
CLARION TECHNOLOGIES INC/DE/
CLEVITE INDUSTRIES INC
COATES INTERNATIONAL LTD \DE\
COLLINS & AIKMAN CORP
COMMERCIAL VEHICLE GROUP INC
COOPER-STANDARD AUTOMOTIVE
CRAGAR INDUSTRIES INC
CYCLE COUNTRY ACCESSORIES
NE ENERGY INC
DAISY PARTS INC
DANA HOLDING CORP
DATA FORTRESS SYSTEMS GROUP
DAUCH ANNUITY TRUST 2001
DECOMA INTERNATIONAL INC
DEFIANCE INC
DEFLECTA SHIELD CORP /DE/

List 1 continued . . .

DELPHI CORP
DESC S A DE C V
DORMAN PRODUCTS INC
DREW INDUSTRIES INC
DULCIN IZMIR CORP
DURA AUTOMOTIVE SYSTEMS
DURAKON INDUSTRIES INC
DYNEER CORP
EAGLE PICHER TECHNOLOGIES
EATON CORP
ECHLIN INC
EDELBROCK CORP
EDMAR LTD
ELECTRA CAPITAL INC /NV
ENERGTEK
ENOVA SYSTEMS INC
ENVIRONMENTAL CONTROL CORP.
EPMR CORP
EXCEL INDUSTRIES INC
EXHAUST TECHNOLOGIES INC
FEDERAL MOGUL CORP
FUEL SYSTEMS SOLUTIONS INC
GEBELEIN CHRISTOPHER A
GENERAL FELT INDUSTRIES INC
GENTEX CORP
GOLD & GREEN INC
HASTINGS MANUFACTURING CO
HAYES LEMMERZ INTERNATIONAL
EL ANTHONY
HILITE INDUSTRIES INC
HILLSDALE TOOL & MFG
HLI OPERATING CO INC
HONEYWELL INTERNATIONAL INC
IMPCO TECHNOLOGIES INC
INDESTRUCTIBLE 1, INC
INSILCO TECHNOLOGIES INC
INTERNATIONAL TEXTILE GROUP
INTIER AUTOMOTIVE INC
JL FRENCH AUTOMOTIVE CASTING
JPS AUTOMOTIVE INC
JUPITER CONTAINERS, INC.
KELSEY HAYES CO
KEY PLASTICS INC
LARIZZA INDUSTRIES INC
LEAR CORP
LUCASVARITY PLC
LUND INTERNATIONAL HOLDINGS
LYDALL INC /DE/
MAGNA INTERNATIONAL INC
MARK I MOLDED PLASTICS INC
MCCURDY LARRY W
MCLAREN PERFORMANCE TECH.
MERITOR AUTOMOTIVE INC
METALDYNE CORP

MILE MARKER INTERNATIONAL
MIRENCO INC
MIZATI LUXURY ALLOY WHEELS
MODINE MANUFACTURING CO
MOTOR WHEEL CORP
NATURAL GAS VEHICLE
NAVIGATOR GAS TRANSPORT
NEWCOR INC
NEWTECH BRAKE CORP
NOBLE INTERNATIONAL, LTD.
NORTHPORT INDUSTRIES INC
ODYNE CORP
OEA INC /DE/
PEARLMAN BRET D
PENDA CORP
PERFECT FUTURE LTD
POWER TECHNOLOGY INC/CN
PROLIANCE INTERNATIONAL
PURADYN FILTER TECH.
QUANTUM FUEL SYS TECH
RASER TECHNOLOGIES INC
REMY INTERNATIONAL, INC.
RESULTS TECHNOLOGY GROUP
ROLLING TECHNOLOGIES, INC.
SAFE TRANSPORTATION SYSTEMS
SCHWITZER INC
SCORPION PERFORMANCE, INC.
SENSE TECHNOLOGIES INC
SHEP TECHNOLOGIES INC
SILENT WITNESS ENTERPRISES
SIMPSON INDUSTRIES INC
SKATOFF LAWRENCE B
SORL AUTO PARTS, INC.
STANADYNE CORP
STANDARD PRODUCTS CO
STANT CORP
STARCRAFT CORP /IN/
STONERIDGE INC
STRANEY MICHAEL D
STRATTEC SECURITY CORP
SUPERIOR INDUSTRIES INT. INC
SYPRIS SOLUTIONS INC
TENNECO INC
TESMA INTERNATIONAL INC
T J T INC
TOMKINS PLC
TORVEC INC
TRACTECH INC
TRANSNATIONAL AUTO GROUP
TRANSPORTATION TECH. IND. INC
TRIANON INDUSTRIES CORP
TRICO PRODUCTS CORP
TRIDENT AUTOMOTIVE PLC
TRW AUTOMOTIVE HOLDINGS

TURBODYNE TECHNOLOGIES, INC
UCI HOLDCO, INC.
UNITED COMPONENTS INC
UNIVERSAL HOLDINGS INC
UNIVERSAL TOOL & STAMP
US AUTOMOTIVE MFG
US ENERGY INITIATIVES CORP
VALLEY FORGE CORP
VALTEK LLC
VAPOR FUEL TECHNOLOGIES INC
VARLEN CORP
VEMCO INC /MI/
VENTURE INDUSTRIES CORP
VISTEON CORP
WABCO HOLDINGS INC
WALBRO CORP
WEDGESTONE FINANCIAL INC
WELDING ROBERT D
WESCAST INDUSTRIES INC
WILLIAMS CONTROLS INC
WITOSKY GARY J
WONDER AUTO TECHNOLOGY
XE CO

www.manaraa.com

List 2. US-based automotive companies extracted from EDGAR through SIC codes

SIC 2531, U.S. based   n = 4
BE AEROSPACE INC
JOHNSON CONTROLS INC
LEAR CORP
VIRCO MFG. CORP

SIC 3011, U.S. based   n = 4
AMERITYRE CORP
BANDAG INC
COOPER TIRE & RUBBER CO
GOODYEAR TIRE & RUBBER CO

SIC 3385, U.S. based   n = 10
AAON INC
DECTRON INTERNATIONALE INC
ENGINEERED SUPPORT SYSTEMS
FEDDERS CORP
GOODMAN GLOBAL INC
LENNOX INTERNATIONAL INC
MESTEK INC
POWERCOLD CORP
TECUMSEH PRODUCTS CO -CL A
TRANE INC

SIC 3711, U.S. based   n = 10
DAIMLER AG
FEDERAL SIGNAL CORP
FORD MOTOR CO
GENERAL MOTORS CORP
MONACO COACH CORP
NAVISTAR INTERNATIONAL CORP
OSHKOSH CORP
PACCAR INC
SPARTAN MOTORS INC
TONGXIN INTERNATIONAL LTD

SIC 3713, U.S. based   n = 5
BNS HOLDING CO
MILLER INDUSTRIES INC/TN
OBSIDIAN ENTERPRISES INC
POINDEXTER (JB) & CO INC
SUPREME INDUSTRIES INC

SIC 3714, U.S. based   n = 42
ACCURIDE CORP
AMERICAN AXLE & MFG HOLDINGS
AMERIGON INC
ARVINMERITOR INC
AUTOLIV INC
BORGWARNER INC
CHAMPION PARTS INC
CHINA AUTOMOTIVE SYSTEMS INC
COMMERCIAL VEHICLE GROUP INC
DANA HOLDING CORP
DELPHI CORP
DORMAN PRODUCTS INC
DURA AUTOMOTIVE SYS -CL B
EATON CORP
ENOVA SYSTEMS INC
FEDERAL-MOGUL CORP
FUEL SYSTEMS SOLUTIONS INC
GENTEX CORP
HAYES LEMMERZ INTL INC
MAGNA INTERNATIONAL -CL A
METALDYNE CORP
MIRENCO INC
MODINE MANUFACTURING CO
PROLIANCE INTERNATIONAL INC
PURADYN FILTER TECHNOLOGIES
QUANTUM FUEL SYS TECH
RASER TECHNOLOGIES INC
SORL AUTO PARTS INC
STANADYNE CORP
STRATTEC SECURITY CORP
SUPERIOR INDUSTRIES INTL
SYPRIS SOLUTIONS INC
TENNECO INC
T J T INC
TRW AUTOMOTIVE HOLDINGS
TURBODYNE TECHNOLOGIES
UNITED COMPONENTS INC
US ENERGY INITIATIVES CORP
VISTEON CORP
WABCO HOLDINGS INC
WESCAST INDUSTRIES -CL A
WILLIAMS CONTROLS INC

SAMPLE COMPANIES BELOW

SIC 2531, US + S&P 500 n = 3
BE AEROSPACE INC
JOHNSON CONTROLS INC
LEAR CORP

SIC 3011, US + S&P 500 n = 3
BANDAG INC
COOPER TIRE & RUBBER CO
GOODYEAR TIRE & RUBBER CO

SIC 3585, US + S&P 500 n = 5
AAON INC
FEDDERS CORP
LENNOX INTERNATIONAL INC
TECUMSEH PRODUCTS CO -CL A
TRANE INC

SIC 3711, US + S&P 500 n = 8
FEDERAL SIGNAL CORP
FORD MOTOR CO
GENERAL MOTORS CORP
MONACO COACH CORP
NAVISTAR INTERNATIONAL CORP
OSHKOSH CORP
PACCAR INC
SPARTAN MOTORS INC

SIC 3714, US + S&P 500 n = 13
AMERICAN AXLE & MFG
ARVINMERITOR INC
BORGWARNER INC
DANA HOLDING CORP
DELPHI CORP
EATON CORP
FEDERAL-MOGUL CORP
GENTEX CORP
HAYES LEMMERZ INTL INC
MODINE MANUFACTURING CO
SUPERIOR INDUSTRIES INTL
TENNECO INC
VISTEON CORP

SUMMARY

All automotives listed by chosen SIC codes	**280**
All U.S.-based automotives listed by SIC codes	**75**
All U.S.-based + S&P 500 member, listed by SIC (sample)	**32**

Note: The companies were extracted through the SIC numbers from: *United States Securities and Exchange Commission*. Online EDGAR database of public company filings. Interactive on
http://www.sec.gov/edgar/searchedgar/webusers.htm

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APPENDIX B: Executive Total Compensation Data, Years 2006 and 2007

Year_C	Exec_ID	Co_Name	Total_SEC ($ 000)	tcomp(A1) ($ 000)
2006	836	EATON CORP	14,127.949	14,092.418
2007	836	EATON CORP	15,703.261	16,017.165
2006	997	GENERAL MOTORS CORP	10,191.153	11,041.656
2007	997	GENERAL MOTORS CORP	14,415.914	19,761.874
2006	1274	JOHNSON CONTROLS INC	17,793.700	23,114.717
2007	1274	JOHNSON CONTROLS INC	23,157.400	18,667.578
2006	1725	PACCAR INC	8,619.014	9,524.271
2007	1725	PACCAR INC	9,509.033	10,392.622
2006	4000	TECUMSEH PRODUCTS CO	481.622	481.622
2007	4000	TECUMSEH PRODUCTS CO	1,186.187	1,186.187
2006	6005	GENTEX CORP	806.612	907.688
2007	6005	GENTEX CORP	902.139	1,196.223
2006	6665	SPARTAN MOTORS INC	842.959	1,029.184
2007	6665	SPARTAN MOTORS INC	1,070.383	1,689.767
2006	7863	BE AEROSPACE INC	5,566.205	15,954.688
2007	7863	BE AEROSPACE INC	9,564.818	19,819.927
2006	8921	FEDDERS CORP	1,596.872	1,333.872
2007	8925	FEDDERS CORP	1,596.872	1,333.872
2006	10373	MODINE MANUFACTURING	2,444.851	2,444.851
2007	10373	MODINE MANUFACTURING	4,337.865	4,967.672
2006	10819	BANDAG INC	1,160.333	1,482.396
2007	10819	BANDAG INC	1,160.333	1,482.396
2006	11849	NAVISTAR INTERNA. CORP	2,233.855	2,233.855
2007	11849	NAVISTAR INTERNA. CORP	2,233.855	2,233.855
2006	14060	LEAR CORP	6,298.876	4,602.873
2007	14060	LEAR CORP	9,980.208	10,400.804
2006	17482	MONACO COACH CORP	2,204.770	2,199.662
2007	17482	MONACO COACH CORP	3,107.673	3,370.921
2006	18676	COOPER TIRE & RUBBER	7,946.335	8,590.241
2007	18676	COOPER TIRE & RUBBER	3,312.072	6,830.866
2006	19013	SUPERIOR INDUSTRIES INTL	2,504.586	2,651.181
2007	19013	SUPERIOR INDUSTRIES INTL	3,071.451	2,346.998
2006	19056	DELPHI CORP	339.962	339.962
2007	19056	DELPHI CORP	6,503.660	6,135.260
2006	19227	OSHKOSH CORP	6,266.000	6,290.767
2007	19227	OSHKOSH CORP	8,795.987	7,740.166
2006	19235	LENNOX INTERNATIONAL	10,153.128	5,524.653
2007	19235	LENNOX INTERNATIONAL	2,860.005	7,812.256
2006	19463	BORGWARNER INC	2,627.594	5,153.799
2007	19463	BORGWARNER INC	11,130.552	19,259.445
2006	19565	TENNECO INC	1,285.834	4,344.759
2007	19565	TENNECO INC	6,419.623	10,708.262
2006	20926	GOODYEAR TIRE & RUBBER	17,313.118	15,493.609
2007	20926	GOODYEAR TIRE & RUBBER	20,451.008	23,592.034
2006	21855	TRANE INC	10,675.813	7,553.276

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Appendix B continued

Year_C	Exec_ID	Co_Name	Total_SEC ($ 000)	tcomp(A1) ($ 000)
2007	21855	TRANE INC	9,849.396	9,849.396
2006	23815	VISTEON CORP	10,783.136	5,914.956
2007	23815	VISTEON CORP	8,393.607	13,768.528
2006	23940	FORD MOTOR CO	10,497.292	5,496.700
2007	32416	FORD MOTOR CO	21,671.978	22,751.689
2006	24810	HAYES LEMMERZ INTL INC	4,193.756	3,821.846
2007	24810	HAYES LEMMERZ INTL INC	5,579.348	3,834.251
2006	27033	FEDERAL SIGNAL CORP	2,759.686	2,959.904
2007	27033	FEDERAL SIGNAL CORP	3,722.820	3,617.589
2006	28290	ARVINMERITOR INC	2,045.844	2,495.844
2007	28290	ARVINMERITOR INC	4,926.169	5,270.362
2006	28652	DANA HOLDING CORP	2,889.000	2,889.000
2007	28652	DANA HOLDING CORP	7,485.077	7,132.297
2006	31657	FEDERAL-MOGUL CORP	9,241.709	9,241.709
2007	31657	FEDERAL-MOGUL CORP	14,453.910	41,289.244
2006	117861	AMERICAN AXLE & MFG	9,329.628	8,750.767
2007	117861	AMERICAN AXLE & MFG	10,175.194	6,162.479
2006	021542	AAON INC	1,897.058	2,495.844
2007	021542	AAON INC	3,005.875	3,005.875

Note: The companies were extracted through the SIC numbers from: *United States Securities and Exchange Commission*. Online EDGAR database of public company filings. Interactive on http://www.sec.gov/edgar/searchedgar/webusers.htm
Other sources of raw data from: 1. *Standard & Poor's ExecuComp*. (2008). Available for a fee: Standard & Poor's
2. *Company performance*, Hoover's, Inc., Available online at: www.hoovers.com, accessed Sept, 2008.

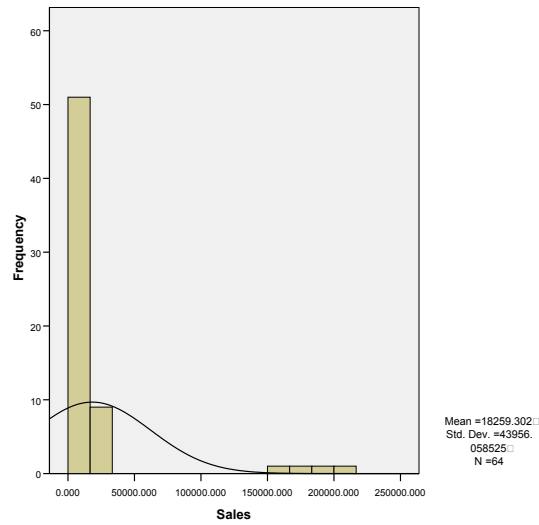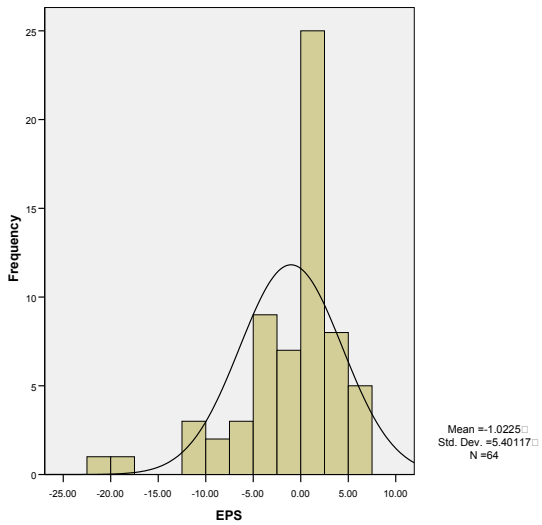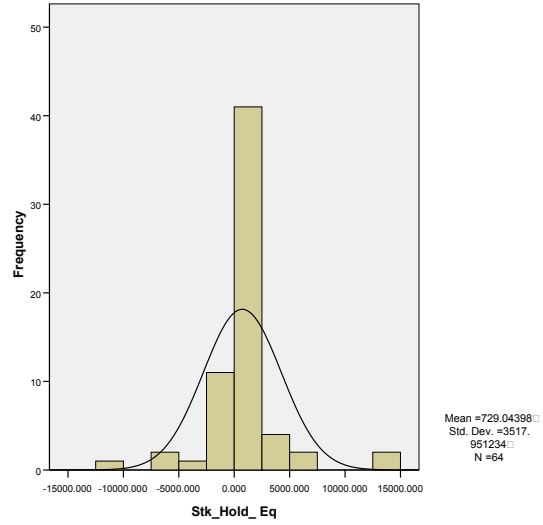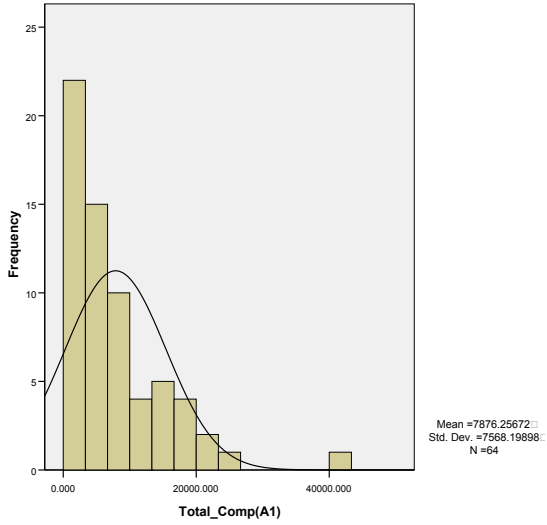## APPENDIX C: Company Performance Data, Years 2005 and 2006

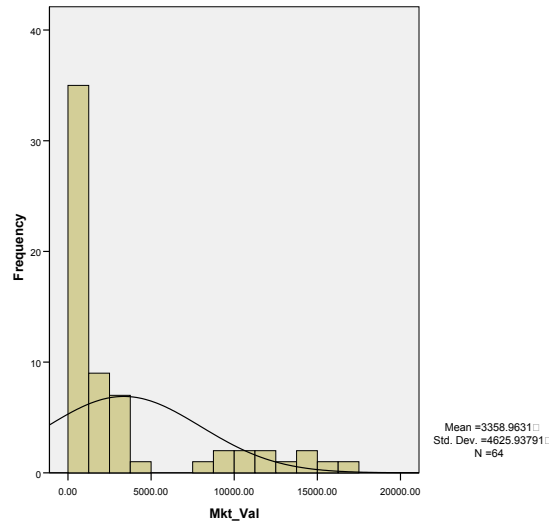| Year_P	Co_Name	Sales (mil.)	Net_Inc (mil.)	EPS (act.)	ROE (%)	ROA (%)	Mkt_Val (mil.)	S_Price (act.)	Empl (thou.)	SH_ Eqt (mil.)
2005	EATON CORP	11,115	805	5.36	21.31	7.88	9,929	67.09	59.00	3,778
2006	EATON CORP	12,370	950	6.07	22.21	7.99	11,195	75.14	60.00	4,106
2005	GM	190,215	-10,567	-18.50	-71.65	-2.20	10,982	19.42	335.00	14,597
2006	GM	207,349	-1,978	-3.50		-1.06	17,375	30.72	280.00	-5,441
2005	JOHNSON CNTR.	27,479	909	3.95	12.50	4.69	11,947	62.05	114.00	6,058
2006	JOHNSON CNTR.	32,235	1,028	5.31	14.05	4.71	14,029	71.74	136.00	7,355
2005	PACCAR	14,057	1,133	6.60	29.05	8.26	11,720	69.23	21.90	3,901
2006	PACCAR	16,454	1,496	5.98	33.57	9.29	16,115	64.90	21.00	4,456
2005	TECUMSEH PROD.	1,847	-223	-12.09	-27.44	-12.41	409	22.96	19.10	814
2006	TECUMSEH PROD.	1,769	-80	-7.03	-16.28	-7.29	310	16.90	18.50	798
2005	GENTEX CORP	536	109	0.70	13.01	11.87	3,029	19.50	2.26	841
2006	GENTEX CORP	572	108	0.74	15.48	13.85	2,228	15.56	2.39	702
2005	SPARTAN MTRS	343	8	0.66	11.42	6.73	129	10.29	0.92	72
2006	SPARTAN MTRS	445	16	0.85	16.31	8.83	318	15.18	1.12	103
2005	BE AEROSPACE	844	84	1.44	14.85	5.93	1,580	22.00	3.98	569
2006	BE AEROSPACE	1,677	147	1.67	11.71	8.31	4,897	52.90	6.30	706
2005	FEDDERS CORP	279	-124	-4.12		-71.24	41	1.00	1.66	
2006	FEDDERS CORP	297	-62	-2.61		-24.16	65	1.72	1.76	-121
2005	MODINE MFG.	1,628	7	1.80	12.02	5.77	990	29.50	7.90	505
2006	MODINE MFG.	1,757	42	1.32	8.57	3.84	752	22.90	7.70	493
2005	BANDAG INC	914	49	2.55	8.85	6.55	732	42.67	3.79	559
2006	BANDAG INC	973	19	1.89	6.35	4.86	931	50.43	3.36	575
2005	NAVISTAR INT.	12,124	139	1.98		1.29	1,929	27.52	17.60	-1,699
2006	NAVISTAR INT.	14,200	301	4.29		2.35	2,089	27.73	17.50	-1,114
2005	LEAR CORP	17,089	-1,381	-20.57	-124.35	-16.67	1,911	28.46	115.11	1,111
2006	LEAR CORP	17,838	-707	-10.35	-118.01	-9.05	1,989	29.53	104.00	602
2005	MONACO COACH	1,236	2	0.13	1.25	0.68	393	13.30	6.04	316
2006	MONACO COACH	1,297	1	0.03	0.31	0.18	421	14.16	5.29	315
2005	COOPER TIRE	2,155	-9	-0.24	-1.60	-0.70	939	15.32	8.76	938
2006	COOPER TIRE	2,676	-78	-1.40	-13.42	-3.84	877	14.30	13.36	639
2005	SUPERIOR IND.	844	-5	-0.27	-1.22	-0.98	592	22.26	6.70	578
2006	SUPERIOR IND.	789	-9	-0.36	-1.71	-1.35	512	19.27	5.70	560
2005	DELPHI CORP	26,947	-2,357	-4.18		-13.75	163	0.29	184.20	-6,245
2006	DELPHI CORP	26,392	-5,464	-9.74		-35.52	2,146	3.82	171.40	-12,055
2005	OSHKOSH CORP	2,959	160	2.22	19.57	9.32	3,164	43.16	7.96	818
2006	OSHKOSH CORP	3,427	205	2.81	19.36	9.74	3,716	50.47	9.39	1,061
2005	LENNOX INT.	3,366	150	2.37	19.13	8.75	1,999	28.20	16.00	794
2006	LENNOX INT.	3,671	166	2.37	20.64	9.65	2,078	30.61	16.00	804
2005	BORGWARNER	4,293	239	4.23	14.57	5.86	3,456	60.63	17.40	1,644
2006	BORGWARNER	4,585	211	3.69	11.28	4.62	3,396	59.02	17.40	1,875
2005	TENNECO INC	4,441	58	1.35	44.96	1.97	865	19.61	19.00	129
2006	TENNECO INC	4,682	49	1.11	21.68	1.50	1,125	24.72	19.00	226
2005	GOODYEAR	19,723	228	1.36	327.40	1.53	3,065	17.38	80.00	73
2006	GOODYEAR	20,258	-330	-1.86		-1.94	3,725	20.99	77.00	-758

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Appendix C continued . . .

Year	Co_Name	Sales (mil.)	Net_Inc (mil.)	EPS (act.)	ROE (%)	ROA (%)	Mkt_Val (mil.)	S_Price (actual)	Empl (thou.)	SH_ Eqt (mil.)
2005	TRANE INC	10,264	556	2.63	60.30	8.10	8,394	39.95	61.20	922
2006	TRANE INC	11,208	541	2.68	58.58	7.30	9,141	45.85	62.20	923
2005	VISTEON CORP	16,976	-270	-2.14		-4.01	805	6.26	49.58	-48
2006	VISTEON CORP	11,418	-163	-1.31		-2.41	1,091	8.48	45.00	-188
2005	FORD	176,896	1,440	0.89	12.23	0.61	13,793	7.72	300.00	13,442
2006	FORD	160,123	-12,613	-6.72		-4.53	13,653	7.51	283.00	-3,465
2005	HAYES LEMMERZ	2,277	-457	-12.35	-255.37	-26.02	141	3.73	10.50	183
2006	HAYES LEMMERZ	2,056	-166	-3.11	-116.99	-7.04	175	4.57	8.50	101
2005	FEDERAL SIGNAL	1,156	-4	0.98	12.57	4.23	722	15.01	5.50	376
2006	FEDERAL SIGNAL	1,211	22	0.72	8.90	3.28	764	16.04	5.40	386
2005	ARVINMERITOR	8,903	12	0.48	3.77	0.56	1,174	16.72	29.00	875
2006	ARVINMERITOR	9,195	-175	-2.51	-18.43	-3.16	1,004	14.24	27.50	944
2005	DANA CORP	8,626	-1,605	-7.86	-215.60	-15.91	1,080	7.18	44.00	545
2006	DANA CORP	8,515	-739	-4.11		-9.18	208	1.39	45.00	-834
2005	FEDERAL-MOGUL	6,286	-334	-3.75		-4.32	32	0.36	41.70	-2,433
2006	FEDERAL-MOGUL	6,326	-549	-6.15		-7.66	52	0.59	43.10	-1,747
2005	AMERICAN AXLE	3,387	56	1.10	5.63	2.10	932	16.77	11.00	890
2006	AMERICAN AXLE	3,191	-222	-4.42	-27.34	-8.57	985	18.00	10.00	-435
2005	AAON INC	185	11	0.60	14.42	10.09	220	11.28	1.41	79
2006	AAON INC	231	17	0.90	18.71	13.17	324	16.85	1.44	91

Note: The companies were extracted through the SIC numbers from: *United States Securities and Exchange Commission*. Online EDGAR database of public company filings. Interactive on http://www.sec.gov/edgar/searchedgar/webusers.htm
Other sources of raw data from: 1. *Standard & Poor's ExecuComp*. (2008). Available for a fee: Standard & Poor's
2. *Company performance*, Hoover's, Inc., Available online at: www.hoovers.com, accessed Sept, 2008.

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APPENDIX D: Histograms of The Study's Variables

Histogram of Total_Comp(A1) — Mean =7876.25672, Std. Dev. =7568.19898, N =64

Histogram of Stk_Hold_ Eq — Mean =729.04398, Std. Dev. =3517.951234, N =64

Histogram of EPS — Mean =-1.0225, Std. Dev. =5.40117, N =64

Histogram of Sales — Mean =18259.302, Std. Dev. =43956.058525, N =64

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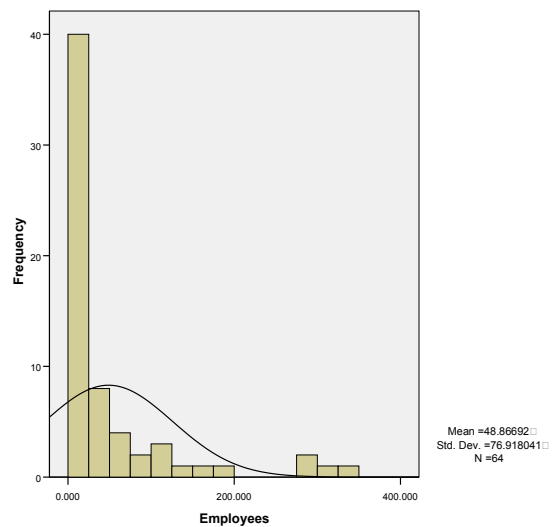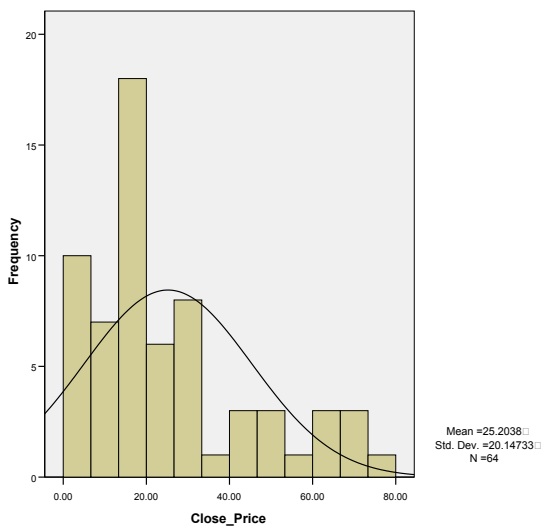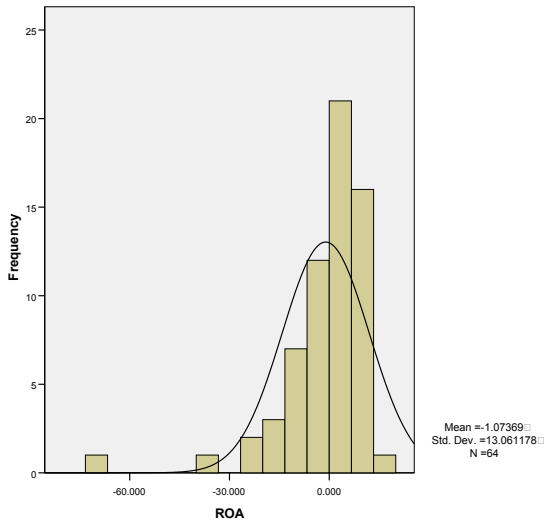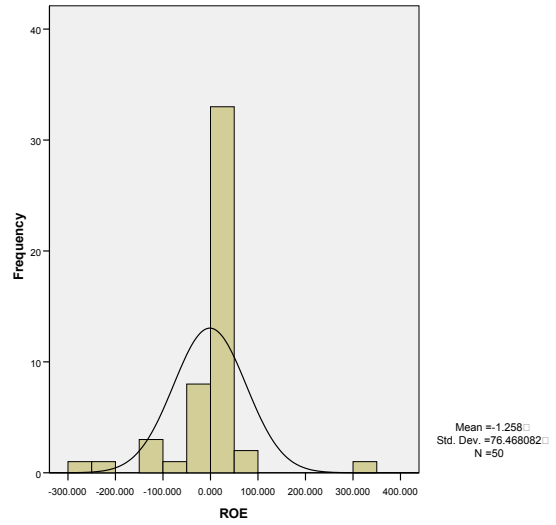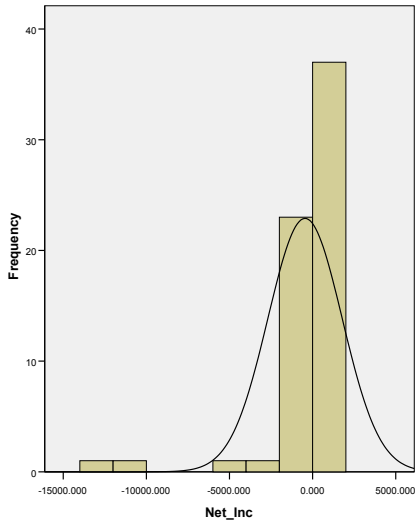
APPENDIX E: Transformed Variables

Mean =3.70171
Std. Dev. =0.44308
N =64

Mean =3.64133
Std. Dev. =0.717459
N =64

Mean =1.24746
Std. Dev. =0.651245
N =64

Mean =1.19541
Std. Dev. =0.538946
N =64

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Mean =3.0981
Std. Dev. =0.67806
N =64
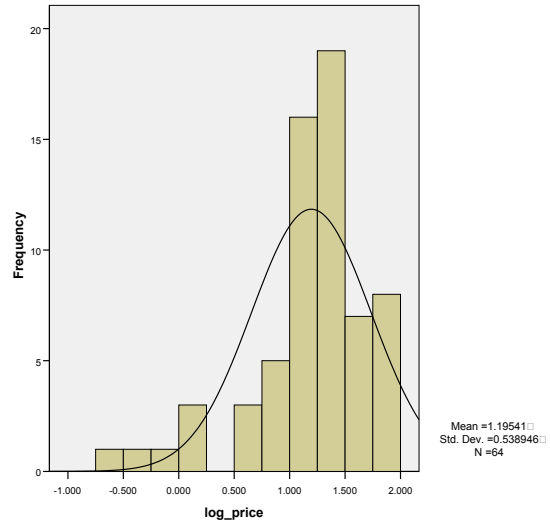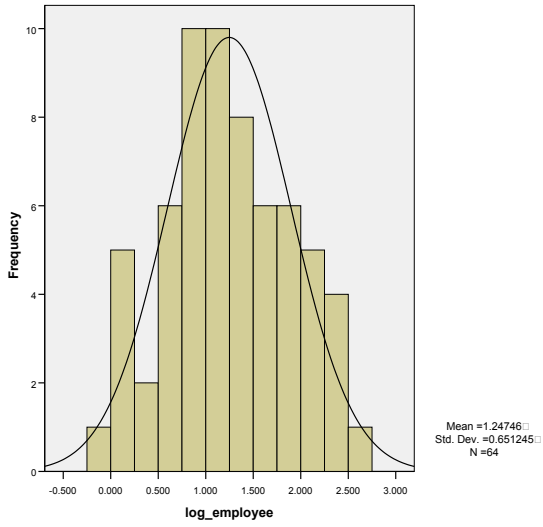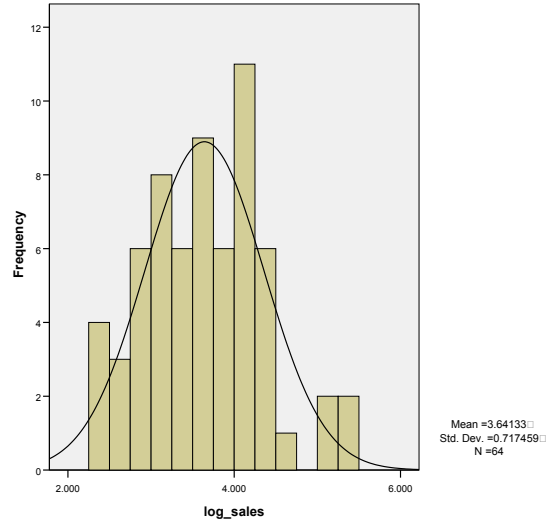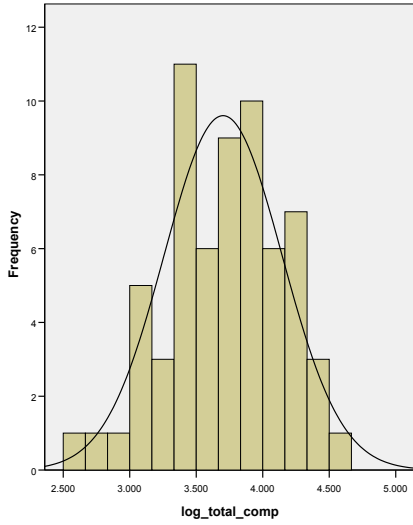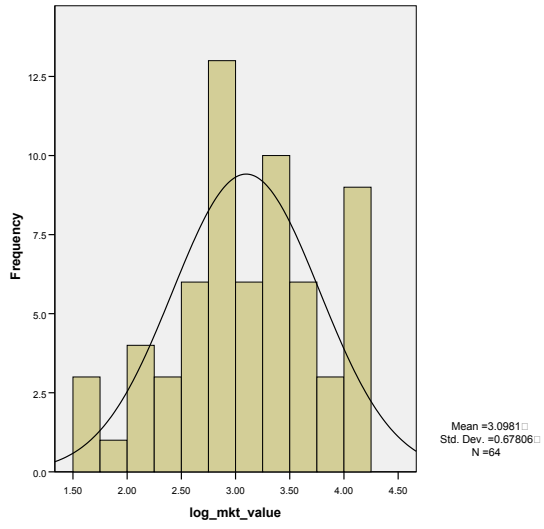
APPENDIX F: Normal Probability Plots of Variables

Normal Q-Q Plot of Total_Comp(A1)
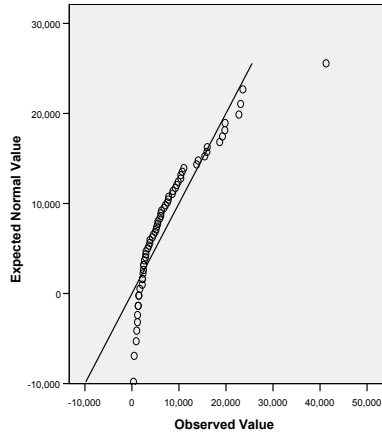
Normal Q-Q Plot of Sales
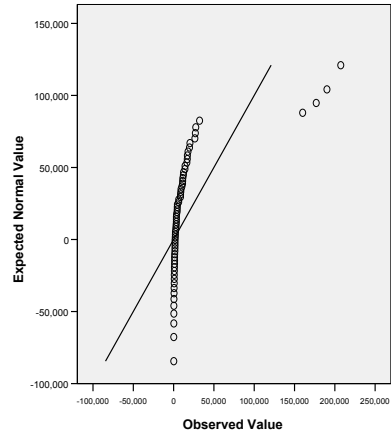
Normal Q-Q Plot of EPS
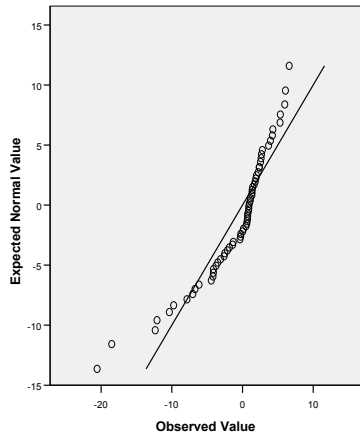
Normal Q-Q Plot of Net_Inc

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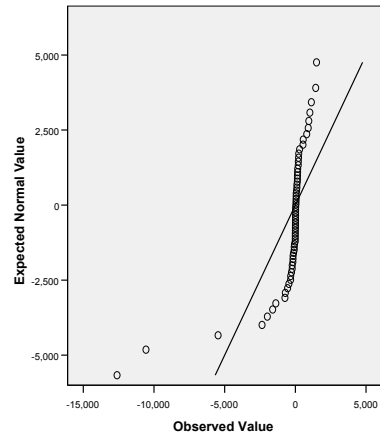
Normal Q-Q Plot of ROE
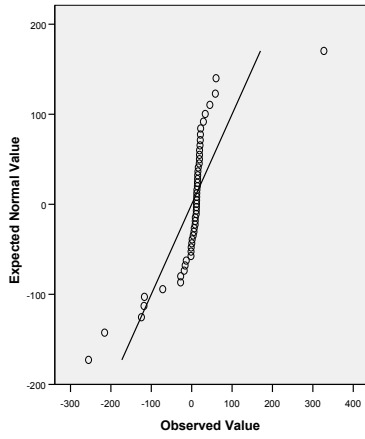
Normal Q-Q Plot of ROA
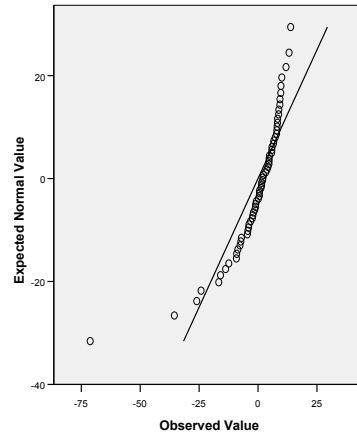
Normal Q-Q Plot of Mkt_Val
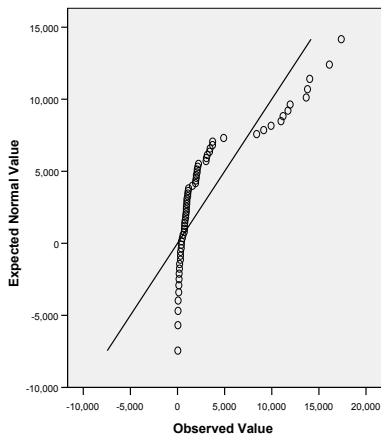
Normal Q-Q Plot of Close_Price
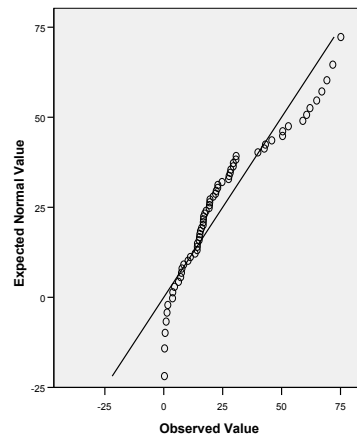
Normal Q-Q Plot of Employees
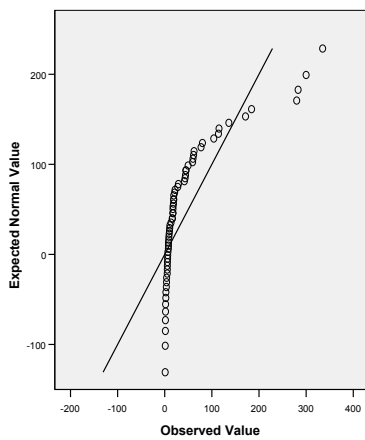
Normal Q-Q Plot of Stk_Hold_ Eq

157
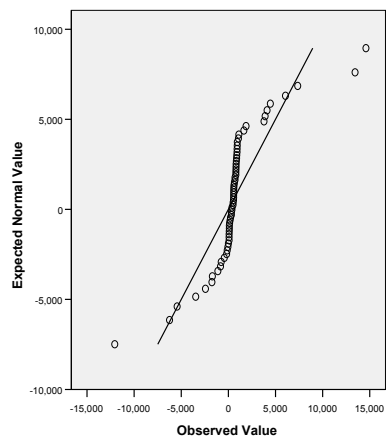
APPENDIX G: Normal Probability Plot of Transformed Variables

Normal Q-Q Plot of log_total_comp
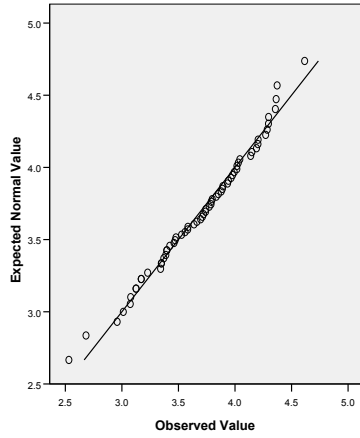
Normal Q-Q Plot of log_sales
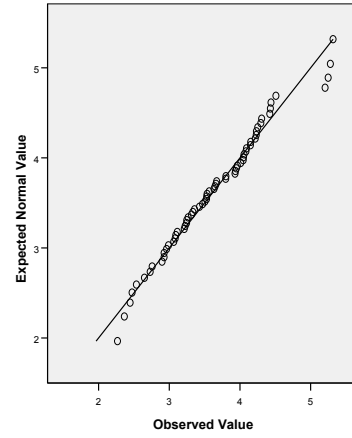
Normal Q-Q Plot of log_employee
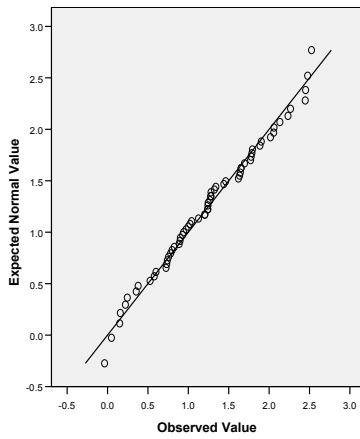
Normal Q-Q Plot of log_price

158
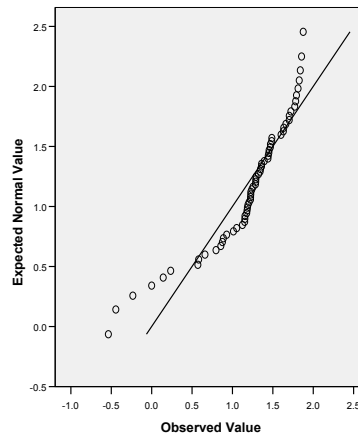
Normal Q-Q Plot of log_mkt_value
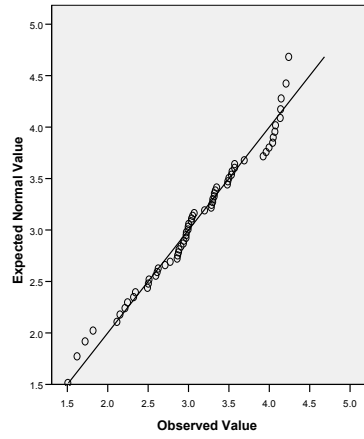
APPENDIX H: Full Regression Output for Testing of Hypothesis 1

Regression - Hypothesis 1

Descriptive Statistics

	Mean	Std. Deviation	N
log_total_comp	3.70171	.443080	64
log_sales	3.64133	.717459	64
log_employee	1.24746	.651245	64
log_mkt_value	3.0981	.67806	64

Correlations

		log_total_comp	log_sales	log_employee	log_mkt_value
Pearson Correlation	log_total_comp	1.000	.542	.518	.508
	log_sales	.542	1.000	.957	.621
	log_employee	.518	.957	1.000	.521
	log_mkt_value	.508	.621	.521	1.000
Sig. (1-tailed)	log_total_comp	.	.000	.000	.000
	log_sales	.000	.	.000	.000
	log_employee	.000	.000	.	.000
	log_mkt_value	.000	.000	.000	.
N	log_total_comp	64	64	64	64
	log_sales	64	64	64	64
	log_employee	64	64	64	64
	log_mkt_value	64	64	64	64

Variables Entered/Removed [b]

Model	Variables Entered	Variables Removed	Method
1	log_mkt_value, log_employee, log_sales [a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: log_total_comp

160

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.589[a]	.347	.314	.366971	.347	10.614	3	60	.000	1.197

a. Predictors: (Constant), log_mkt_value, log_employee, log_sales

b. Dependent Variable: log_total_comp

ANOVA [b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.288	3	1.429	10.614	.000[a]
	Residual	8.080	60	.135		
	Total	12.368	63			

a. Predictors: (Constant), log_mkt_value, log_employee, log_sales

b. Dependent Variable: log_total_comp

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	2.627	.534		4.919	.000	1.559	3.695					
	log_sales	.062	.257	.101	.242	.810	-.452	.577	.542	.031	.025	.063	15.933
	log_employee	.177	.260	.260	.679	.500	-.344	.697	.518	.087	.071	.074	13.436
	log_mkt_value	.203	.092	.310	2.202	.032	.019	.387	.508	.273	.230	.549	1.821

a. Dependent Variable: log_total_comp

Coefficient Correlations [a]

Model			log_mkt_value	log_employee	log_sales
1	Correlations	log_mkt_value	1.000	.325	-.496
		log_employee	.325	1.000	-.948
		log_sales	-.496	-.948	1.000
	Covariances	log_mkt_value	.008	.008	-.012
		log_employee	.008	.068	-.063
		log_sales	-.012	-.063	.066

a. Dependent Variable: log_total_comp

APPENDIX I: Regression Output for Hypothesis 2 Test

Descriptive Statistics

	Mean	Std. Deviation	N
log_total_comp	3.70171	.443080	64
EPS	-1.0225	5.40117	64

Correlations

		log_total_comp	EPS
Pearson Correlation	log_total_comp	1.000	.120
	EPS	.120	1.000
Sig. (1-tailed)	log_total_comp	.	.173
	EPS	.173	.
N	log_total_comp	64	64
	EPS	64	64

Variables Entered/Removed [b]

Model	Variables Entered	Variables Removed	Method
1	EPS [a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: log_total_comp

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.120[a]	.014	-.002	.443430	.014	.901	1	62	.346	1.013

a. Predictors: (Constant), EPS

b. Dependent Variable: log_total_comp

ANOVA [b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.177	1	.177	.901	.346[a]
	Residual	12.191	62	.197		
	Total	12.368	63			

a. Predictors: (Constant), EPS

b. Dependent Variable: log_total_comp

162

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.712	.056		65.778	.000	3.599	3.825					
	EPS	.010	.010	.120	.949	.346	-.011	.030	.120	.120	.120	1.000	1.000

a. Dependent Variable: log_total_comp

Coefficient Correlations [a]

Model			EPS
1	Correlations	EPS	1.000
	Covariances	EPS	.000

a. Dependent Variable: log_total_comp

Collinearity Diagnostics [a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	EPS
1	1	1.187	1.000	.41	.41
	2	.813	1.209	.59	.59

a. Dependent Variable: log_total_comp

Residuals Statistics [a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.50982	3.77653	3.70171	.053019	64
Residual	-1.139280	.964464	.000000	.439897	64
Std. Predicted Value	-3.619	1.411	.000	1.000	64
Std. Residual	-2.569	2.175	.000	.992	64

a. Dependent Variable: log_total_comp

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Regression

Descriptive Statistics

	Mean	Std. Deviation	N
log_total_comp	3.70171	.443080	64
ROA	-1.07369	13.061178	64

Correlations

		log_total_comp	ROA
Pearson Correlation	log_total_comp	1.000	.191
	ROA	.191	1.000
Sig. (1-tailed)	log_total_comp	.	.066
	ROA	.066	.
N	log_total_comp	64	64
	ROA	64	64

Variables Entered/Removed [b]

Model	Variables Entered	Variables Removed	Method
1	ROA [a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: log_total_comp

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.191[a]	.036	.021	.438447	.036	2.339	1	62	.131	.988

a. Predictors: (Constant), ROA

b. Dependent Variable: log_total_comp

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ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.450	1	.450	2.339	.131[a]
	Residual	11.919	62	.192		
	Total	12.368	63			

a. Predictors: (Constant), ROA

b. Dependent Variable: log_total_comp

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.709	.055		67.438	.000	3.599	3.819					
	ROA	.006	.004	.191	1.529	.131	-.002	.015	.191	.191	.191	1.000	1.000

a. Dependent Variable: log_total_comp

Coefficient Correlations[a]

Model			ROA
1	Correlations	ROA	1.000
	Covariances	ROA	1.79E-005

a. Dependent Variable: log_total_comp

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	ROA
1	1	1.083	1.000	.46	.46
	2	.917	1.086	.54	.54

a. Dependent Variable: log_total_comp

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.24791	3.79825	3.70171	.084474	64
Residual	-1.088315	.956704	.000000	.434953	64
Std. Predicted Value	-5.372	1.143	.000	1.000	64
Std. Residual	-2.482	2.182	.000	.992	64

a. Dependent Variable: log_total_comp

165

Regression

Variables Entered/Removed [b]

Model	Variables Entered	Variables Removed	Method
1	Stk_Hold_ Eq[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: log_total_comp

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.182[a]	.033	.018	.439179

a. Predictors: (Constant), Stk_Hold_ Eq

b. Dependent Variable: log_total_comp

ANOVA [b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.410	1	.410	2.124	.150[a]
	Residual	11.958	62	.193		
	Total	12.368	63			

a. Predictors: (Constant), Stk_Hold_ Eq

b. Dependent Variable: log_total_comp

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	3.685	.056		65.707	.000	3.573	3.797
	Stk_Hold_ Eq	2.29E-005	.000	.182	1.457	.150	.000	.000

a. Dependent Variable: log_total_comp

166

Residuals Statistics [a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.40865	4.01960	3.70171	.080643	64
Std. Predicted Value	-3.634	3.942	.000	1.000	64
Standard Error of Predicted Value	.055	.225	.069	.036	64
Adjusted Predicted Value	3.29842	4.06571	3.70002	.090555	64
Residual	-1.020955	.970911	.000000	.435680	64
Std. Residual	-2.325	2.211	.000	.992	64
Stud. Residual	-2.396	2.237	.002	1.009	64
Deleted Residual	-1.095893	.994271	.001680	.450651	64
Stud. Deleted Residual	-2.495	2.314	.000	1.023	64
Mahal. Distance	.000	15.540	.984	3.018	64
Cook's Distance	.000	.243	.018	.038	64
Centered Leverage Value	.000	.247	.016	.048	64

a. Dependent Variable: log_total_comp

167

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
log_total_comp	3.70171	.443080	64
log_price	1.19541	.538946	64

Correlations

		log_total_comp	log_price
Pearson Correlation	log_total_comp	1.000	.242
	log_price	.242	1.000
Sig. (1-tailed)	log_total_comp	.	.027
	log_price	.027	.
N	log_total_comp	64	64
	log_price	64	64

Variables Entered/Removed [b]

Model	Variables Entered	Variables Removed	Method
1	log_price [a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: log_total_comp

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.242[a]	.059	.043	.433366	.059	3.856	1	62	.054	.925

a. Predictors: (Constant), log_price

b. Dependent Variable: log_total_comp

168

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.724	1	.724	3.856	.054[a]
	Residual	11.644	62	.188		
	Total	12.368	63			

a. Predictors: (Constant), log_price

b. Dependent Variable: log_total_comp

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.464	.133		26.110	.000	3.199	3.729					
	log_price	.199	.101	.242	1.964	.054	-.004	.401	.242	.242	.242	1.000	1.000

a. Dependent Variable: log_total_comp

Coefficient Correlations[a]

Model			log_price
1	Correlations	log_price	1.000
	Covariances	log_price	.010

a. Dependent Variable: log_total_comp

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	log_price
1	1	1.913	1.000	.04	.04
	2	.087	4.685	.96	.96

a. Dependent Variable: log_total_comp

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.35725	3.83707	3.70171	.107213	64
Residual	-1.051933	1.198256	.000000	.429913	64
Std. Predicted Value	-3.213	1.263	.000	1.000	64
Std. Residual	-2.427	2.765	.000	.992	64

a. Dependent Variable: log_total_comp

169