

CEO Compensation in the U.S.:

Are CEOs Underpaid or Overpaid?

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Abstract

This study investigates the adequacy of CEO compensation from the perspective of using accounting measures to assess the performance of CEOs. The main objective of this research is to determine to what extent compensation packages received by American CEOs represent an underpayment of CEOs based on the performance of their firms when firm performance is defined in terms of accounting measures. CEO compensation data are obtained from Compustat, 10K SEC filings, and Forbes listing of CEO data. The analysis covers a two-phased time period i.e., before and after the financial crisis in the USA. CEO compensation data are analyzed for the years 2004, 2005, 2006, and 2007 (pre-financial crisis) and for years 2009 to 2013 (post financial crisis). Multiple regression models consisting of six accounting performance measures are used to perform the analysis to determine the extent of CEO underpayment or overpayment. Having examined 1151 CEO compensation packages to determine if CEO underpayment exist in light of what is an overwhelming literature supporting CEO overpayment, the results show that 67.33% of the CEOs were in fact underpaid based on their firms performance, and only 32.67% (376 CEOs) were overpaid based on firm performance.

Keywords: CEO compensation, accounting measures, firm performance, underpayment

1. Introduction

Executive compensation is a global issue that has received considerable attention by scholars, researchers and the general public over that last two decades. The interest in executive compensation, particularly chief executive officers (CEOs) remains as current as when it was first discussed more than twenty five years ago. The continued and sustained interest in CEO compensation is largely a result of the recent corporate scandals and failures which have left many shareholders and other stakeholders asking if these CEOs are worth the compensation they received. Every year there is an annual ritual being played out in the business press: compensation figures for the highest paid executives in Europe and North America are released with the expected gasps about overpayment (Wade, O'Reilly and Pollock, 2006). The general consensus of stakeholders is that CEO compensation has increased exponentially in recent years while the average pay of other workers has lagged behind (Frydman and Saks, 2007). Against this background, researchers including Core, Guay and Thomas (2007) and Kaplan (2008) have sought to understand the factors that have led to the sudden increase in CEO compensation. Consequently, researchers have argued that CEOs are overpaid based on the economic environment in which they operate (Conyon, Core and Guay, 2009; Gabaix and Landier, 2008).

The issue of CEO compensation relative to that of the ordinary worker is highlighted by the fact that in 2014 CEOs of the S&P 500 index companies received on average \$13.6 million in total compensation which represents a 15.6% increase when compared with 2013 compensation figures. However, the average non-supervisory and production worker earns \$36,134 per annum, whereas the full time worker making the federal minimum wage earns only \$15,080 per annum. The problem of excessive CEO compensation is further compounded by the fact that the CEO to worker pay ratio in 2014 was 373:1, whereas, in 1980 it was 42:1 and by 2013 it has risen to 333:1.

Statistics like those presented above provide fertile ground for the argument that CEOs are overcompensated. While there may be some credibility regarding the perception of excessive CEO compensation packages, the central issue concerns how widespread is the problem, and if it is as widespread as has been presented in the literature. Secondly, and more importantly, could it be that despite the occurrence of CEO overpayment, there are significant numbers of CEOs who are being underpaid based on the performance of their firms. This is the issue that needs to be addressed.

The debate in the literature is based on agency theory which holds that agency problems arise due to the separation of management from ownership. Agency problems occur because the agents or managers are likely to pursue self-serving goals that may not benefit stockholders (Tosi, Werner, Kate, and Gomez-Mejia, 2000). Therefore, shareholders have become concerned that CEOs have enriched themselves over the last decade by negotiating compensation packages that do not reflect the performance of their firms. This view is not common to only shareholders, as Tosi et al., (2009) argue that commentators and academic writers have been preoccupied with the view that CEOs are overpaid and hence compensation contracts should be designed to prevent CEOs from extracting robust financial rewards from firms at the expense of shareholders' wealth.

To protect shareholders' interests, minimize agency cost, and ensure the alignment of principal and agent interests, agency theorists have prescribed various governance mechanisms for example, alternative compensation schemes and governance structures (Demsetz and Lehn, 1985). Given the view that CEOs are being overpaid, financial incentive schemes can provide rewards and punishment that are aimed at aligning principal-agent interests (Davis, Schoorman, and Donaldson, 1997). A business article headlined "Does Rank Have Too Much Privilege? - Special Deals for Top Executives, While Underlings Lose Jobs and Savings, Are All Too Common" (Hymowitz, 2002) captured the general perception most people have about top executives' compensation and the outrage it can inspire. The sustained attention and interest in CEO compensation over these many years with the basic underlying presumption that CEOs have been and are still currently being overpaid may have prevented scholars from taking an objective look at the issues of CEO compensation through a different set of lens and objectively consider whether CEOs are in fact being overpaid or is it just a convenient popular emotive view to hold?

The main objective of this study is to investigate the total compensation received by CEOs in a given year and to determine whether CEOs were underpaid based on the financial performance of their companies. There is an extensive and growing body of literature aimed at investigating executive compensation, its determinants, and its sensitivity to key financial variables, such as financial performance and firm size (defined in terms of sales). Adding to the numerous scholarly studies, is the increasing commentary in the press and other media outlets about the rising levels of remuneration paid to executives of firms that have reported poor financial results or otherwise failing performances (Callan and Thomas, 2011). Many studies have questioned the worth of the CEO when compared to the financial out-turn of the firm.

Some studies have tried to investigate if remuneration is in fact linked to firm performance, to determine this, regression analysis is used to identify the marginal effect of changes in performance on executive pay, known as the pay-for-performance relationship, and these marginal effects can then be used to estimate the relevant elasticities (Callan and Thomas, 2011). Interestingly, although most empirical findings suggest that the pay-for-performance relationship is positive, most of these find that the relationship is relatively weak and this outcome has resulted in continuing investigation (Callan and Thomas, 2011). The objectives of studies like these are to establish relationships between CEO compensation and firm performance, but they are not able to address the substantive issue of this research. Therefore, the main research question of this study is: do the current compensation contracts agreed to by CEOs and the principals of the firms represent a net savings to these firms because the compensation packages reflect an underpayment to CEOs?

In line with this view, this study investigates the proposed research question using the United States (U.S.) environment. The choice of the U.S. was made based on the availability of CEO compensation data and companies accounting results from annual 10-K Security and Exchange Committee (SEC) filings. Additionally, compensation data for the highest paid United States CEOs are readily available from databases in the U.S. Furthermore, a large number of studies have examined the issues of CEO compensation, some trying to explain the presence of excess earnings and the possible reasons for the excess earnings of CEOs, while others have concluded that CEOs are overpaid and they try to explain why CEOs are overpaid. Still there are those researchers who have tried to uncover as best as possible, the main determinants of executive compensation (Cordeiro and Veliyath, 2003).

2. Theories and Literature Review

The main theoretical framework for this study is one that is grounded in agency theory and corporate governance. The basic premise is that the separation of ownership from management results in agency costs to the principals. Principals

are concerned that the interests of agents are not generally in alignment with the interests of the owners and resulting from this non-alignment or divergence of interests, shareholders incur agency costs. Therefore, to control and monitor self-serving agents, the need for effective corporate governance structures become an imperative.

The agents who are the CEOs are employed to manage the firms on behalf of the shareholders with the sole purpose of maximizing shareholders' wealth and in return CEOs receive a compensation package which should be reflective of their performance and contribution to shareholder wealth maximization. However, in most cases this simple depiction of what should be a straightforward model does not work. The result is distrust between principals and agents and the attempt by principals to implement punishment and monitoring system to bring agents behavior in line with the interests of shareholders. To achieve this, corporate governance and control structures are normally implemented through the board of directors.

According to Johnson, Daily, and Ellstrand, (1996) the board of directors has three major responsibilities to accomplish: monitoring management actions, advising the CEO, and getting external resources that are vital to build corporate capabilities. An effective board is therefore vital to ensure that agents/CEOs do not enrich themselves at the expense of the shareholders. The effectiveness of the board is dependent on its structure. However, managerial power theory contends that board structure arrangements are important boundary conditions for board monitoring and for aligning CEO pay to firm performance. Boards dominated by executive insiders are assumed to be problematic monitors and compromised compensation decision-makers who are normally loyal to the CEOs, given that the CEOs can influence fellow executive rewards' and career advancement (Beatty and Zajac, 1994). In addition, managerial power theory proposes that CEOs who are also board chairpersons have the power to influence board decisions in general, but especially in the setting of CEO pay (Boyd, 1994). Combining the role of board chairperson and CEO is said to render directors beholden to the CEO and hence, to create the conditions for board complicity or board capture (Bebchuk and Fried, 2004; Cadbury, 2002; Gumbel, 2006; Huse, 2007).

Arising from this concern, an effective governance mechanism would be one in which the percentage of independent directors on the board exceed that of the executive directors. The directors are the moderating force between the opportunistic CEOs and the shareholders and thus board integrity must be maintained at all times especially because shareholders are normally dispersed and lack the power to directly monitor the actions of the CEOs.

This study also incorporates some aspects of stewardship theory. Stewardship theory presents a view that is contrary to that of agency theory, while agency theory sees agents as opportunistic and self-serving; stewardship theory sees agents as loyal, committed individuals who want to do a good job and therefore see shareholder wealth maximization as being in their best interest. This study therefore gives extensive coverage to agency and corporate governance issues.

2.1 Overview of Corporate Governance

Agency conflicts in organizations results from the separation of ownership and control, the conflicting objectives of owners and managers, and information asymmetry between owners and managers (Fama and Jensen, 1983). As a result of these agency conflicts, and given that managers have sufficient latitude in applying acceptable accounting procedures, they are likely to have incentives to take actions that maximize their utility, even when those actions do not maximize shareholder wealth (Watts and Zimmerman, 1986).

Daily, Dalton, and Cannella (2003) view governance as the determination board uses as to which organizational resources will be deployed and the resolution of conflicts among the numerous participants in organizations. They argue that the definition stands in some contrast to the many decades of governance research in which researchers have focused mainly on the control of executive self-interest and the protection of shareholder interest in settings where organizational ownership and control are separated. It is further argued that the overwhelming emphasis in governance research has been on the ability of the various mechanisms available to protect shareholders from the self-interested whims of executives (Daily, et al., 2003).

There is considerable debate in corporate governance literature on the role of board in disciplining the firm management (Rashid, et al. 2012). The board's ability to exercise the governance function depends on a number of board attributes, such as the distribution of power between the board Chair and the Chief Executive Officer (CEO) (Pearce and Zahra 1991; Finkelstein and Hambrick 1996; Kakabde, Kakabde, and Barratt, 2006); board size (Hermalin and Weisbach 2003; Zahra and Pearce 1989); boards of directors' ability to choose CEO with standard managerial competencies who may demonstrate integrity, provide meanings, generate trust, and communicate values (Bennis and O'Toole 2000); board independence (Rosenstein and Wyatt 1990; Gopinath, Siciliano, and Murray, 1994; Maassen 2002; Raheja 2005), and the extent of influence of external environment (Pfeffer and Salancik 1978).

The board's ability to monitor management attracted attention following the collapse of Maxwell Publishing Group, BCCI and Poly Peck in the United Kingdom (Rashid, 2013). The Cadbury Code developed and published in response to these collapses (Jonsson, 2005), made recommendations for board reforms, including the structural independence of the board (Rashid, 2013).

Similarly, the board's ability to monitor management also attracted attention following the wave of mega corporate collapses in the early 2000s, such as the collapse of Enron, WorldCom and HIH insurance (Brick, Palmon, and Wald, 2006; Braun and Sharma, 2007). It is alleged that board's inability to monitor management within these corporations was due to insufficient monitoring as the management had a consolidation of power (Rose, 2005). The Sarbanes-Oxley Act in 2002, following the corporate scandals in the United States (such as Enron and WorldCom), recommends a number of additional checks and balance in place to monitor the CEOs (Dey, Engel, and Liu, 2009)

The corporate governance mechanisms provide shareholders some assurance that managers will strive to achieve outcomes that are in the shareholders' interests (Shleifer and Vishny, 1997). Shareholders have available both internal and external governance mechanisms to help bring the interests of managers in line with their own (Walsh and Seward, 1990). Internal mechanisms include an effectively structured board, compensation contract that encourage a shareholder orientation, and concentrated ownership holdings that lead to active monitoring of executives. The market for corporate control serves as an external mechanism that is normally activated when internal mechanisms for controlling managerial opportunism have failed (Daily et al., 2003).

The governance structure of a firm involves mechanisms to maximize agency conflicts. The demand for these control mechanisms is likely to be higher for firms with greater need for oversight, or with higher degrees of agency conflicts. In other words, agency conflicts and governance mechanisms in a firm are likely to be complementary, that is, higher levels of agency conflicts will result in stronger governance structures (Dey, 2008).

While agency theory dominates corporate governance research (Dalton, Daily, Certo, and Roengpitya, 2003), part of the governance literature stem from a wider range of theoretical perspectives (Daily et al., 2003), it is said that many of these theoretical perspectives are intended as complements to agency theory. Daily, et al., (2003) argue that a multitheoretical approach to corporate governance is essential for recognizing the many mechanisms and structures that might reasonably enhance organizational functioning. For example, it is claimed that the board of directors is perhaps the most central internal governance mechanism. However, whereas agency theory is appropriate for conceptualizing the control and or monitoring role of directors, additional perspectives are needed to explain directors' resource, service, and strategy roles (Johnson, Daily, and Ellstrand, 1996).

Resource dependency theory provides a theoretical foundation for directors' resource role (Daily, et al., 2003). Advocates of this theory see board members' contributions as boundary spanners of the organization and the environment (Dalton, Daily, Johnson, and Ellstrand, 1999; Hillman, Cannella, and Paetzold, 2000). In these roles, outside directors provide access to resources needed by the firm. For example, outside directors who are also executives of financial institutions may assist in securing favorable lines of credit (Stearns and Mizruchi, 1993) also outside directors who are partners in a law firm provide legal advice, either in board meetings or in private communications with firm executives, which may otherwise be more costly for the firm to secure. The provisions of these resources enhance organizational functioning, firm performance and survival (Daily, et al., 2003).

Executives have reputations that are interwoven with the financial performance of their firms (Baysinger and Hoskisson, 1990). In order to protect their reputations as expert decision makers, executives and directors are inclined to operate the firm in a manner that maximize financial performance measures, including shareholder returns. For example, directors, whether insiders or outsiders, concern themselves with the effectiveness of their firm's strategy, because they recognize that the firm's performance directly impacts perceptions of their individual performance. Therefore, in being effective stewards of the organization, executives and directors are also effectively managing their careers (Fama, 1980).

The power perspective, as applied to corporate governance studies addresses the potential conflict of interest among executives, directors, and shareholders (Jensen and Warner, 1988). The power relationship between CEOs and board of directors has been of particular interest in corporate governance research (Daily, et al., 2003). Although the board is legally the more powerful entity in the CEO/board relationship, there are a number of factors that operate to reduce board power vis-à-vis the CEO. For example, CEO can exercise influence over the succession process by dismissing viable successor candidates (Cannella and Shen, 2001). Also, the timing of a director's appointment to the board might also impact the power relations between board members and CEOs, because directors appointed during the tenures of current CEOs may be loyal to them and may be less likely to challenge them.

2.2 CEO Duality

Boards of directors are charged with ensuring that chief executive officers (CEOs) carry out their duties in a way that serves the best interests of shareholders. Thus boards can be seen as monitoring devices that help align CEO and shareholder interests (Fama and Jensen, 1983). CEO duality occurs when the same person holds both the CEO and board chairperson in a corporation (Rechner and Dalton, 1991). CEO duality has opposing effects that boards must attempt to balance. On the one hand, duality can firmly entrench a CEO at the top of an organization, thus challenging a board's ability to effectively monitor and discipline (Mallette and Fowler, 1992). On the other hand, the consolidation of the two most senior management positions establishes a unity of command at the top of the firm, with unambiguous leadership clarifying decision-making authority and sending reassuring signals to shareholders (Finkelstein and D'Aveni, 1994).

Separation of ownership and management in modern corporations has led to different arguments regarding the relationship between the principal and agent. According to agency theory, the agent in this relationship will be a self-interest optimizer. In other words, executive managers will take decisions with the aim of optimizing their wealth and or minimizing their risks at the expense of the shareholders' value (Elsayed, 2007). Therefore, it has been argued that internal and external monitoring mechanisms need to be implemented to lessen the divergence in interest between shareholders and the management (Jensen and Meckling, 1976).

However, other researchers argue against the hypothesis of agency theory and propose stewardship theory (Elsayed, 2007). For example, Donaldson and Davis (1991) claim that the executive manager under stewardship theory is far from being an opportunistic shirker, and essentially wants to do a good job, that is he wants to be a good steward of the company's assets. The basic premise of stewardship theory is that the structure of the firm is the main determinant that can assist the executive manager to implement his or her plans effectively (Elsayed, 2007).

According to Johnson et al., (1996) the board of directors has three major responsibilities to accomplish: monitoring management actions, advising the CEO and getting external resources that are vital to build corporate capabilities. One fundamental question that has received growing attention in the literature is whether there is a relationship between board leadership structure and corporate performance. Or to put it another way, is it better to have one person to fulfil the CEO and at the same time to be the chairman of the board of directors, or is it preferred to give the job to two different persons? (Elsayed, 2007).

The board of directors is at the apex of the internal control system and has responsibility for the functioning of the firm (Jensen, 1993). However, when the board chairman is also the CEO, the board intensity to monitor and oversee management is reduced as a result of a lack of independence and a conflict of interest (Dobryznski, 1991; Millstein, 1992). The issue that arises when companies practice CEO duality is, "Who monitors management?" (Abdullah, 2004). Unlike in a two-tier system, the unitary system has the board at the highest internal control system, as argued by Jensen (1993). It has been argued that the firms' managers' influence in setting the board agenda and controlling information flow could impede the board's ability to perform its duties effectively (Solomon, 1993; Aram and Cowan, 1983). The firm's managers' ability to determine the board agenda and the flow of information is predicted to be much stronger when the board chairman is also CEO than when the firm adopts a non-dual structure (Abdullah, 2004). Dayton (1984) asserts that the board is the primary force pushing the company towards realizing the opportunities and meeting the obligations of the shareholders and other stakeholders. He argues that it is the CEO who allows the board to play the primary force.

In a similar vein, dual leadership structure indicates the absence of separation of the decision management and decision control (Fama and Jensen, 1983. Rechner (1989) argued that the ideal corporate governance structure is one in which the board is composed of a majority of outside directors and a chairman who is an outside director. Hence, the weakest corporate governance is one where the board is dominated by inside directors and the CEO holds the chairmanship of the board. Where one person dominates a firm, the role of independent director becomes hypothetical (Rechner, 1989; Dayton, 1984). A structure of this type is likely to lead to the board being incapable of protecting the interests of the shareholders. The board with the high influence of the management will not be able to discipline the management appropriately as the management who controls the board will over-rule such initiatives (Abdullah, 2004). Miller and Friesen (1977) argue that the non-executive chairman promotes a higher level of corporate openness.

Different theoretical arguments have been used to either support or challenge CEO duality. Drawing on agency theory, the opponents (e.g. Levy, 1981; Dayton, 1984) suggest that CEO duality diminishes the monitoring role of the board of directors over the executive manager, and thus in term may have a negative effect on corporate governance. On the other hand, advocates of CEO duality (e.g. Anderson and Anthony, 1986; Donaldson and Davis, 1991) assert that corporate performance is enhanced when executive manager has the full authority over his corporation by serving also

as the chairman, as less conflict is likely to happen. Others such as Brickley, Coles, and Jarrell, (1997) argue that there is no one optimal leadership structure as both duality and separation perspectives have related costs and benefits. Hence, duality will benefit some firms while separation will likely be advantageous for others.

The issue of separation of the top two posts has been addressed in the Cadbury Committee (1992), which recommended that the roles of board chairman and CEO be separated. The Malaysian Code of Corporate Governance (2001) also recommended a similar board structure. The reason for the need for separations is that when both, monitoring roles and implementing roles are vested in a single person, monitoring roles of the board will be severely impaired (Abdullah, 2004). The impairment of the board's independence could affect the board incentives to ensure that management pursues value increasing activities (Abdullah, 2004).

Though the literature seems to consistently argue that separate individuals for the post of CEO and chairman leads to better corporate governance systems, the real issue is whether this leads the board to be a better monitor, and thus, is capable of increasing the value of the firm. Proponents of CEO duality structure argue that combining these two roles provides a clear focus for objectives and operations (Stoeberl and Sherony, 1985). Separation of CEO and chairman posts has costs and benefits and it was shown that for larger firms, the costs are greater than the benefits (Brickley et al., 1997). Evidence from Abdullah (2002) in the Malaysian setting confirmed the costs and benefits contention. In their study, Berg and Smith (1978) found that there was no significant difference in various financial indicators between firms which experienced CEO duality and firms which did not. The substantial cost of separation could come from the incomplete transfer of company information and the confusion over who is in charge of running the company (Goodwin and Seow, 2000). It could be argued that when one person is in charge of both tasks, decisions are reached faster; also when the board chairman and the CEO are the same persons, he or she is well aware of the decisions needed to improve the performance of the firm (Abdullah, 2004). In another study, Chaganti, Mahajan, and Sharma, (1985) also documented evidence similar to that found by Berg and Smith (1978) involving firms that experienced bankruptcy and survival. Rechner and Dalton (1991) also showed that firms with CEO duality consistently outperformed firms with a CEO non-duality structure.

2.3 CEO Compensation in the Current Context

There is an extensive and growing literature aimed at investigating executive compensation, its determinants, and its sensitivity to key financial variables, such as financial performance and firm size. In an attempt to understand what the main drivers of executive compensation are, James (2014) provided a review of the main journal articles which examined CEO compensation. The results showed that among the main factors that influence executive compensation were: firm size and performance, corporate governance issues and agency problems, the structure of the board of directors, executive power and tenure, market forces, insider trading restrictions, and company characteristics (James, 2014). Adding to the numerous scholarly studies there is the increasing commentary in the popular press and other media outlets about the rising levels of remunerations paid to executives of firms that have reported poor financial results or otherwise failing performances. The controversy which was heightened during the recent spate of corporate scandals centered on whether executives are worth the high level of compensation they receive (Callan and Thomas, 2011). According to data presented by Jensen and Murphy (2004), average inflation adjusted CEO remuneration rose from \$850,000 (\$2002) in 1970 to more than \$14 million (\$2002) in 2000, decreasing to \$9.4 million (\$2002) in 2002.

Within the body of scholarly work, the principal agency problem is identified as being at the center of the debate (Callan and Thomas, 2011). Berle and Means (1932) claim that when control is separated from the owners, or principals, of an organization and delegated to managers, or agents, the interest of the agents are likely to be different from the interests of the firm and its shareholders. To compensate for this divergence of interest, corporate executives are generally remunerated in ways that are linked to firm performance (Berle and Means, 1932). However, the firm's governance structure implemented through its board of directors is expected to monitor executive performance and make appropriate decisions about compensation (Callan and Thomas, 2011).

To determine if remuneration is in fact linked to firm performance, regression analysis is used to identify the marginal effect of changes in performance on executive pay, known as the pay-for-performance relationship, and these marginal effects can then be used to estimate the relevant elasticities (Callan and Thomas, 2011). Interestingly, although most empirical findings suggest that the pay-for-performance relationship is positive, most of these find that the relationship is relatively weak and this outcome has resulted in continuing investigation (Callan and Thomas, 2011). Some argue, for example, that the size of the firm can exert stronger influence on an executive's decision than the firm's profits (Tosi et al., 2000). It is argued that this can occur because increases in firm size are readily recognizable and indicative of an executive's expanding span of control, which in turn is typically acknowledge monetarily (Callan and Thomas, 2011).

3. Sample Selection

This section explains the sources of data which will be used for the analysis and discusses the sample selection criteria. The data for this study were obtained from three main sources namely, COMPUSTAT, Forbes published reports and SEC 10-K filings. Given that the objective of this study is to determine whether CEOs are being underpaid based on their firms accounting results, it therefore requires the collection of data on CEOs compensation and firms accounting results. Data on CEO compensation were collected for the years 2004, 2005, 2006, 2007, 2009, 2010, 2011, 2012 and 2013. The source of the CEO compensation data was Forbes published list of the highest paid United States CEOs for the years being examined. Table 1 shows the number of highest paid CEOs for the respective years.

Table 1. Sample size of highest paid United States CEOs

Years	2004	2005	2006	2007	2009	2010	2011	2012	2013
Number of highest paid CEOs	101	100	100	101	148	150	151	151	149

This study also aims to determine if the financial crisis of 2008 had an effect on CEO compensation that is, to what extent, if any, CEOs were overpaid or underpaid before or after the 2008 financial crisis. Hence, CEO compensation data for year 2008 were not included in the analysis, thus the analysis is conducted in two distinct time-periods namely; pre financial crisis (years 2004, 2005, 2006 and 2007) and post financial crisis (years 2009 to 2013). Therefore the total sample size is 1151 CEOs.

Accounting data for each CEO's company were also required. The accounting data were obtained from two sources, first, COMPUSTAT provided most of the accounting results measures and then, the SEC 10-K filings for the companies also provided accounting data that were not easily obtained from COMPUSTAT. Non- financial data relating to the CEOs such as age, CEO duality, CEO tenure and CEO founder were obtained from both SEC 10-K filing and CEO profile on the company's web-site.

4. Analytical Tool and Hypotheses

The data analysis process was done by using Hierarchical Linear Modelling (HLM) (Bryk and Raudenbush, 1992). HLM's "intercepts and outcomes" (Bryk and Raudenbush, 1992) modelling facilitates a cross-sectional analysis of the relationship of CEO compensation and its interaction with the independent variables. The analysis of CEO compensation was affected by regressing CEO compensation in time t of firm j on independent (change Δ from year 1 to year 2) and control variables.

$$\begin{aligned}
 (\text{CEO COMPENSATION})_{tj} = & \beta_0 + \beta_1 (\Delta \text{ SALES})_{t-1,j} + \beta_2 (\Delta \text{ NET INCOME})_{t-1,j} \\
 & + \beta_3 (\Delta \text{ EPS})_{t-1,j} + \beta_4 (\Delta \text{ ROE})_{t-1,j} \\
 & + \beta_5 (\Delta \text{ TOTAL ASSETS})_{t-1,j} + \beta_6 (\Delta \text{ ROA})_{t-1,j} \\
 & + \beta_7 \text{ CEO AGE}_{tj} + \beta_8 \text{ CEO DUALITY}_{tj} \\
 & + \beta_9 \text{ CEO TENURE}_{tj} + \beta_{10} \text{ CEO FOUNDER}_{tj} \\
 & + \varepsilon_{tj}
 \end{aligned}$$

Dependent Variable:

CEO COMPENSATION: CEO compensation variables include salary, bonus, other compensation (such as LTIPs), and stock grants

Independent Variables:

SALES The total net sales for the company as reported in SEC 10-K filing

NET INCOME Net operating income as reported in the 10-K filing

EPS Diluted EPS as reported in COMPUSTAT

ROE As reported by COMPUSTAT, ROE is the ratio of net income to long-term liabilities plus owners' equity

TOTAL ASSETS Total current and noncurrent assets as reported in the 10-K Filing

ROA The ratio of net income to total assets as reported by COMPUSTAT

Control Variables:

CEO AGE	The age of the CEO in years
CEO DUALITY	Duality, takes the value of 1 if the CEO sits on the board as Chairman, 0 otherwise
CEO TENURE	The number of years since appointment as CEO
CEO FOUNDER	Founder, takes the value of 1 if the current CEO was the Founder of the company, 0 otherwise.

The first four hypotheses will be related to the years 2004, 2005, 2006 and 2007, which are the years before the financial crisis.

H1: There is sufficient evidence to indicate that a significant number of CEOs employed during the year 2004 were underpaid based on the performance of their firms.

H2: There is sufficient evidence to indicate that a significant number of CEOs employed during the year 2005 were underpaid based on the performance of their firms.

H3: There is sufficient evidence to indicate that a significant number of CEOs employed during the year 2006 were underpaid based on the performance of their firms.

H4: There is sufficient evidence to indicate that a significant number of CEOs employed during the year 2007 were underpaid based on the performance of their firms.

CEO compensation data for year 2008 will not be analyzed to determine whether CEOs were underpaid or overpaid due to the negative impact the financial crisis had on most companies during that year. Following the 2008 financial crisis in the United States, significant changes were made to the corporate governance mechanism of many companies especially those in the financial sector. In addition to these changes, there were also new legislation that were designed to improve the fiduciary management of companies and to provide guidelines and limits regarding CEOs compensation packages.

Therefore, the following post 2008 hypotheses are presented.

H5: There is sufficient evidence to indicate that a significant number of CEOs employed during the year 2009 were underpaid based on the performance of their firms.

H6: There is sufficient evidence to indicate that a significant number of CEOs employed during the year 2010 were underpaid based on the performance of their firms.

H7: There is sufficient evidence to indicate that a significant number of CEOs employed during the year 2011 were underpaid based on the performance of their firms.

H8: There is sufficient evidence to indicate that a significant number of CEOs employed during the year 2012 were underpaid based on the performance of their firms.

H9: There is sufficient evidence to indicate that a significant number of CEOs employed during the year 2013 were underpaid based on the performance of their firms.

5. Empirical Results

Empirical Results for Hypothesis 1: Testing Underpayment in Year 2004

The central point advanced by hypothesis 1 is that there is sufficient evidence to support the position that CEOs were underpaid in 2004 based on the performance of their firms. Therefore, to test this hypothesis a hierarchical multiple regression is performed based on the accounting measures used to develop the wage performance regression equation.

Table 2. presents the results of the residual analysis of year 2004 compensation paid to 101 CEOs

Table 2. Residual Analysis of CEO Compensation for Year 2004

N	Actual 2004 Pay(\$MIL)	PRE_1	RES_	ZRE_1
1	9.851	16.947	-7.096	-.491
2	5.674	17.226	-11.552	-.800
3	6.201	11.845	-5644	-.391
4	6.476	1.326	5.150	.356

5	20.183	17.685	2.498	.173
6	4.281	19.427	-15.146	-1.048
7	7.449	14.932	-7.483	-.518
8	4.475	13.786	-9.311	-.645
9	31.212	14.934	16.278	1.127
10	15.086	17.755	-2.669	-.185
11	15.368	20.258	-4.890	-.338
12	37.077	23.410	13.667	.946
13	35.470	18.967	16.503	1.142
14	1.406	17.198	-15.792	-1.093
15	15.202	16.663	-1.461	-.101
16	4.403	17.024	-12.621	-.874
17	22.034	15.240	6.794	.470
18	22.298	18.152	4.146	.287
19	28.624	21.987	6.637	.459
20	7.046	21.572	-14.526	-1.006
21	8.546	20.362	-11.816	-.818
22	22.470	16.930	5.540	.384
23	39.565	16.809	22.756	1.575
24	23.209	16.621	6.588	.456
25	12.671	19.010	-6.339	-.439
26	21.712	16.785	4.927	.341
27	25.744	16.787	8.957	.620
28	25.704	16.148	9.556	.661
29	19.648	26.052	-6.404	-.443
30	57.463	17.813	39.650	2.745
31	16.914	17.800	-.886	-.061
32	8.830	18.845	-10.015	-.693
33	27.297	19.133	8.164	.565
34	89.263	18.387	70.876	4.906
35	1.117	19.196	-18.079	-1.251
36	13.540	15.825	-2.285	-.158
37	18.963	15.581	3.382	.234
38	39.722	7.143	22.579	1.563
39	11.250	16.774	-5.524	-.382
40	11.038	12.958	-1.920	-.133
41	30.775	17.845	12.930	.895
42	17.036	17.845	-.809	-.056
43	23.985	19.744	4.421	.294
44	2.775	17.304	-14.529	-1.006
45	3.308	12.919	-9.611	-.665

46	10.618	24.142	-13.254	-.936
47	2.179	15.436	-13.257	-.918
48	6.471	16.490	-10.019	-.694
49	39.392	20.199	19.193	1.329
50	41.397	17.098	24.299	1.682
51	7.591	12.672	-5.081	-.352
52	13.350	15.384	-2.034	-.141
53	5.008	10.744	-5.736	-.397
54	42.692	18.488	24.204	1.675
55	31.213	22.884	8.329	.577
56	7.829	12.530	-4.701	-.325
57	15.179	19.756	-4.577	-.317
58	5.049	16.386	-11.337	-.785
59	8.269	15.205	-6.936	-.480
60	11.465	18.132	-6.667	-.462
61	11.109	23.206	-12.097	-.837
62	1.878	16.281	-14.403	-.997
63	23.585	14.493	9.092	.629
64	20.448	17.698	2.750	.190
65	13.594	20.003	-6.409	-.444
66	9.526	16.300	-6.774	-.469
67	35.718	16.230	19.488	1.349
68	10.400	15.113	-4.713	-.326
69	9.245	15.138	-5.893	-.408
70	6.789	18.620	-11.831	-.819
71	14.254	13.423	.831	.058
72	2.048	16.228	-14.180	-.982
73	15.030	16.012	-.982	-.068
74	37.152	19.695	17.457	1.208
75	15.886	13.275	2.614	.181
76	8.324	17.951	-9.627	-.666
77	3.311	15.887	-12.576	-.870
78	48.659	16.272	32.387	2.242
79	15.360	16.206	-.846	-.059
80	6.401	16.654	-10.253	-.710
81	17.948	15.634	2.314	.160
82	12.066	19.601	-7.535	-.522
83	17.624	16.681	.943	.065
84	1.598	-3.030	4.628	.320
85	15.563	20.281	-4.718	-.327
86	18.796	15.571	3.225	.223

87	7.044	17.045	-10.001	-.692
88	9.444	17.122	-7.678	-.531
89	1.250	17.261	-16.011	-1.108
90	49.074	18.540	30.534	2.114
91	1.779	15.957	-14.178	-.981
92	28.283	16.731	11.552	.800
93	8.907	17.324	-8.417	-.583
94	13.257	13.419	-.162	-.011
95	1.011	16.551	-15.540	-1.076
96	13.221	16.675	-3.454	-.239
97	14.003	16.603	-2.600	-.180
98	12.012	16.746	-4.734	-.328
99	13.254	15.996	-2.742	-.190
100	9.360	19.584	-10.224	-.708
101	8.325	15.128	-6.803	-.471

Note: PRE_1 = Predicted CEO compensation based on regression wage equation

RES_1 = Raw unstandardized residual

ZRE_1 = Standardized residual

In order to interpret the results of Table 2, it is important to remember that a negative residual, based on the general principle of residual analysis, indicate that a particular actual occurrence is less than the predicted value having used some estimation technique based on established criteria. In the case of Table 2, actual CEO compensation for year 2004 was analyzed with the aim of determining the extent to which CEOs were underpaid based on the performance of their firms. The criteria used was the accounting measures based on the performance regression equation established in the methodology chapter. Therefore in this analysis, a negative residual would indicate CEO underpayment based on the performance of their firms, while a positive residual would indicate CEO overpayment based on the performance of their firms.

The results show that the residuals of 63 CEOs of the total of 101 CEOs in year 2004 were negative. Thus, based on the interpretation of the residual analysis this indicates that 63 CEOs were underpaid during the year 2004, while 38 CEOs were overpaid in the year. The results are the same whether the raw unstandardized residuals (RES_1) are use or the standardized residual (ZRE_1) are used.

CEO numbers 1, 2, and 3 had actual total compensation of \$9.851M, \$5.674M, and \$6.201M respectively; however, the predicted total compensation based on the regression equation for these CEOs were \$16.947M, \$17.226M, and \$11.845M respectively, thus resulting in a negative raw unstandardized residual of -\$7.096M, -\$11.552M, and -\$5.644M respectively. The corresponding standardized residual are -.491, -.800, and -.391 respectively. CEO numbers 10 and 15 had smaller residual. Actual compensation for CEOs 10 and 15 were \$15.086M and \$15.202M respectively, however the predicted compensation for CEO 10 and 15 is shown to be \$17.755M and \$16.663M respectively, hence the resulting residuals are -2.669 and -1.461 (RES_1) and -.185 and -.101 (ZRE_1) respectively.

The model also showed that predicted CEO compensation does not necessarily have to vary significantly from actual compensation received by the CEO. For example, CEO numbers 31, 42 and 94 whose actual compensation were \$16.914M, \$17.036M, and \$13.257M respectively, differ marginally from the model's predicted compensation. The predicted compensation packages for these CEOs (31, 42, and 94) were \$17.800M, \$17.845, and \$13.419M respectively, this resulted in residuals of -\$0.886M, -\$0.809M, and -\$0.162M respectively.

In addition to underpayment residuals that are very small, there are some residuals that are very large thus indicating CEO underpayment. There have been few instances when CEOs have decided to take very small pay packages in a particular year. For example there have been some CEOs who have accepted \$1 as their total salary in a particular year, while this is a rare occurrence, the presence of this would result in large negative residuals indicating CEO underpayment based on firm performance. CEO compensation data for year 2004 showed that there were a few

instances when CEOs elected to accept very modest pay packages for example CEO numbers 14, 35, 91, and 95 all fall in this category. Hence the actual compensation for CEOs 14, 35, 91 and 95 were \$1.406M, \$1.117M, \$1.779M, and \$1.011M, respectively. However, given that these compensation packages were not related to the performance of the respective firms, the model predicted the following CEO compensation packages for the four CEOs: \$17.198M, \$19.196M, \$15.957M, and \$16.551M respectively. This resulted in very large negative residuals of \$15.792M, \$18.079M, \$14.178M, and \$15.540M respectively.

Although the central focus of this study concerns evidence of CEO underpayment, there were 38 CEOs who were classified as being overpaid based on residual analysis as can be seen in Table 2. CEOs who are overpaid would reflect a positive residual which indicated that the predicted compensation package is less than the actual compensation received in the year. The vast majority of CEO compensation literature has argued that CEOs have been overpaid, hence it is not surprising to find that the results show that approximately 33% of these CEOs were overpaid.

CEOs identified by numbers 5, 9, 12, and 19 all had overpayment ranging from modest to significant. The actual compensation received by these CEOs (5, 9, 12, and 19) were \$20.183M, \$31.212M, \$37.077M, and \$28.624M respectively; however, the model predicted the following respective compensation package: \$17.685M, \$14.934M, \$23.410M, and \$21.987M. Therefore as a result of the model's predicted compensation, the following positive residuals were produced for CEOs 5, 9, 12, and 19: \$2.498M, \$16.278M, \$13.67M, and \$6.637M.

This study has never tried to argue that CEO overpayment does not exist; however contrary to other researchers who are preoccupied with CEO excessive compensation packages, the view held here is that any objective analysis of CEO compensation based on firm performance will reveal significant numbers of CEOs being underpaid. In light of the foregoing statement, Table 2 shows some CEOs receiving significant amount of overpayment. CEOs identified by the numbers: 54, 67, 74, 78, and 90 were all significantly overpaid based on the results of the model. Actual compensation received by these CEOs (#s 54, 67, 74, 78, and 90) were \$42.692M, \$35.718M, \$37.152M, \$48.659M, and \$49.074M respectively. The model predicted the following total compensation based on firm performance: \$18.488M, \$16.230M, \$19.695, \$16.272M, and \$18.540M respectively. Thus, the following large positive residuals (representing CEO overpayment) were produced: \$24.204M, \$19.488, \$17.457M, \$32.387M, and \$30.534M respectively.

Therefore, based on the results from the residual analysis for year 2004 there is sufficient evidence to prevent a rejection of hypothesis 1. It is thus obvious that despite the widely held view of excessive CEO overpayment, there is sufficient empirical evidence to support the statement that based on firm performance there are a large number of CEOs who were underpaid in year 2004.

(Residual Tables for the remaining years 2005 to 2013 are omitted due to their length)

5.1 Testing the Significance of the Accounting Models

The purpose of this section is to determine the significance of the accounting variables used in developing the accounting model, and the accounting model itself, in determining the extent of CEO underpayment for the years under examination. The model used for the four years in hypothesis 1 to 9 will be tested for their level of overall significance, hence this section will focus on the second set of hypotheses, (hypothesis 10 to 13). The testing process involves the use of hierarchical multiple regression analysis. As stated in the methodology chapter, it is not considered necessary to examine all the 9 models since the accounting variables used to build the models are common to all models. Hence, following from this, a second set of four hypotheses each representing years: 2004, 2005, and years 2012 and 2013 can now be developed regarding the combine effect of the accounting measures for each year. These four years reflect the first 2 years (2004, and 2005) at the beginning of the period being investigated and 2 years within the period prior to the financial crisis, and the last 2 years (2012 and 2013) in the period after the financial crisis.

Testing Accounting Model's Significance: Hypothesis 10 (Year 2004)

The results of testing the significance of the accounting variables used in the 2004 model and the model's overall significance are presented in Table 3.

Table 3. Model Summary^c 2004

Model	R	R Square	Std. Error	R ² Change	df	Sig. F Change
1	.081 ^a	.006	14.4205	.006	3	.888
2	.768 ^b	.590	9.5656	.583	6	.000

a. Predictors: (Constant), Founder, CEO Age, Duality

- b. Predictors: (Constant) Founder, CEO Age, Duality, Sales 04, ROE 04, EPS 04, ROA 04, Total Assets 04, Net Income 04
- c. Dependent Variable: 2004 Pay

Table 3 model summary shows that model 1 which comprises only the control variables explain only 0.6% of the variation in the dependent variable which is CEO 2004 compensation (Pay). However, when the predictor variables were added to the model along with the controlling variables in model 2, the model explained 59% of the variability in CEO compensation in terms of underpayment. Interesting, the R Square change (R^2 change) in model 2 (.583) shows that the predictor variables in model 2 explain 58.3% of the variation in the CEO compensation in terms of underpayment after controlling for CEO age, duality and CEO who are founders. This R^2 change for model 2 is shown to be statistically significant (Sig. F Change .000). The R^2 change of .583 is the result of moving from model 1 .006 which had only the control variables to model 2 (.590) which had both predictor variables and controlling variables. Hence, the overall change in the explanatory power of the predictor variables is statistically significant.

The ANOVA result for the 2004 model is shown in Table 4. The ANOVA results of model 2 will determine the overall significance of the 2004 model.

Table 4. ANOVA^a Results for 2004 Model 2

Model 2	Sum of Squares	Df	Mean Square	F	Sig
Regression	11976.554	9	1330.728	14.543	.000 ^b
Residual	8326.583	91	91.501		
Total	20303.137	100			

- a. Dependent Variables: 2004 Pay (CEO compensation)
- b. Predictors: (Constant), Founder, CEO Age, Duality, Sales 04, ROE 04, EPS 04, ROA 04, Total assets 04, Net income 04

The ANOVA results of Table 4 is used to test the hypothesis that the R square of model 2 is statistically significant and thus determines the model's overall significance. The ANOVA results show the regression output with a F statistic (the difference between 2 group means) of 14.543 and a significance value of .000 (< .05). This results (Sig .000) demonstrates that the 2004 compensation model is statistically significant in predicting the outcome, that is, it is statistically significant in determining CEOs who were underpaid in the year.

To determine which variables make a unique statistically significant contribution to the model, the results of Table 5. must be examined.

Table 5. Coefficients^a 2004 Model

Model 2	Standardized Beta	T	Sig
(Constant)		.974	.332
Duality	-.054	-.773	.441
CEO Age	.035	.519	.605
Founder	-.016	-.226	.822
Sales 04	.610	4.639	.000
Net income 04	-.037	-.281	.780
EPS 04	-.402	-5.051	.000
ROE 04	.134	1.708	.091
Total assets 04	.272	2.148	.034
ROA 04	.038	.415	.679

- a. Dependent Variable: 2004 Pay (CEO Compensation)

Table 5. shows that 3 predictor variables make a unique statistically significant contribution to the 2004 model with p values all less than 5%. These predictor variables are sales with a p value of .000 and a standardized beta coefficient of .610, earnings per share (EPS) also made a unique statistical contribution to the model (p value .000 and standardized beta coefficient of -.402), and finally, total assets, with a p value of .034 and beta coefficient of .272, made

a unique statistical contribution to the model. None of the control variables made any unique statistical contribution to the mode. The two with the largest contribution to the model in terms of the standardized beta coefficients are sales (.610) and EPS (-.402).

Having therefore examined the results presented in Tables 3, 4 and 5, a summary of the results will show that there was a statistically significant R square change in model 2 after the predictor variables were added to model 1. The ANOVA results showed that the 2004 model taken as a whole is statistically significant in predicting CEO underpayment (p value .000), and the analysis of the coefficients reveal that some predictor variables made unique statistical significant contribution to the model (p value < 5%). Against this premise, hypothesis 10 cannot be rejected and the conclusion is that the 2004 compensation model was statistically significant in identifying CEOs who were underpaid in the year 2004.

Testing Accounting Model's Significance: Hypothesis 11 (Year 2005)

The results of testing the significance of the accounting variables used in the 2005 model and the model's overall significance are presented in Table 6.

Table 6. Model Summary^c 2005

Model	R	R Square	Std. Error	R ² Change	Df	Sig. F Change
1	.187 ^a	.035	22.0486	.035	97	.177
2	.520 ^b	.270	19.7997	.235	91	.000

a. Predictors: (Constant), CEO Age, Duality

b. Predictors: (Constant), CEO Age, Duality, Total assets 05, ROE 05, EPS 04, Net income 05, ROA 05, Sales 05

c. Dependent Variable: 2005 Pay

Table 6 shows that model 1 which comprises the control variable only has a R square of .035 which implies that model 1 variables explain 3.5% of the variation in the dependent variable (CEO compensation- pay). However, when the predictor variables were added to the model in model 2 and also including the controlling variable, the R square was .27 which mean that model 2 now explains 27% of the variation in outcome variable (CEO underpayment compensation) after controlling for CEO age and duality. Interestingly, the R Square change moved from .035 to .235. This increase in R Square change of .235 (.270-.035) is the result of adding the predictor variables to the model. It also shows that this R² change is statistically significant (sig = .000) at p value < 5%. Hence, the overall change in the explanatory power of the predictor variables is statistically significant.

The ANOVA result for the 2005 model is shown in Table 7. The ANOVA results of model 2 will determine the overall significance of the 2005 model.

Table 7. ANOVA^a Results for 2005 Model 2

Model 2	Sum of Squares	Df	Mean Square	F	Sig
Regression	13194.191	8	1649.274	4.207	.000 ^b
Residual	35674.704	91	392.030		
Total	48868.895	99			

a. Dependent Variables: 2005 Pay (CEO compensation)

b. Predictors: (Constant), CEO Age, Duality, Total assets 05, ROE 05, EPS 05, Net income 05, ROA 05, sales 05.

The ANOVA results of Table 7 are used to test the hypothesis that the R square of model 2 is statistically significant and it thus determines the model's overall significance as a predictor of the outcome variable. The ANOVA results show the regression output with a F statistic (the difference between 2 group means) of 4.207 and a significance value of .000 (< .05). This results (Sig = .000) demonstrates that the 2005 compensation model is statistically significant in predicting the outcome, that is, it is statistically significant and appropriate in determining CEOs who were underpaid in the year 2005.

To determine which variables make a unique statistically significant contribution to the model, the coefficients in Table 84 must be examined.

Table 8. Coefficients^a 2005 Model

Model 2	Standardized Beta	T	Sig
(Constant)		2.444	.016
Duality	-.073	-.813	.418
CEO Age	-.160	-1.761	.082
Table 5.20B	(continued)		
Model 2	Standardized Beta	T	Sig
Sales 05	.532	3.220	.002
Net income 05	.082	.661	.510
EPS 05	-.331	-3.194	.002
ROE 05	.070	.517	.607
Total asset 05	-.087	-.581	.563
ROA 05	-.068	-.492	.624

a. Dependent Variable: 2005 Pay (CEO Compensation)

Table 8 shows that 2 predictor variables make a unique statistically significant contribution to the 2005 model with p values all less than 5%. These predictor variables are sales with a p value of .002 and a standardized beta coefficient of .532 and earnings per share (EPS) also made a unique statistical significant contribution to the model (p value .002 and standardized beta coefficient of -.331). None of the control variables (duality and CEO age) made any unique statistical significant contribution to the model, their p values were .418 and .082 respectively. The two predictor variables with the largest absolute contribution to the model in terms of the standardized beta coefficients are sales (.532) and EPS (-.331).

A review of the results presented in Tables 4, 7 and 8, show that there was a statistically significant R square change in model 2 after the predictor variables were added to model 1. The ANOVA results showed that the 2005 model taken as a whole is statistically significant in predicting CEO underpayment (p value .000), and the analysis of the coefficients reveal that some predictor variables made unique statistical significant contribution to the model (p value < 5%). Therefore, against this premise, hypothesis 11 cannot be rejected and the conclusion therefore follows that the 2005 compensation model was statistically significant in identifying CEOs who were underpaid in the year 2005.

The two models examined so far represent the pre-financial crisis period. The results for years 2004 and 2005 clearly show that the compensation models used to identify CEOs who were underpaid by means of residual analysis were statistically significant and appropriate predictors of the outcome variable. Two models from the post financial crisis period will now be examined to determine whether they are statistically significant predictor of CEO underpayment for the years 2012 and 2013.

Testing Accounting Model's Significance: Hypothesis 12 (Year 2012)

The results of testing the significance of the accounting variables used in the 2012 model and the model's overall significance are presented in Table 9.

Table 9. Model Summary: Year 2012

Model	R	R Square	Std. Error	R ² Change	df	Sig. F Change
1	.078 ^a	.006	15.0498	.006	146	.640
2	.739 ^b	.546	10.3915	.540	140	.000

a. Predictors: (Constant), CEO Age, Duality

b. Predictors: (Constant), CEO Age, Duality, ROE 12, Sales 12, ROA 12, Total, assets 12, EPS 12, Net income 12

Table 9 reveals that model 1 which comprises only of the control variables has a R square of .006 which implies that model 1 variables explain 0.6% of the variation in the dependent variable (CEO compensation- pay). However, after the predictor variables were added to the model in model 2 which also includes the controlling variables, the R square was .546 which mean that model 2 now explains 54.6% of the variation in outcome variable (CEO underpayment compensation) after controlling for CEO age and duality. Additionally, the R² change moved from .006 to .540. This increase in R Square change of .540 (.546-.006) is the result of adding the predictor variables to the model. It also

shows that this R^2 change is statistically significant ($\text{sig} = .000$) at p value $< 5\%$. Hence, the overall change in the explanatory power of the predictor variables is statistically significant.

The ANOVA result for the 2012 model is shown in Table 10. The ANOVA results of model 2 will determine the overall significance of the 2012 model.

Table 10. ANOVA^a Results for 2012 Model 2

Model 2	Sum of Squares	df	Mean Square	F	Sig
Regression	18152.698	8	2269.087	21.013	.000 ^b
Residual	15117.931	140	107.985		
Total	33270.629	148			

a. Dependent Variable: Total pay (CEO compensation)

b. Predictors: (Constant), CEO Age, Duality, ROE 12, Sales 12, ROA 12, Total . , assets 12, EPS 12, Net income 12

The ANOVA results shown in Table 10 are used to test the hypothesis that the R square of model 2 is statistically significant and it also determines the model's overall significance as a predictor of the outcome variable. The ANOVA results show the regression output with a F statistic (the difference between 2 group means) of 21.013 and a significance value of .000 ($< .05$). This results ($\text{Sig} = .000$) demonstrates that the 2012 compensation model is statistically significant in predicting the outcome, that is, it is statistically significant and appropriate in determining CEOs who were underpaid in the year 2012.

To determine which variables make a unique statistically significant contribution to the model, the coefficients in Table 11 must be examined.

Table 11. Coefficients^a 2012 Model

Model 2	Standardized Beta	T	Sig.
(Constant)		2.109	.037
Duality	-.078	-1.264	.208
CEO Age	.006	.105	.917
Sales 12	.261	2.869	.005
Net income 12	-.295	-3.271	.001
EPS 12	-.122	-1.710	.089
ROE 12	-.055	-.921	.358
Total asset 12	.538	7.505	.000
ROA 12	.246	3.499	.001

a. Dependent Variable: Total pay (CEO compensation)

Table 11 shows that 4 predictor variables make a unique statistically significant contribution to the 2012 model with p values all less than 5%. These predictor variables are sales with a p value of .005 and a standardized beta coefficient of .261, net income with a p value of .001 and a standardized beta coefficient of -.295, total assets with a p value of .000 and a standardized beta coefficient of .538, also ROA made a unique statistical contribution to the model (p value .001 and standardized beta coefficient of .246). None of the control variables (duality and CEO age) made any unique statistical significant contribution to the model, their p values were .208 and .917 respectively. The two variables with the largest absolute contribution to the model in terms of the standardized beta coefficients are total assets (.538) and net income (-.295).

Having reviewed the results in Tables 5, 10 and 11, it shows that there was a statistically significant R square change in model 2 after the predictor variables were added to model 1. The ANOVA results also showed that the 2012 model taken as a whole is statistically significant in predicting CEO underpayment (p value .000), and the analysis of the coefficients revealed that four of the six predictor variables made unique statistical significant contribution to the model (p values $< 5\%$). Therefore, based on the results obtained, hypothesis 12 cannot be rejected and the conclusion therefore follows that the 2012 compensation model was statistically significant in identifying CEOs who were underpaid in the year 2012.

5.2 Testing Accounting Model's Significance: Hypothesis 13 (Year 2013)

The results of testing the significance of the accounting variables used in the 2013 model and the model's overall significance are presented in Table 12.

Table 12. Model Summary: Year 2013

Model	R	R Square	Std. Error	R ² Change	Df	Sig. F Change
1	.078 ^a	.006	15.04964	.006	146	.640
2	.680 ^b	.463	11.30023	.457	140	.000

a. Predictors: (Constant), CEO Age, Duality

b. Predictors: (Constant), CEO Age, Duality, ROA 13, Net income 13, Total assets, 13, EPS 13, ROE 13, Sales 13

Table 12 shows that model 1 which comprises only of the control variables has a R square of .006 which translates to mean that the variables in model 1 explain 0.6% of the variation in the dependent variable (CEO compensation- pay). However, after the predictor variables were added to the model in model 2 which also includes the controlling variable, the R square increase to .463 which mean that model 2 now explains 46.3% of the variation in outcome variable (CEO underpayment compensation) after controlling for CEO age and duality. Additionally, the R² change moved from .006 to .457. This increase in R² change of .457 (.463-.006) is the result of adding the predictor variables to the model. It also shows that this R² change for model 2 is statistically significant (sig = .000) at p value < 5%. Hence, the overall change in the explanatory power of the predictor variables is statistically significant.

The ANOVA result for the 2013 model is shown in Table 13. The ANOVA results of model 2 will determine the overall significance of the 2013 model. The ANOVA results shown in Table 13 are used to test the hypothesis that the R square of model 2 is statistically significant and it also determines the model's overall significance as a predictor of the outcome variable. The ANOVA results show the regression output with a F statistic (the difference between 2 group means) of 15.068 and a significance value of .000 (< .05). This results (Sig = .000) demonstrates that the 2013 compensation model is statistically significant in predicting the outcome, that is, it is statistically significant and appropriate in determining CEOs who were underpaid in the year 2013.

Table 13. ANOVA^a Results for 2013 Model 2

Model 2	Sum of Squares	Df	Mean Square	F	Sig
Regression	15393.287	8	1924.161	15.068	.000 ^b
Residual	17877.324	140	127.695		
Total	33270.629	148			

a. Dependent variable: Total pay (CEO compensation)

b. Predictors: (Constant), CEO Age, Duality, ROA 13, Net income 13, Total assets, , EPS 13, ROE 13, Sales 13

To determine which variables make a unique statistically significant contribution to the model, the coefficients in Table 5.30 must be examined.

Table 14. Coefficients^a 2013 Model

Model 2	Standardized Beta	T	Sig.
(Constant)		2.617	.010
Duality	-.079	-1.204	.231
CEO Age	-.028	-.440	.661
Sales 13	.278	2.953	.004
Net income 13	-.402	-5.193	.000
EPS 13	-.096	-1.394	.165
ROE 13	-.113	-1.543	.125
Total asset 13	.359	4.220	.000
ROA 13	.219	2.826	.005

a. Dependent Variable: Total pay (CEO compensation)

The results of Table 14 show that 4 predictor variables make a unique statistically significant contribution to the 2013 model with p values all less than 5%. The statistically significant predictor variables are sales with a p value of .004 and a standardized beta coefficient of .278, net income with a p value of .000 and a standardized beta coefficient of -.402, total assets with a p value of .000 and a standardized beta coefficient of .359, also ROA made a unique statistical contribution to the model (p value .005 and standardized beta coefficient of .219). None of the control variables (duality and CEO age) made any unique statistical significant contribution to the model, their p values were .231 and .661 respectively. The two variables with the largest absolute contribution to the model in terms of the standardized beta coefficients are total assets (.359) and net income (-.402).

The review of the results in Tables 6, 13 and 14, shows that there was a statistically significant R^2 change in model 2 after the predictor variables were added to model 1. The ANOVA results also showed that the 2013 model taken as a whole is statistically significant in predicting CEO underpayment (p value .000), and the analysis of the coefficients shows that four of the six predictor variables made unique statistical significant contribution to the model (p values < 5%). Hence, based on the results obtained, hypothesis 13 cannot be rejected and the conclusion therefore follows that the 2013 compensation model was statistically significant in identifying CEOs who were underpaid in the year 2013.

6. Summary of Research Findings

Table 15 provides an overview of the main research findings of the study.

Table 15. Research Findings

Year	# Overpaid	%	# Underpaid	Percent	Total
2004	38	37.62	63	62.38	101
2005	37	37.00	63	63.00	100
2006	26	26.00	74	74.00	100
2007	41	40.59	60	59.41	101
2009	37	25.00	111	75.00	148
2010	46	30.67	104	69.33	150
2011	63	41.72	88	58.28	151
2012	47	31.13	104	68.87	151
2013	41	27.52	108	72.48	149
Total	376	32.67	775	67.33	1151

As shown in Table 15, results of CEO over and underpayment

The main focus of this study was to investigate the extent to which CEOs are being underpaid based on the performance of their firms. There is no shortage of literature that supports the view that there is widespread abuse of CEO power which results in CEOs receiving massive excessive compensation packages that bear no relationship to their performance. However, the results in Table 15 takes the discussion in a new direction.

Table 15 shows that a total of 1151 CEOs compensation packages were analyzed over nine years to determine if evidence could be found to support the hypotheses that CEOs were being underpaid. In 2004 a total of 101 CEOs compensation packages were analyzed. The results showed that 63.38% (63 CEOs) were underpaid, while 37.62% (38 CEOs) were actually overpaid in the year. The analysis of 2005 top 100 highest paid CEOs showed that 63% (63 CEOs) were underpaid while 37% (37 CEOs) were overpaid. This level of CEO overpayment is not consistent with the popular view presented in the literature. In 2006, 74% of the CEOs was underpaid, whereas in 2007, the year before the financial crisis, 59.41% of the CEOs was underpaid.

In 2009, the first year following the 2008 financial crisis, the sample size was the highest paid 148 CEOs in the U.S. Of the 148 CEOs, 75% (111) was classified as being underpaid compared to 25% (37) which was classified as having received excess compensation. There were reductions in the percentage of CEO underpayment in 2010 and 2011. In 2010, 150 CEOs compensation packages were analyzed, the results show that 69.33% (104 CEOs) were deemed to have been underpaid, while 30.67% (46 CEOs) were classified as being overpaid. Only 58.28% of the 151 CEOs in 2011 was underpaid, this resulted in 2011 being the year with the highest percentage (41.72%) of CEOs being overpaid. The last two years, 2012 and 2013 had increases in the percent of CEO underpayment over that of 2011. For 2012, of the 151 CEOs compensation packages analyzed, 68.87% (104 CEOs) were classified as being underpaid, while 31.13% (47 CEOs) were deemed to have been overpaid. The final year of 2013 saw 72.48% (108 CEOs) being underpaid and 27.52% (41 CEOs) overpaid.

The overall results present a very interesting picture. Having examined 1151 CEO compensation packages to determine if CEO underpayment exist in light of what is an overwhelming literature supporting CEO overpayment, the results show that 67.33% of the CEOs were in fact underpaid based on their firms performance, and only 32.67% (376 CEOs) were overpaid based on firm performance. This resulted in the first set of nine hypotheses all being accepted as sufficient evidence was found to support the hypothesized position that CEO underpayment exist and hence a large percentage of compensation contracts in fact represent net saving to the owners of these corporations because there are a number of CEOs who are being paid less than their worth.

This study examined whether there was evidence to support the view that CEOs were being underpaid in the United States in light of the current literature that claim widespread CEO overpayment in the US. The results indicated that the current view of widespread CEO overpayment in the US is incorrect with only one-third of US CEOs being classified as receiving excessive compensation packages. Therefore, one area of future research could be a comparative study between United States CEOs and CEOs from a European country to determine the extent to which CEO overpayment and CEO underpayment exist.

Among the results obtained in this study is that the model was able to predict compensation packages for some CEOs that were almost the same as the actual compensation received. This situation represents a type of optimum compensation package for the CEO. Hence, one area in which additional work could be done is on studies that would focus on developing models based on agreed performance measures. These models would then be used to determine the optimum or standard compensation packages for CEOs. This type of work would help to re-align the interest of shareholders with that of CEOs and reduce agency cost.

Given that two-thirds of the CEOs were underpaid, it would be interesting to know if these CEOs knew that they were being underpaid. Therefore, if they knew that they were underpaid, then the question arises as to what effect CEO underpayment has on CEO motivation, CEO performance and CEO perceive status within the executive community. Answering these concerns are important areas of future study because it would provide fertile ground for shaping our understanding of how CEO underpayment affects the CEO. One final point that must be made is that it is important to note that sensitivity of the results could be subjected other alternative specifications example using log-transformed CEO compensation and sales as was observed in other studies (Core et al., 1999).

6.1 Potential Implications of the Research

There can now be no doubt that the well-established popular view presented in the current CEO compensation literature which describes CEOs as receiving widespread excessive and unjustified compensation packages is incorrect. The empirical evidence from this study does not support the position that large numbers of CEOs are receiving large compensation packages that bear no relationship to their firm performance and thus CEOs generally are overpaid. What this study has shown is that only about 33% of CEOs have compensation packages that can be described as excessive and represent CEO overpayment. The converse is that about two-thirds of CEOs have negotiated compensation packages that represent CEO underpayment based on their firm performance.

Therefore, based on the results two questions immediately arise: Why are some CEOs underpaid? And why are some CEOs overpaid? In answering the question as to why some CEOs are overpaid may be the easier of the two questions to answer based on existing literature. However, given that the existing literature has been shown to be flawed regarding CEO overpayment, this question needs careful analysis.

The compensation committee is normally responsible for determining the CEO pay package. However, in my view, if the compensation committee is dysfunctional CEO overpayment can be the result. For example, if the compensation committee lacks the experience or ability required to establish appropriate benchmarks to tie CEO compensation to firm performance then this could result in CEO overpayment whereby compensation packages are signed –off on that do not require CEOs to attain relevant performance targets.

The other concern regarding compensation committees is what I would call their level of economic insecurity and CEO dependency. Where committee members economic existence depends largely on their continued association with a particular firm, then those members would be less inclined to be engaged in a quarrel with a CEO regarding the CEO's compensation package. Compensation committee members' economic insecurity therefore allows CEOs to have a "free-hand" in shaping their compensation packages the result of which is normally an excessive pay package with no objection from committee members.

Where compensation committee members are able to establish appropriate performance targets for CEOs, these targets and the linking of pay to performance will only be effective if committee members have the requisite accounting expertise to detect earnings management techniques used by CEOs to inflate financial results as a basis

for requiring increase pay. Compensation committee members therefore need to be vigilant in analyzing financial results and ask the relevant questions in order to determine the extent to which CEOs have achieved the established performance benchmarks.

CEO overpayment, in my view, is a direct function of the firm's corporate governance structure. Weak corporate governance structure normally leads to CEO overpayment. But the question is: what is weak corporate governance structure? The general view is that the board of directors should comprise largely of external directors, but this is a recipe for CEO overpayment if this is not buttressed by safeguards. There are two factors that could undermine this position of having external directors. First, CEOs/board chair are normally the ones who recommend members to the board of directors. Given the high level of CEO duality in the United States, if CEOs are able to appoint other CEOs to their board, this would ensure that there is little opposition to the CEO compensation package, and CEO overpayment could easily result.

Second, in the event that CEOs do not appoint other CEOs to their board, the appointment of other external "independent" directors could easily lead to excessive CEO compensation packages. There is a general view that external directors should be adequately compensated in order for them to be motivated to dedicate sufficient time to the affairs of the corporation. It is argued that these external directors are busy with their other substantive jobs and hence do not have the time required to be effective directors, thus adequate compensation may just allow them to become more dedicated to the firm's business. However, here lies the problem, when external directors are well-paid they may become less inclined to disagree with the CEO/board chair on matters to do with the CEO compensation package as they risk being replaced as directors, and this theoretically ideal governance structure, could easily lead to CEO overpayment.

There is scarcely anything written regarding CEO underpayment, hence, the reason for CEO underpayment requires careful thought. One possible reason is that compensation committees are able to establish stringent performance targets which CEOs experience difficulties in achieving. The literature normally portrays CEOs as having great power and influence over the board of directors, however this may not be the case in instances where the firm has had a few years of poor results. CEOs who managed firms that experience poor results maybe concern about their job security and thus lose their negotiating power and are more willing to accept reduced or average compensation packages in order to maintain their jobs, the result of which could easily lead to CEO underpayment. Finally, CEOs who are in their first appointment as CEO maybe more concerned with establishing a long-term career path than immediate financial benefits and thus will accept lower compensation packages than other well-established CEOs.

Irrespective of the reasons for CEO underpayment or overpayment, there are significant policy implications resulting from this study. Given that one-third of CEOs are overpaid, there is obviously a need for some form of governmental regulation of CEO compensation in the United States. One possible measure is to have a cap placed on CEO compensation as a percentage of the firm's market capitalization, this would prevent compensation packages from ballooning out of line with what is considered a just and sustainable pay package. Also compensation packages should not be allowed to fall below a certain market capitalization percentage in order to provide CEOs with the required motivation to manage the firm in the interest of the shareholders. Any lifting of the cap should only be possible by the approval of a two-thirds majority at the firm's annual general meeting.

Another area that should be examined is the composition of compensation committees. Compensation committee members should be comprised of independent directors with net-worth above an agreed minimum. This agreed minimum net-worth would prevent the committee members from becoming economically dependent on their appointment as directors to sustain their personal affairs. Secondly, at least one member of the compensation committee should have expertise in accounting and auditing to be able to ask relevant questions regarding the possibility of earnings management techniques being carried out by CEOs to inflate financial results where their compensation is linked to firm performance.

Having outlined some practical implications resulting from this study, there are a few theoretical implications that now arise. This study has shown that the time has come for a change in the approach to the discussion of executive compensation particularly CEO compensation by researchers and the popular press. For the past two decades we have been fed a diet which proclaimed that CEOs were receiving excessive compensation and that this situation was a widespread phenomenon. This diet was used to shape and inform almost all research and discussions surrounding executive compensation, so much so that researchers would accept this message as a fact and then proceed to argue a case as to what factors are driving CEO compensation. No one took the time to question the veracity of this message, let alone to contemplate the possibility that CEOs could in fact be underpaid based on their firm performance. We now know that this message is not correct. There is no widespread overpayment of CEOs, the

results show that only one-third of CEOs can be described as receiving excessive compensation packages. Two-thirds of the CEOs were underpaid. This message has never been communicated in any research before. Researchers therefore have to change their mainstream approach to the investigation of CEO compensation, no longer can they approach the issue as they have been doing over the last two decades. The time has come for a paradigm shift in the approach to research and discussion of CEO compensation. The results of this study have provided the opportunity, let us not continue in the dark.

6.2 Potential Limitations of the Study

There is a generalized temptation to classify all studies on executive compensation as if they are all the same which is due mainly to how the executive compensation literature is presented. However, this study is based on CEO compensation and the findings are therefore specific to CEOs, therefore readers should be guarded against extending generalizations from this study to other groups of corporate executives. A second potential limitation of this study is that data used in this study are based solely of US firms and US CEOs, no data relating to any other country were included in the analysis. Hence, generalizations from this study should not be made to countries not mentioned in this study. One reason for the focus on the United States and its CEOs is due to the fact that the greater percentage of the body of CEO compensation literature is related to the US CEOs partly because of the accessibility of published data.

This study included a number of control variables that could have an impact in determining the size of the CEO compensation package; however, it is highly possible that other factors not controlled for in this study may affect the level of CEO compensation. For instance, factors such as CEO education and qualification, CEO gender, CEO reputation, CEO possessing special skills and CEO likability. This exclusion is due mainly to the lack of data availability and the difficulty of measuring some of these factors. However, in using previous theoretical and empirical works as a guide, it has been shown that the control variables that are included in this study address the most important determinant of CEO compensation.

Additionally, the data used to build the regression models are based on the firms' accounting results. Although the accounting data were obtained from audited financial statements, there is always the possibility that management could undertake earnings management activities in order to make firm performance appear better than what they are. Given the difficulty of detecting these activities of management by auditors, it can only be assumed that the reported accounting results do not reflect any fraudulent accounting practices which could affect the model's reliability.

Finally, it should be noted that the model is reasonably robust. However, future research may consider alternative model specifications as well as alternative data transformations. Also it should be noted that the possibility exists that results may be sensitive to different model specifications and different data transformations.

6.3 Key Areas for Future Research

This study examined whether there was evidence to support the view that CEOs were being underpaid in the United States in light of the current literature that claim widespread CEO overpayment in the US. The results indicated that the current view of widespread CEO overpayment in the US is incorrect with only one-third of US CEOs being classified as receiving excessive compensation packages. Therefore, one area of future research could be a comparative study between United States CEOs and CEOs from a European country to determine the extent to which CEO overpayment and CEO underpayment exist.

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