Honest compensation or misuse of power?

A study on executive compensation at financial, insurance, and real estate institutions in the U.S.

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Introduction

Executive compensation may well be the most discussed topic in the media in 2008 and 2009. Bloomberg Business Week literally stated “As markets crash and retirement dreams fade away, media and the public are full of outrage at everyone from mortgage brokers and Wall Street CEOs to real estate investors to experts who failed to predict the crisis was coming” (Bloomberg Business Week, 2008). This same article, supported by several important authors in modern finance, stated that the excessive risk takers in financial firms probably had no direct intention of wrecking U.S. economy, but were making a lot of money for themselves. Crotty (2008) studied the structural causes of the global financial crisis, and in his paper he came up with a part including excessive risk taking by top executives. He described the reason behind the subprime mortgages, and how the people involved became richer that they could possibly imagine. His rationale was that all involved institutions such as the mortgage brokers, the investment firms, the banks/specialist institutions, rating agencies, and the insurance companies were inclined to keep up the flow of loans. Since short-term profitability of these loans was high, the fees paid to the executives were skyrocketing. These fees would not have to be paid back in case of declining profitability. This concept is described as the “hidden downside of the new ‘originate and distribute’ model of banking” (Crotty, 2008). Disturbingly, Crotty (2008) provides examples of Goldman Sachs, whose bonus pool in 2006 was $16 billion, an average of $650,000 distributed among the 25,000 employees. Halfway 2007, when the investment banking disasters became imminent, the average Wall Street bonus declined with just 4.7%, whereas the profits of the NYSE fell by 46%. The five largest investment banks – Merrill Lynch, Goldman Sachs, Morgan Stanley, Lehman Brothers and Bear Stearns – paid out $40 billion in bonuses, whereas the *projected* amount of bonuses in 2006 amounted up to $36 billion (Crotty, 2008). While the profitability declined to almost half of its projections, bonus grants actually increased in these firms. Lehman Brothers went bankrupt in fall 2008, while the bonus grants were actually increasing in their organization. Lehman Brothers is a good example of a company pursuing a too risky investment program. Essentially this firm pursued a low risk strategy, but it suddenly changed course pursuing an excessive risk strategy because it felt that competitors made great profits by following the riskier strategy (Daily finance, 2010). These facts however do not necessarily suggest that bonuses paid to CEOs are too high, but it does suggest that lousy performance still yields high bonuses. If this is the case, then the pay-performance relationship for these CEOs should not yield a very high correlation in years of declining performance. This research will be on executive compensation, with main focus on the financial and real estate institutions operating in the United States. This research extends my previous research, which utilized a sample of fifty large banks in the United States. My belief

then was that the CEOs of those firms were paid not just for their performance, but rather based on other measures such as managerial power or rent seeking behavior. The statistical results extracted from the previous research showed that the CEOs of these companies were indeed paid for their performance, as opposed to my expectations. While the results gained from my previous research give some indication of the relation between pay and performance of the CEOs, it does not cover a large and representative enough sample. The credit crunch struck me with great amazement, and the drive to perform research in this field continues to interest me. Executive compensation is closely related to the credit crunch because the CEOs involved in causing this crisis received high pay packages prior the crisis. Since the current credit crisis does not limit itself to commercial banks, this paper will include a dataset containing all financial and real estate institutions operating in the U.S. for the period 1992-2007. All institutions involved in causing the financial crisis are included in this research. Mortgage brokers, investment firms, banks, rating agencies, the insurance companies, and even real estate agencies who were similarly incentivized to sell as much real estate as possible as intermediary (Website Hubpages). The timeframe should provide reliable results on the efficiency of managerial incentives in these industries. The goal of this research is not to pinpoint the companies responsible for our current crunch, but rather to get some *basic insight* in the pay for performance relationship of the CEOs involved. Therefore no division is made throughout industry or firms, the results are generalized over all firms in the sample. This leads to the following research question:

Does firm performance have a meaningful relation with annual bonuses, long-term incentive plans, and stock options granted in the period 1992-2007 to CEOs in the financial services and real estate industry, or are other factors determining the level of these grants?

I was able to find some interesting results. Annual bonuses tend to be related to firm performance, whereas the evidence on long-term incentive plans and stock options being related to firm performance is not so clear. Some evidence for the pay-performance relation was found when dividing the initial sample in size groups for long-term incentives. Some part of the pay levels suggests managerial power, or even random choice.

Chapter 1 will start off with a brief literature review on executive compensation. I will review the history of executive compensation and a theoretical framework is set up reviewing all important theories on executive compensation. The structure and components of executive compensation will be reviewed, as well as the most important findings of other authors operating in this field. Chapter 2 will present the set-up of the statistical model. It shows what sample selection procedure is used, the source of the data, and what methodology is used. This information is then presented in a model, followed by the definitions of the variables.

Chapter 3 presents the data analysis, and discusses the results. Chapter 4 presents additional data analysis on different panels, and also discusses the results.

Chapter 1: Literature review

1.1 Executive Compensation

1.1.1 Introduction to CEO Compensation

Executive compensation has been a focal point in financial literature for several decades now. In fact, the research in this area expanded even faster than the CEO remuneration itself (Murphy, 1999). The increase in executive pay is partially justified by the changing market conditions and the inflation, but despite these facts executive pay remains a much debated phenomenon, especially with the current credit crunch. All sorts of sources cannot stop writing on the topic. Newspapers, business journals, and periodicals all write on the excessiveness of firms' remuneration programs, which occurs especially in the top layer of the hierarchy. It was just recently debated by President Obama, who argued that the high compensation packages led to the practices responsible for the current credit crunch (New York Times, 2010). His administration mentioned that compensation in the financial industry should not be capped, but rather adjusted in structure in such way that it makes excessive risk taking unnecessary/unattractive. The focal point made by Obama and its administration is supported by recommendations made by Jensen and Murphy (1990). They argued that the excessive pay of CEOs is not the big issue here, but rather *how* these CEOs are paid. They asked themselves the question: "Would average levels of CEO pay be higher if the relation between pay and performance were stronger?" (Jensen, Murphy, 1990). They answer this question with yes. They believe total compensation of a CEO would, or even should be higher when tied more closely to performance. This way the less talented CEOs will either receive a lower compensation package, or be replaced by a more talented CEO (Jensen et al. 1990).

It has recently come to light that many companies, especially financial firms, had invested in too risky portfolios for at least a decade. These investments yielded good short-term results, but in the long-term these investments had proven to be value destroying rather than value creating. In the past decade the top executives of these firms were given huge incentives, and even when their failure became public their compensation package was not adjusted accordingly in some cases. Raviv and Landskroner (2009) studied possible factors explaining the credit crunch, and they found that equity compensation gave executives incentive to risk taking. They saw equity based compensation grow over this decade, but they saw no substitution effect, which means no accompanied decrease in non-equity

compensation (Raviv, Landkroner, 2009). For the executives it meant that the upside potential of gaining a lot in the short-term was substantial, with only limited downside risk because of the relatively high non-equity compensation. Obviously this misalignment of incentives versus performance proves more complex than one might think. Therefore it is wise to start with reviewing historical research to get some idea of how executive compensation is built up, and how it has evolved over time.

Modern history of executive compensation dates back to the '80s, which was approximately in the same period the 'agency theory', was generally accepted. This specific theory lies at the basis of executive compensation, and the next subchapter therefore reviews this theory thoroughly. Executive compensation has gained a lot of attention in different study fields such as accounting, finance, economics, law, organizational behavior and strategy. Some examples are accountants, who looked at whether accounting based bonuses led to manipulation of earnings, financial economists who mainly studied the pay-performance relationship, or compensation related to investment decisions, capital structure and mergers/acquisitions. While most research on executive compensation involved tests on the agency theory, sociologists mainly looked at the social aspects of executive compensation (Murphy, 1999). Zajac and Westphal (1995) researched an alternative concept related to executive compensation: symbolization. Symbolism in compensation means that the discussion on whether an executive is overpaid or not is not important. Symbolism looks at how firms communicate rationale of magnitude of the CEO's compensation. It mainly revolves around the subjective assessment whether an X-amount of bonus for example can be justified in the eyes of the stakeholders, rather than fixing the bonus to a certain level which would make economically sense. By implementing symbolism less bias may appear in the compensation level, since the level of compensation has to be justified to all important stakeholders (Zajac, Westphal, 1995). Chapter 1.1.2 reviews the theories inherent to executive compensation, but also the structure, level, and components of pay. Eventually chapter 1.2 and 1.3 focus more on the pay-performance relationship in corporations in general and financial and real estate firms in more detail.

1.1.2 Theoretical Framework

Agency theory

The basis for the agency theory has its origin in Berle and Means (1932), who were the first to discuss the separation of ownership and control. In short the agency theory can best be described as a contract in which a person (principal) engages another person (agent) to perform some service on his or her behalf (Jensen, Meckling, 1976). The agency theory assumes that both persons are 'utility maximizers'. In fact, the agent will demand incentive

for his performed service, while the principal is more concerned with the results the agent delivers. It often occurs that the principal and the agent have different or even contradicting interests. Berle and Means (1932) eventually argue that boards are dominated by management, and that due to this ineffectiveness of their supervisory role the management has almost full discretion. This gives executives the possibility to extract rents from the owners. That is where the basis of the agency problem lies.

Jensen and Meckling (1976) formalized separation of ownership and control. They devoted most of their research in explaining the relationship between the owner and the agent. They noted that one of the most important conflicts which arise between the owner and the agent is when the agent's ownership claim falls. This basically means that the agent will have less incentive to devote its efforts in investing in profitable new ventures since it may not be in its own best interest. This notion supports the suggestion that some ownership claim in the firm for the manager (agent) may induce the agent to perform more effectively, and thus create firm value (Jensen et al., 1976).

Eisenhardt (1989) distinguished the agency theory along two lines, the positivist agency theory and principal-agent theory. Both theories share common characteristics. They both concern the contractual relationship between a principal and an agent. The assumptions on people, organizations and information are common amongst both as well. They differ however in mathematical rigor, dependent variable, and style (Eisenhardt, 1989).

The positivist approach identifies situations in which principals and agents may experience conflicts in which the agent seeks self-serving behavior. For this problem it develops a governance mechanism in order to limit this behavior. Another characteristic of the positivist approach is that it merely focuses on the relationship of owners and managers of large, public corporations (Berle, Means, 1932). As opposed to the positivists, the principal-agent theorists are more concerned with a general theory of the relationship between principals and agents. The application of this theory is suitable for owner-managers, but also other agency relationships (Harris, Raviv, 1978). It can be applied in all firms, unions, bureaus, universities, cooperatives, corporations, and governmental authorities etcetera. A downside of this approach is that it involves difficult mathematics, and its results are abstract, making it hard to apply to real world cases (Eisenhardt, 1989). The positivist agency theory is an easier method to apply, and is therefore more commonly used.

Two common theories exist in the current financial literature which link the agency problem with executive compensation:

1) Optimal Contracting Theory
2) Managerial Power Approach

Optimal contracting theory

Contracting theory in itself exists in every institution or organization involving a relationship between a principal and an agent; its mere existence is to solve a particular problem. A principal wants an agent to operate efficiently for the interest of the principal. In return the agent demands incentives suitable to his needs. If this incentive choice is not to the liking of the agent, optimal contracting assumes that performance of this particular agent will destroy rather than create value for the principal. Optimal contracting is probably the most common theorem when discussing compensation packages for executives. The optimal contracting theory considers executive pay as a (partial) remedy for the agency problem, supported by the majority of relevant economic literature. For corporations optimal contracting means that, amongst others, a board of directors is elected to design compensation schemes for top executives. These compensation schemes are efficiently built up, in order to incentivize the management optimally. These packages are performance related, and are especially valuable in situations where monitoring is difficult or costly. Eventually the performance related compensation package aligns the interests of the executive with that of the board. In order to design these packages, the board of directors is concerned with basically three tasks: 1) attaining and retaining high quality management, 2) providing executives with suitable incentives, while aligning it with shareholder interests, and 3) minimizing overall costs (Bebchuk, Fried, Walker, 2002).

In line with these assumptions lies the idea Berle et al. (1932) proposed. Executives typically have low ownership in large corporations, which means they have little interest in profit maximization as their mere goal. Their utility-maximizing nature requires them to be compensated appropriately for their performance, in which the outcome-based contract offers the solution. The outcome-based contract typically consists of several pay metrics, such as salary and bonuses, which are performance dependent. Executives will put effort in their work in order to increase the specific performance measures, which eventually leads to higher compensation. As Bebchuk, Fried, and Walker (2002) point out, optimal contracting can never perfectly align the interests of managers and shareholders. The main goal of optimal contracting is therefore to minimize agency costs. Agency costs are defined as the sum of contracting costs, monitoring costs, and other costs incurred in achieving a certain level of compliance with the shareholders (Bebchuk et al., 2002).

Bebchuk et al. (2002) identifies three limitations to the optimal contracting theory:

1) Limitation of arm's length relationship
   Although directors are essentially chosen independently from each other, an ideal arm's length relationship is hard to maintain. Main reason for this is the discretion of

the CEO in all facets of the firm. Board dynamics also plays a role; directors are expected to monitor the performance of the CEO, and make decisions on whether to maintain him in his position, or to fire him. On the other hand they are also expected to support the CEO, providing the directors with dilemmas. Social dynamics also play a role. When acting in a group of directors, a single director feels pressured to satisfy other directors, sometimes leading to opposing interests. Besides discretion in management, and board dynamics, economic considerations should also be taken into account. The economic benefit of reducing CEO remuneration is minimal, while the costs of reappointing a new CEO could be considerably higher. Decreasing ones remuneration also increases ones reputational loss (Bebchuk et al., 2002).

Probably the most important notion of the limitation in an arm's length relationship is that the directors are part of the agency problem as well. They too subdue under its effects. Directors usually earn their own share of interest in the firm. Pearl, Mayers and Partners (2002) showed that average director compensation in the 200 largest corporations in the U.S. was $152,626 in 2001. The compensation of directors is partially determined by CEOs. So the directors most definitely have good incentives to play along with the CEO, as long as the rent extraction of the CEO is not too massive (Bebchuk, Fried, 2003). Brick, Palmon, and Wald (2005) presented their finding that CEO and director excess compensation is tied to firm underperformance, suggesting the existence of mutual backscratching. Since the CEO has almost complete discretion in not just management, but also the board, the CEO also decides up to some degree which board members will or will not be re-elected in the board, giving the directors even more incentive to back up the CEO. It is often considered an honor to maintain a position in the board, beside the fact it is also favorable for their social network (Bebchuk et al., 2003).

2) Limitations on the power of market forces

Although the board of directors selects a compensation package under the influence of the executives, executives are constrained by market forces to select the compensation package that is in the best interest for the shareholders. Bebchuk et al. (2002) identified four market forces that bear on upon managerial activity:

a. Managerial labor market: some labor market mechanisms align with the interests of the shareholders. The most important mechanisms would be the compensation plan and the equity holdings. The compensation plans are usually built up with base salary, bonuses, and stock options. All those components are performance related. Through stock options, executives have incentive to generate shareholder value, since it afflicts their own wealth. However, since the absolute sensitivity between firm performance and CEO wealth is very low, an

increase in firm value would result in only a minor increase in CEO wealth. Another effect of the labor market is the echo effect in the organization. This effect relates to the increasing gap between CEO pay and that of its subordinates, resulting in higher rates of managerial turnover. A CEO would take this into account before awarding himself with a pay raise. Another factor is the possibility to get another CEO job, but often this process depends more on the performance the CEO delivered rather than the rent it extracted. Executives could also be concerned with dismissal; however this option is also based on its performance rather than CEO's level of compensation (Bebchuk et al., 2002).

b. Market for corporate control: the market for corporate control is also considered an important factor in aligning the interests of executives with that of shareholders. Takeover threat for example would incur management to perform extra well, since takeovers are correlated with executive dismissals. However, this effect seems minimal when considering a CEO boosting his compensation package. When a CEO boosts its compensation package in such way that the firm experiences one percent decline in firm value, this is unlikely to result into a takeover (Bebchuk et al., 2002).
c. Market for additional capital: if a firm is forced to go to the equity market for additional capital, a restraint is put on the executive. If the executive is overcompensated, the equity market will view the executive as a conservative self-compensator. However, this effect will only slightly increase the cost of capital, and the executive will still have good incentive to raise its pay (Bebchuk et al., 2002).
d. Product markets: A final potential constraint on managerial behavior is created by the competitive market. Inefficient behavior in a competitive market will result in lower profits and lower market share. However, to view this force as restraining executives to boost compensation is false. An executive will not act in such way that productivity decreases. Redistribution of profits from shareholders to the executives has no significant effect on the operational efficiency (Bebchuk et al., 2002).
e. Overall force: executive compensation is not affected much by market powers. In its broadest sense it may resist CEOs from excessively increasing their compensation, mitigating the gap with optimal contracting (Bebchuk et al., 2002)

3) Limitations on the power of shareholders

Optimal pay arrangements could occur when shareholders would have the power to somehow mitigate executives' compensation packages. They have two mechanisms

at their disposal; however both mechanisms do not impose much of a constraint to excessive compensation:

a. Derivative litigation: corporate law allows shareholders to sue a CEO, with the goal to overthrow its compensation package, when it is not aligned with the shareholder's interests. However such lawsuits are seldom successful, therefore not resisting CEOs to boost their compensation (Bebchuk et al., 2002).
b. Voting on option plans: shareholders can mitigate compensation plans of executives by voting for option plans. In some states (U.S.) it is obligatory that shareholders vote for stock option plans. By not accepting a stock option plan, or postponing it, shareholders have the ability to adjust the compensation package. However, usually postponing or not accepting it at all does not yield positive results for the shareholders (i.e. talented CEOs could leave) (Bebchuk et al., 2002).

Managerial Power Theory

The managerial power theory is based upon the same assumptions as the optimal contracting theory. Both acknowledge the principal-agent agency problem. However, beside the acknowledgement that executive compensation functions as a remedy for the agency problem, managerial power theory also dictates that executive compensation is essentially *part* of the problem. With optimal contracting a board is selected to create an optimal compensation contract, which is ought to be value maximizing for both shareholders and executives. As mentioned before, there is no perfect match; therefore the optimal contract would be where agency costs are minimized. Financial economists observed a recurring trend; while the application of the optimal contracting theory sounds plausible, they experienced large deviations from the optimal levels of the contracts. Zingales (1998) argued that contracts are not renegotiated continuously, meaning that over time contracts become less optimal. This inefficiency temporarily allows executives to extract rents. He notes this inefficiency is mean-reverting, meaning that over time the power will flow back to shareholders eventually. Still, the lack of renegotiation of contracts allows executives to exploit shareholders. According to the optimal contracting theory the board of directors should independently choose the pay package of the management. However, in practice management is regularly involved in selecting their own pay package. Yermack (1997) noted that board compensation committee reports in annual proxy statements revealed that management had direct or indirect influence on the composition of their own pay package. Examples were given by Yermack (1997) from Intel Corp in 1994: "…stock options for the executive officers were granted upon recommendation of management…" as well as for Western Digital Corp in 1994: "…taking into account the recommendations of management,

the Committee determines the employees to whom options will be granted, and the timing and manner of the grants of options." (Yermack, 1997). These inadequacies in selecting an efficient and optimal contract for executives are exactly what the managerial power theory is about. The managerial power theory acknowledges the fact that CEOs often have complete discretion in the board of the firm. This fact is not a new trend per se. As mentioned before, Berle et al. (1932) argued that boards of firms are dominated by management due to their ineffectiveness of their supervisory role, indicating that executive pay is also *part* of the agency problem besides being a *remedy.* But this approach does not stop with the mere fact that management exerts power over the board, since the board itself has very good incentives to back up corporate management. The CEO has power over the compensation package of the directors, as well as the re-election in the board of the directors. Managerial power approach acknowledges the fact that an arm's length ideal is usually not the result. Managerial power theory assumes that executives use their power to extract rents from the firm due to their utility maximizing nature. Firms in which corporate governance is weak are expected to be the firms where CEOs have the most power. The board of directors cooperating with management (up to some degree) indicates lack of corporate governance. Introducing a large shareholder in a small board for example will result in less rent extraction by management (Bertrand, Mullainathan, 2001). Another important assumption of the managerial power theory is the relation between ownership/control and rent extraction. It basically says that when an executive has more ownership within a firm, it usually has higher rents extracted. More ownership also means that executives have greater influence in the election of directors, meaning that more ownership is related with more loyal directors towards CEOs. An important notion of rent extraction is that the costs to shareholders are not limited to simply the excess pay to the CEO. The effect of the inefficient contracts yields high efficiency costs, which are often higher than rent extracted (Bebchuk et al., 2002). Adams (1963) suggested equity theory. Its basic principle lies in the equity of payment. From a sociological and psychological point of view, a CEO who contributes a lot to the firm should receive appropriate compensation. When contribution and compensation are in equilibrium we can speak of an equal payment. However, whenever the compensation exceeds contribution, or vice versa, we speak of either overpayment or underpayment respectively (Adams, 1963). Whenever overpayment occurs, and thus underperformance by the CEO is shown, other departments in the firm may experience pay-inequities. These pay inequities may for example lead to lower productivity, lower product quality, lower employee morale, and increased turnover (Murphy, 1999). While this efficiency effect is clearly visible in corporations, only few firms acknowledge it. Most of the financial economists focused their attention on optimal contracting, where it should have been focusing more on the managerial power approach (Bebchuk et al., 2002).

The managerial power theory is not without limitations however. Directors will support the CEO as much as possible, since this is in their own interest as well. However, the CEOs opinion is not the only important feature for directors. Their position requires them to be role models. With the job comes prestige and they have to be able to defend their choices when their decisions are made public. When one of their choices, on the compensation package for the executive for example, is considered outrageous, their credibility and reputation will be damaged. Therefore a director will not accept over-the-top compensation packages since this might afflict his own reputation. Widespread perception that CEO pay is excessively high and not related to firm performance contributed to the view that the board of directors were indeed cooperating with CEOs, thus failing their responsibility to shareholders (Johnson, Porter, Schackell, 1997). This widespread perception induced the use of "camouflage", introduced by Bebchuk et al. (2002). It means that the rent extraction is dressed in such way that the relevant parties (investors, media) will not notice the excessiveness of the compensation. Camouflage is a typical managerial tool. As long as the truth is hidden there is no problem. In order to improve the credibility of a compensation package, a consultancy firm is hired. This consultancy firm essentially should be used to optimize compensation packages for executives, but truth be told: the consultancy firm has great advantages pleasing the CEO. As the consultancy firm is selected by human resources, the CEO has a great say in which consultancy firm should be picked. Needless to say that the consultancy firm who best "camouflages" the compensation package remains hired (Bebchuk et al., 2002).

The next chapter will focus on level and structure of different kinds of components of pay, provided with some background history and developments in the components.

1.1.3 Level and structure of CEO pay

All studies on executive compensation concern the agency theory; in fact the issue of excessive pay is indeed (partially) the result of the agency *problem* as described by the managerial power theory. Whereas early studies on executive pay were based upon the mere relationship of CEO pay and firm performance, more recent papers document also whether CEOs are terminated due to lack of performance, or whether CEOs are rewarded for their relative performance against the market or industry.

This change, or better said evolution in financial literature on executive pay is tremendous. Many variables changed in importance, others were added in the process. Short-term bonuses (STI), long-term bonuses (LTIP), stock options and stock ownership have all become very important in explaining the relationship of pay-performance, but also the behavior of the managers (agents). As mentioned before, stock options and stock ownership

have gained great attention over the past decade(s). Hall and Murphy (2003) noted that stock options have become one of the most important components of executive compensation. The development of the different variables can be seen in **figure 1**, available in Appendix A1. When relating stock options to the agency problem, it has certain advantages. The basic line of thought of stock options is that an executive has good incentives to realize profitable results, since part of its compensation is tied to developments in stock prices. Another advantage of stock options is that its structure encourages employees to remain within the firm, since only then will they be able to benefit from the options. The option to exercise often disappears when the employee leaves the firm (Murphy, 1999).

A disadvantage noted by Hall et al. (2003) is risk-taking. Because non-equity compensation was relatively large, the downside risk of diluting the value of stock options was not dramatic for the executives. However, the upside potential of gaining a lot of money on the options was high. The rationale for many executives was comparable to a win-win situation, where the loss in value of the options was considered a 'bummer', but not that bad because of the high non-equity compensation, whereas the growth in value because of excessive risk-taking was quite substantial. It became pretty clear that this excessive risk-taking was not in the best interest of the firms, considering the longer term (Hall et al, 2003).

Level and structure of pay among industries

Much heterogeneity exists within industries when considering pay structures. In fact, all industries use the following four basic pay components: 1) salary, 2) STI (short-term incentives), 3) stock options, and 4) LTIP (long-term incentives). A lot of firms also participate in other additional components such as life insurance and supplemental executive retirement plans (SERP). In mid-level management a contract is often not negotiable, top executives can negotiate their entire contract to their consent. These contracts often last for five years and include minimum salary, target bonuses, and also resignation arrangements in the event of separation of control (Murphy, 1999).

<Insert Figure 1 here, available in Appendix A1>

Murphy distinguished between several industries when considering pay structures. He looked at mining/manufacturing firms, utility firms, but also financial services. Whereas this paper will focus only on the financial services and real estate industry, I believe it is important to see how the pay structure in other industries is built up as well because it shows us how executive compensation differs between industries. **Figure 1**, available in Appendix A1, presents the level and composition of pay per industry. From this figure we can see that total

compensation increased in all industries except for utility firms. They saw only a minor increase in compensation compared to the other industries. Mining and manufacturing firms saw their compensation package grow substantially (+- 58% in four years), as well as the financial services (+- 55% in four years). From 1995 to 1996, the financial services industry had a major increase in compensation with an increase of approximately 26%. This increase appears to be typical in this particular industry.

In all industries, the proportion of each component changed over time. Base salary decreased in all industries compared to total compensation. This makes logically sense since stock options gained much popularity since the beginning of the '90s. Stock options increased in the financial services from 26% to 33%, but in dollars this means that it more than doubled in four year time. Regular bonuses remained more or less constant in all industries except for the financial services industry, where it increased from 21% to 26% of the total compensation package. In none of the industries major fluctuations are observed for other compensation (life insurance, SERP).

Level and structure of pay compared internationally

<Insert Figure 2 here, available in Appendix A2>

Murphy (1999) compared the components of pay internationally. He used data from Towers Perrin's *1997 Worldwide Total Remuneration* report, which is visualized in **figure 2**. Figure 2 is available in Appendix A2. From the picture can be seen that the United States pays its executives a lot more than in other countries. There is also a big difference in the way firms compensate their executives. In the United States most of the compensation is done through stock options, whereas other countries have relatively higher salaries. In 9 countries stock options and long-term incentives are not present at all, in 13 of 23 countries this usage rate lies below 5%. An interesting finding Murphy (1999) discovered was that pay practices seem to converge over time, opening the market for international managerial talent. Laan, Ees, and Witteloostuijn (2010) performed research in continental Europe, with special focus on Dutch firms. It appears that transparency in continental Europe is a lot less compared to the U.S., making it difficult to monitor the excessiveness. In their research it appeared that the convergence with the U.S. was not as high as one might think. Cash compensation still remains the core element in most European compensation contracts (Laan, Ees, Witteloostuijn, 2010). Firms with U.S. subsidiaries observe large internal pay differences. These firms often adjust the pay practice in their home country, i.e. increasing it to the level of the U.S. subsidiary (Murphy, 1999).

1.1.4 Components of CEO pay

This chapter will describe components of pay which exist in compensation contracts. A compensation contract is built up from several components (Murphy, 1999):

- Base salary
- Bonus plans (STI)
- Stock options
- Restricted stock
- Long-term incentive plans (LTIP)
- Retirement plan
- Other compensation (Rajan, Wulf, 2006) (Yermack, 2006)

Base salary

Base salaries form the basis of a compensation contract. It is built up by the use of 'benchmarks'. As opposed to manufacturing firms, which uses general industry benchmarks, financial services firms use internal industry benchmarks. The foundation of salary is derived from the relative size of the company, rather than for example educational level, experience, or age.

Baker, Jensen, and Murphy (1988) and Rosen (1992) formalized the observed relation between company size and salary. They suggested that at the 50th percentile, salaries are labeled as *below market level*. Between the 50th and 75th percentile, the salary is considered *competitive*. They also suggested the so called 'ratchet' effect, basically meaning that salary grows because of the presence of competition. Even though growth in salary is not necessarily due to increasing firm size, or higher tenure of the CEO; competition makes sure salary grows over time.

Even though the relative position of base salaries to other components of compensation is declining, base salaries are still considered as a very important component in a contract. It is the basis of the contract, and the level of the other components is based on the level of salary. Bonuses for example are typically expressed as a percentage of salary, whereas options are typically expressed as multiples of salary. An increase in base salary would thus benefit all other components as well (Murphy, 1999).

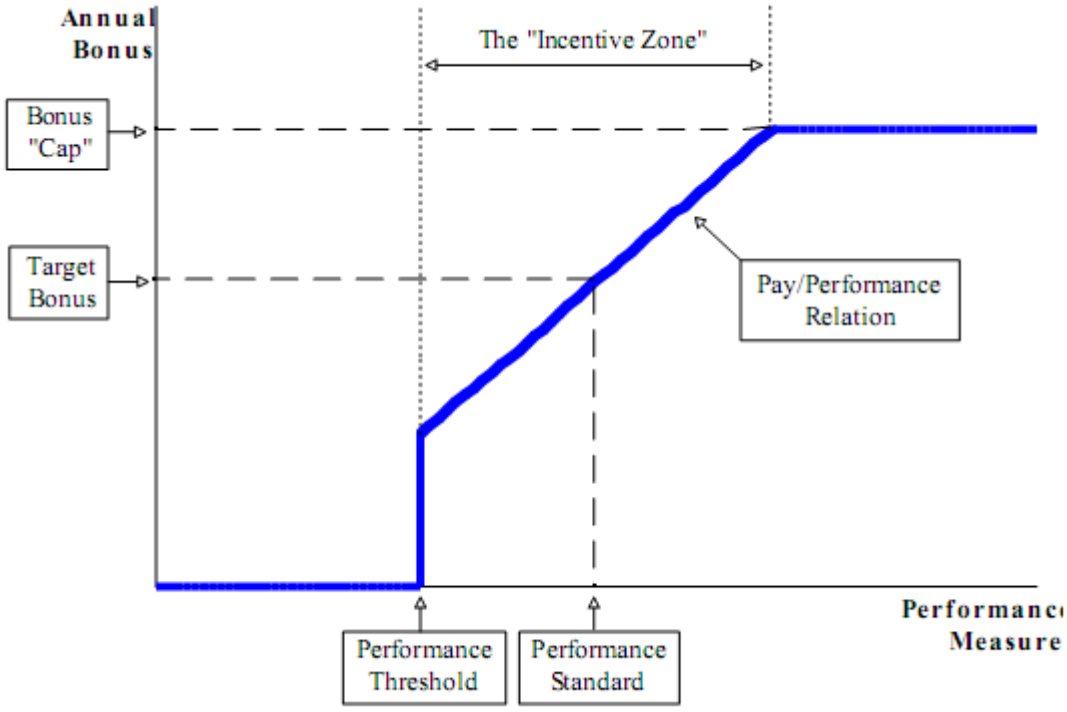
Bonus plans

Almost every commercial firm uses bonus plans for its top management. A bonus plan is usually on an annual basis, and basically resolves around three basic components (Murphy, 1999):

1) Performance measures
2) Performance standards
3) Structure of the pay-performance relationship

Figure 3 presents what is called a "typical" bonus plan, as derived from Murphy (1999).

Figure 3: *"A typical bonus plan"* (Murphy, 1999).



It basically works as follows; there is a performance threshold. Performance below this threshold means no bonus. Performance equal to the threshold gives the right to the minimum bonus, which is usually expressed as a percentage of the target bonus. Performance equal to the standard yields the target bonus. Performance above the standard is awarded with a premium on top of the target bonus, until the cap is reached. The area between the performance threshold and the bonus cap is called the *incentive zone.* This is the area where the bonus level can be earned, based on your performance.

The bonus plan as presented above is not the only metric of the bonus plan. There is also a subjective side of the story. Usually firms have a certain *bonus pool*, consisting of a fixed

amount of money. Apart from the performance of the firm, individual performance is measured as well. Since this metric has a certain subjective nature, CEOs usually get an extra bonus up to 25% of the bonus as derived from figure 3 (Murphy, 1999).

Stock options

Since employee stock options have become an extremely relevant compensation component, I believe it is important to get a good background on the characteristics and implications of employee stock options. Therefore more attention will be pointed to this specific pay component.

Stock options are defined as contracts which give an executive the right to buy a share of stock at a pre-specified strike price at a pre-specified term (Murphy, 1999). As mentioned before, stock options are often measured as a multiple of the base salary, and its main implication is to bind the executive to the firm. The more stock options an executive has, the more inclined he will be to remain within the firm. If an executive decides to leave the firm early, the contract often states that part of the stock options (if not all) disappears (Murphy, 1999). Another reason to provide executives with stock options was to maintain the executive's level of efficiency. Since the executive has an interest in the firm, his utility-maximizing nature would incline him to perform as good as possible (Berle et al., 1932).

During the 80s and 90s the importance of stock options started to grow excessively for several reasons: corporate governance changes, reporting requirements, taxes, managerial rent seeking, and the bull market (Hall et al., 2003). The grant of stock options was not limited to top executives; other employees holding shares grew to a level where economists wondered whether this increase in stock options among employees was efficient for the firm (Hall et al., 2003). Hall and Murphy (2003) asked themselves the question whether stock options are efficient at all. Do they attract, retain and motivate executives and employees to operate efficiently, to raise stock prices to a level which would otherwise not be reached? Before those questions can be answered, it is important to note what stock options cost to a firm (Hall et al., 2003).

The cost is not limited to the value of the stock option granted to the executive/employee. If an executive/employee could choose between a certain value in stock options and an equivalent value in cash, he would preferably choose the cash. Why? The cash can be used instantly and is riskless; the stock options are often subject to certain restrictions and involve risk. Since executives and employees want positive incentive benefits for the grant of stock options, firms have to account for the risk inherent of stock options (Hall et al., 2003). Hall and Murphy (2000, 2002) found in their previously published papers that employees who

were granted stock options at market price, value these options only half of what they cost to the firm.

Hall et al. (2003) provide evidence on whether the grant of stock options is efficient. They suggest that stock options are inefficient for lower level employees. While they provide incentives for the employees to perform better, the question remains whether it is efficient. It is not. Lower level employees hold only a minimal level of the outstanding shares, which subjects them to the 'free-rider' problem: while the employees may work extra hard for raising stock prices, an increase would almost not be noticed in the share they hold. It may attract, retain and motivate employees, but in an inefficient way. For executives the grant of stock options is generally accepted as being an efficient way to tie pay to performance. The basic idea is plausible, however, Hall et al. (2003) argue that stock options for executives are essentially efficient, but the designs of the stock option plans are not. They consider the traditional stock option, which is ten years with short vesting and an exercise price equal to the grant-date market price, as inefficient. Along with many other economists they embrace the idea of 'indexed' stock options. This basically means that the exercise price of stock options are indexed against the market price, providing benefits for the executives (protection from market shocks) and shareholders (only paying for good performance). This approach also has disadvantages; Hall et al. (2003) found evidence suggesting that traditional employee stock options are 'in-the-money' 80% of the times after ten years, for indexed options less than 50% is 'in-the-money' after ten years. Indexed options would thus yield lower costs for firms, but an even lower value for executives because since their risk-averse nature induces them to attach low value to options likely to expire worthless. Therefore the traditional stock options cost less to a firm than an indexed stock option does. Analysis of Hall and Murphy's 2002 paper suggested that an indexed stock option would only yield positive returns for executives when the exercise price is indexed below market value at grant-date. This way the low probability outcomes are overcome (Hall et al., 2003).

Tax implications

Executives' preference for stock options is also due to considerable tax advantages. Under Section 162(m) of the Internal Revenue Code, compensation over $ 1 million is no longer deductible as a corporate compensation expense. However, this same act also states that performance-based pay can be unlimited. This particular fact makes stock options more attractive than cash-based pay, like salaries and bonuses (Hall et al., 2003).

Mathematics of stock options

For valuing the cost of stock options for firms, the Black-Scholes (1973) formula is mostly used. Black-Scholes assumes risk-neutrality, which basically means that investors can hedge, and that all assets can be appreciated at the risk-free rate. Expected values of the option upon exercise can then be estimated and discounted at the risk-free rate (Murphy, 1999).

Black-Scholes formula also bears some pitfalls; is assumes constant dividend yields and stock price volatilities, which are plausible assumptions for short-term, but not so well for the longer term. Since stock options typically last a decade, this assumption is questionable. Black-Scholes also overstates the option value, because it does not take into account that stock options can be forfeited when an executive leaves the firm before vesting of the options (which makes stock options less costly for firms). Another assumption of Black-Scholes which contradicts a stock option is that options can only be exercised at expiration date. Since exercise can take place at vesting as well, the option becomes more expensive because an outside investor would value this option higher (Murphy, 1999).

Restricted stock

Restricted stock has more or less the same characteristics as a regular stock option, only it is restricted in the sense that the shares are forfeited when certain conditions are not met. Usually the forfeiture of shares is related to for example CEO longevity. In 1996, approximately 26% of the S&P500 granted restricted stock to its CEOs. It has favorable tax implications since no taxes have to be paid until the restrictions nullify (Murphy, 1999).

Long-term Incentive Plans (LTIP)

Approximately 27% of the CEOs in the S&P500 in 1996 received pay-outs in the form of such a plan. A Long-term Incentive Plan, or LTIP, is a ‘bonus’ typically rewarded to CEOs based upon a three to five year cumulative performance. Such plans exist to make sure CEOs do not merely focus on short-term gain (Murphy, 1999). Hewitt (2006) distinguished seven types of compensation which could appear in an incentive plan:

1) Stock option plan
    a. See above: Stock options
2) Performance share plan
    a. CEOs receive shares of the firm when certain performance target is reached.

3) Performance unit plans
    a. Same as performance share plan, only with possibility of options and cash grants, instead of just shares.
4) Deferred bonus / share investment plans
    a. Part of annual bonus is invested in company shares and turn into bonus shares after a pre-specified period. It may be dependent on some performance criteria.
5) Restricted shares
    a. See above: Restricted stock
6) Stock Appreciation Rights
    a. Same as stock option plan, only with payments in cash.
7) Long-term cash bonuses
    a. Bonuses granted based upon cumulative performance in a number of years.

Retirement plan

Retirement plans involve extra benefits provided for retired executives. Besides the usual "company-wide" retirement plans, extra benefits are provided to CEOs. These extra benefits are called supplemental executives retirement plans (SERP). These plans can be based upon the past tenure in the company, but also on past performance. These plans are typically excluded in studies on executive compensation, because it is hard to get a good estimated value of these plans. The statements do not cover these plans sufficiently enough to make good estimates on the value. SERP's are considered the ultimate form of 'stealth compensation' because of the vagueness of disclosure and anecdotes on the high payouts of these plans (Murphy, 1999).

Other compensation

Rajan and Wulf (2006), and Yermack (2006) are authors who wrote about the perks offered to CEOs beside their regular compensation package. Perks are non-monetary compensation forms offered to top executives. These perks have a wide range, and vary from corporate jets, to a membership at a high-rated golf club. Perks are generally related to the misappropriation of company surpluses. Since perks are hardly visible to outsiders, and usually underreported in statements, CEOs can easily make use of these 'excess free cash flows'. Whereas the general opinion on the sometimes excessive perks is negative, Rajan et al. (2006) found that firms which offer executives perks are generally more productive. Yermack (2006) found the exact opposite; the use of corporate jets as a perk is related to a drop in stock price (1.1%), followed by even more underperformance.

1.2 Pay performance relationship corporations

Most of the literature on executive compensation is based on the pay for performance relationship. This chapter will review some studies performed by other authors in the field. I will start with a chapter on pay for performance relationship in corporations, followed by a chapter on the pay for performance relationship in financial corporations.

Authors who have written on this topic have varying conclusions on whether CEOs are paid for their performance or not. Jensen and Murphy (1990) argue that the most important leaders (CEOs) in the U.S. are paid as bureaucrats. They noted that in "most publicly held companies, the compensation of top executives is virtually independent of performance" (Jensen, Murphy, 1990). In their 1989 paper they studied the pay-performance relationship of top executives. They found a positive and statistical significant relationship between the pay and performance of CEOs, but argued that it was too small for an occupation like this one. On top of that they argue that public and private political forces limit the possibility of a pay-performance relationship, and that achieving contracts with high pay-performance sensitivity is not possible. Important authors, who opposed the idea of Jensen and Murphy (1990), are Hall and Liebman (1998). They found exactly the opposite of what Jensen and Murphy found, which is that CEOs change in wealth is high relative to only a minor change in firm wealth. An example supporting their finding is that the median total compensation of the CEO is around $ 1 million at a return below the average, whereas it is $ 5 million for only a minor positive average return. This is a difference of $ 4 million, which is relatively high for a relatively minor increase in value. This finding suggests that CEOs cannot be paid as bureaucrats. They state: "If there is no meaningful link between CEO-pay and company performance, it is doubtful that the trillions of dollars of assets in public corporations are being managed efficiently" (Hall, Liebman, 1998).

Authors supporting the view of Hall et al. (1998) are for example Leonard (1990) and Carpenter & Sanders (2001). Leonard (1990) performed a study on the pay-performance relationship in 439 large U.S. corporations between 1981 and 1985, finding a strong positive and significant relationship between pay and performance, especially long-term bonuses tended to be closely related to the performance variable return-on-equity. Carpenter & Sanders (2001) selected 250 firms randomly from the S&P500. With their eventual sample of 199 firms they extracted results suggesting a meaningful relationship between CEO pay and performance. However, they suggest that this relationship is mediated by what they call the 'TMT', or the top management team. The TMT compensation represents the compensation packages of all top executives, except the CEO. This mediation effects implies that while CEO pay may be positively related to firm performance, this relation merely exists because

of the effects of TMT pay. The main takeaway from their research was the utmost importance, yet often absent, TMT in studies (Carpenter, Sanders, 2001).

Tosi, Werner, Katz, and Gomez-Mejia (2000) performed meta-analysis using a sample of 899 firms across four different industries for the period 1987-1991. They used 46 firm size and firm performance variables and used the values for their factor analysis. They found that firm size accounts for approximately 40% of the variance in total CEO pay, while firm performance accounts for only 5% of the variance in total CEO pay. The finding that firm size is the most important determinant of the level in CEO pay is no coincidence. Firm size as main determinant is shared by many financial economists; Gabaix & Landier (2007) developed a simple equilibrium model for CEO pay. They argued that when the market is in equilibrium, CEO pay depends on both firm size and aggregate firm size. They matched CEO talent to firm size, indicating that small dispersions in talent justify large pay differences. Typically the more talented CEOs are operating in larger firms. Eventually they presented the finding that the six-fold increase in CEO pay between 1980 and 2003 can be fully accounted to the six-fold increase in market capitalization in large companies, instead of accounting some of the CEO pay increase to other, agency related, aspects. In essence Gabaix and Landier (2007) presented a plausible finding; however, their conclusion that the increase in CEO pay is merely the product of increase in market capitalization is somewhat flawed. They did not link growth in firm size to the performance of the CEO. Wallsten (2000) performed research on pay for performance for the S&P500, for the years 1991-1995. He found that an increase in market value, which is the main indicator of firm size, was related to growth in CEO pay, given that the increase in market value was due to good performance. The result of a strong relation between CEO pay and performance was strengthened by Wallsten's (2000) finding that compensation increased significantly when market value increased, but remained more or less the same when market value decreased.

All studies on pay-analysis in corporations show varying results. Many authors find meaningful relations between CEO pay and performance, some stronger relations than others. Authors including control variables such as firm size experience that a lot of variance in CEO pay is due to firm size, and only a minor part of variation in CEO pay due to firm performance. However, growth in firm size (and thus in CEO pay) may at least partially be the result of increased performance.

1.3 Pay performance relationship in financial and real estate firms

This chapter will review research performed by other authors with main focus on financial and real estate firms. Research in the financial services industry differs somewhat from research in other industries. Deregulation in the banking sector has had great influence on

executive compensation. It opened the market for managerial talent, mainly because deregulation allowed competition in local banking markets (Hubbard, Palia, 1995). CEOs gained more discretion within the firm, providing them with the power to undertake actions which could have great influence on the firm. This is exactly where the agency problem presents itself: the CEO needs proper incentive to undertake actions desirable to the shareholders (Talmor, Wallace, 2001; Crumley, 2008; Hubbard et al., 1995). Hubbard & Palia (1995) used panel data from 147 banks over the 1980s, and found that CEOs have higher levels of pay in deregulated firms compared to regulated firms. Also these levels of pay were better performance related than in regulated firms, where the pay levels and structure showed resemblance to a bureaucratic setting (Hubbard, Palia, 1995; Hall et al., 1998). Crawford, Ezzell, and Miles (1995) found similar results as Hubbard et al. (1995). In a study ranging from 1976 to 1988 they examined the effect of deregulation on the pay-performance relationship of both salary and bonuses. They found, consistent with Hubbard et al. (1995), that after 1981 the pay-performance relationship increased. This is around the time that some banks became deregulated. They described how corporate control had been restraining factor in making executive compensation stronger related to firm performance (Crawford, Ezzell, Miles, 1995).

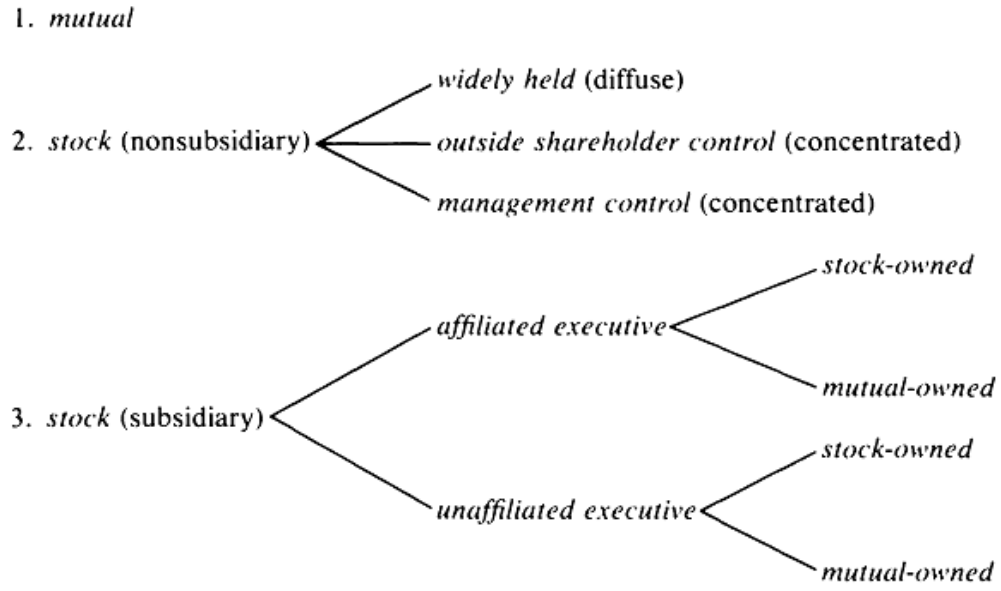
Talmor et al. (2001) performed pay-analysis in the financial services industry, containing three subgroups: commercial banks, brokerage and other non-depository institutions, and insurance companies. Additional to using CEO specific variables and firm performance variables, the authors examined in detail corporate governance structure as well. They found that managerial strategic discretion and task complexity, which involves firm size, best explained the level and structure of CEO compensation. Corporate governance, including board characteristics and ownership structure, is the second best determinant of the level of CEO compensation. CEO specific variables secondly best explained the structure of CEO pay. They found that firm performance variables explained little of the variation in CEO compensation (Talmor et al., 2001).

Crumley (2008) performed pay analysis in the U.S. commercial banking industry, using a sample of 36 firms with a timeframe ranging from 2001-2003. Regression analysis was used to predict whether CEO compensation was related to firm size, firm performance, and CEO specific variables. He used return on stock-market price and return on equity as firm performance proxies. Book-value of assets, level of sales, and number of employees were proxies for firm size. The CEO specific characteristics contained age, tenure, stock ownership, and education. His dependent variable was total cash compensation, consisting of annual salary plus bonuses. He found that CEOs were not paid for their performance. CEO pay was also not dependent on their respective age, tenure, stock ownership, or

education level. These conclusions were drawn upon not finding meaningful relations in the regression. Firm size however was strongly and significantly related to CEO compensation, suggesting that CEOs were paid more when operating in larger firms (Crumley, 2008). Akhigbe et al. (1997) performed similar research as Crumley (2008); they tested both a one-year and five-year model. They used a sample of 49 commercial banking firms, with more or less the same variables as Crumley (2008) did. However, Akhigbe et al. (1997) showed other results. Their performance proxies were all positively and significantly related to executive compensation in both one-year and five-year models. Education level and firm size were also positively and significantly related to executive compensation, suggesting that higher education and larger firms result in higher compensation. CEO tenure also showed a meaningful relation with the compensation package of a CEO, but only in the five-year model.

When reviewing the insurance industry it is important to distinguish between two types of insurance firms: mutual insurance firms and stock insurance firms. Mutual insurance firms are firms which are not publicly owned, but rather owned by the insurance policyholders. Stock insurance firms are firms owned publicly by shareholders (Mayers, Smith, 1992). Mayers et al. (1992) performed research in the life insurance sector, with main focus on mutual insurance firms and stock insurance firms. Before we can continue the review of their research, it is important to get some insight in the ownership structure of the insurance industry. Figure 4 presents a framework on the ownership and control structure of the life insurance industry.

Figure 4: *"Ownership and control structure of the life insurance industry"* (Mayers et al., 1992).



As can be seen from figure 4, ownership structure can be either mutual or stock-based. Stock insurance companies can be subdivided in non-subsidiary (i.e. no parent company) and subsidiary stock insurance firms. The authors found that in a competitive market for managerial talent mutual insurance executives should be paid less than executives leading a stock insurance firm, a finding supported by their statistical results. Stock-owned subsidiaries have higher levels of executive compensation than mutual owned subsidiaries do, according to the results presented by the authors.

These results could best be explained by managerial discretion. Typically stock owned insurance firms/subsidiaries get more authorization for discretion, while mutual insurance firms typically have less authorization for discretion. Furthermore, affiliated executives receive lower compensation than unaffiliated executives. Mayers et al. (1992) also linked both stock insurance firms and mutual insurance firms to firm performance, finding that stock insurance CEO compensation is more related to firm performance than mutual insurance CEO compensation (Mayers et al., 1992).

Not much research has been done specifically in the real estate industry when considering pay-analysis of executive compensation. Davis & Shelor (1995) did perform research in this particular industry, and used SIC classifications for the selection of their sample. Their sample consisted of 130 firms operating in several sectors of the real estate industry: Nonresidential Building Operators, Apartment Building Operators, Real Property Lessors, Real Estate Agents and Managers, and Subdividers/Developers. Their goal was to present a meaningful relationship between dependent variables salary and annual bonuses, and independent variables firm size and firm performance. They also tested the effect of age of the CEO on its pay-package. Firm size, measured by total assets, was positively and statistically significant when considering the relation to salary and annual bonuses. It indicates that larger firms are willing to pay their executives a premium for their leadership. Less evidence was presented that firm performance had a meaningful relation with total compensation. The age of the CEO was not significantly related to its pay package, indicating that older CEOs do not necessarily receive higher incentives (Davis, Shelor, 1995).

Having reviewed merely a grasp of what is written on executive compensation in the financial and real estate industry, there seems to be varying evidence. Firm size is more or less consistent throughout the industries; in almost all studies it explains most of the variability in CEO compensation. Firm performance variables showed less plausible results. Only in a few studies it presented a meaningful relation with CEO compensation. CEO specific variables such as age, tenure and stock ownership of the CEO did not show a significant relation with CEO compensation. These results imply that there is a market for managerial talent; larger

firms tend to attract better CEOs, and pay them a premium. However, no plausible evidence has been found to suggest a strong pay for performance relationship, indicating that bonuses could possibly be selected by random choice. While a lot of pay analysis is performed in the financial and insurance sector and in somewhat lesser degree the real estate sector, no clear performance or connection has been made yet to our current credit crisis for these industries as a whole. I use the time frame 1992-2007, which is suitable for testing pay-performance relationship in these industries. Instead of using just financial services or insurance firms, I also use the real estate sector because this particular industry also had its contribution to the crisis. As mentioned before, this research will merely present basic pay analysis in these industries, not differing between industries. The tests are generalized over the entire sample, instead of testing all subgroups separately. With my empirical research I hope to gain more insight in whether the CEOs, who contributed to this crisis, actually got paid for their performance.

Chapter 2: Data and Methodology

2.1 Sample selection procedure

Panel sampling is used for this study because the data represents similar variables measured over several periods of time. Panel sampling has the advantage over single point cross-sectional studies since it allows us to test and relax assumptions that are implicit in cross-sectional analysis (Maddala, Lahiri, 2009). The selection of the sample was gathered from the Wharton Research Data Services (WRDS), using the SIC classifications between 6000 and 6999. This code range represents the divisions containing all public companies operating in the financial, insurance, and real estate industry (United States Department of Labor, 2011). Table 1 presents the subdivisions of these industries:

Table 1: *Divisions operating in the financial, insurance, and real estate industry.*

Finance	Insurance	Real estate
Depository institutions	Carriers of all types of insurance	Owners of real estate
Non-depository credit institutions	Insurance agents and brokers	Lessors/lessees of real estate
Holding (but not predominantly operating) companies		Buyers/sellers of real estate
Other investment companies		Agents of real estate
Brokers and dealers in securities		Developers of real estate
Brokers and dealers in commodity contracts		
Brokers and dealers in security and commodity exchanges		

From the initial 497 firms, 236 were sampled. The rest did not contain enough information, or did not exist long enough to fit in the time frame (1992-2007). Of the sample selected, at least seven years of data was available. This sample should give solid estimations of how pay is divided among the CEOs operating in these particular industries. The results are not transferable to other industries however.

2.2 Sources of data

The data is gathered from the Wharton Research Data Services (WRDS). This database contains COMPUSTAT North America, in which all public firms operating in different industries can be found. All CEO compensation data, CEO-specific data, performance variables, and size variables are gathered at this specific database. The data is gained using the SIC codes between 6000 and 6999, for the time frame 1992-2007.

2.3 Methodology

Panel data is used for this study, since the data is multi-dimensional. On the one hand the data uses time series (1992-2007). On the other hand cross-sectional data is used because the values have a meaning, but are not ordered yet. Data on the same variables is used, but for different years. The analysis uses a fixed effects estimator. Basically this estimator corrects for any commonality that occurs in the data. The statistical program STATA version 10.1 is used for the regressions.

2.4 The models

Variable definitions for the model given in this subchapter are explained in the next section. The three models which will be tested are:

Model 1:

$$ANNUALBONUS =$$

$$\beta_0 + \beta_1 CEO\_AGE + \beta_2 CEO\_TENURE + \beta_3 OWNERSHIP + \beta_4 SIZE +$$

$$\beta_5 FIRM\_PERFORMANCE + \varepsilon$$

where ε is the error (residual) term.

Model 2:

$$LTIP =$$

$$\beta_0 + \beta_1 CEO\_AGE + \beta_2 CEO\_TENURE + \beta_3 OWNERSHIP + \beta_4 SIZE +$$

$$\beta_5 FIRM\_PERFORMANCE + \varepsilon$$

where ε is the error (residual) term.

Model 3:

$$Options = \beta_0 + \beta_1 CEO\_AGE + \beta_2 CEO\_TENURE + \beta_3 OWNERSHIP + \beta_4 SIZE + \beta_5 FIRM\_PERFORMANCE + \varepsilon$$

where ε is the error (residual) term.

2.5 Variable definitions

Variables are selected upon historical prevalence. Many authors performed research in the field of executive compensation, providing almost every thinkable variable which could explain some relationship between pay and performance. Only the variables which have been important in explaining the relationship are selected. The variable definitions can essentially be divided in four main groups:

Group 1	*CEO incentives*	Dependent variable
Group 2	*CEO-specific characteristics*	Independent variables
Group 3	*Firm size variables*	Independent variables
Group 4	*Firm performance variables*	Independent variables

Dependent variables:

Group 1: CEO incentives

The dependent variable, CEO incentives, includes all pay components of the CEOs and is provided in units of thousands USD. The selection of these variables is based upon the finding of Murphy (1999) who suggested these variables form the basis of a compensation contract. The following dependent variables will be tested in separate models:

ANNUALBONUS represents bonuses granted annually to CEOs. LTIP represents the amount paid out to the executive under the firm's long-term incentive plan. Such a plan usually measures cumulative performance of a firm over several years. Typically three years. The last dependent variable is OPTIONS. It represents the grant of stock options a CEO receives yearly. All dependent variables are expressed in natural logarithms.

Independent variables:

As can be seen from the above table, independent variables are divided in three groups.

Group 2: CEO-specific characteristics

This group contains all variables specific to the CEO himself. CEO_AGE represents the age of the CEO. CEO_TENURE refers to the number of years the CEO works in its current position. Both variables have proven their importance in setting executive compensation in research performed by Crumley (2008) and Akhigbe, Madura, Ryan (1997) among others. Their research used data from the commercial banking sector. In the life-insurance sector, Mayers & Smith (1992) also used CEO_AGE and CEO_TENURE as CEO-specific variables. My expectation is that both the age and tenure of the CEO have a positive effect on the bonus and stock options level of the CEOs, indicating that older CEOs, and CEO who have higher tenure, receive higher bonuses and stock option grants. OWNERSHIP represents the stock ownership of a CEO in the firm. It is expressed as a percentage of common shares (excluding options) held by the CEO of total common shares of the firm. The importance of this variable is rooted in papers by Murphy (1999) and Jensen & Murphy (1990) who argue that stock ownership by a CEO inclines CEOs to operate more efficiently in the firm since they hold their own stock in the firm. They suggest that larger ownership stakes in the firm better aligns the interests of both CEOs and shareholders. Crumley (2008), Akhigbe et al. (1997), Mayers et al. (1992) all use stock ownership in their research. In most financial literature on executive compensation, ownership is considered one of the most important variables. I expect a positive and significant relation between bonus level/stock option level and CEO ownership in the firm, indicating that more ownership in results in higher bonuses and higher stock option grants.

Group 3: Size variables

Group 3 contains the two most important size variables to be used in this research. Firm size is considered the most important variable in setting an executive compensation package. This logic flows from the thought that shareholders experience difficulty monitoring larger firms' executives, and therefore requires higher incentives for CEOs to operate in the best interest of the shareholders (Demsetz, Lehn, 1985). SALES and MVALUE represent sales and market value respectively. Sales refers to the "gross sales reduced by cash discounts, trade discounts, and returned sales and allowances for which credit is given to customers, for each operating segment", and is expressed in millions of USD (Wharton Research Data Services). Mayers et al. (1992), Crumley (2008), Murphy (1999), and Himmelberg, Hubbard, Palia (1999) all used sales as a size proxy, since it represents the magnitude of the revenues

a firm makes. Market value is used as another size proxy, and was among others used by Akhigbe et al. (1997) and Tosi, Werner, Katz, Gomez-Mejia (2000). Market value consists of the outstanding liabilities a firm has, plus stockholders equity. It is the value at which the firm could trade at the market, and therefore should give a good estimation of the size of the firm.

Group 4: Firm performance variables

Group 4 essentially contains variables which measure performance of a company. I chose return on equity, return on assets and earnings per share as suitable performance proxies. Return on equity (ROE) measures the amount of profit a firm makes with the money shareholders invest in the firm. It is therefore calculated by dividing net income by stockholders equity. Tosi et al. (2000) found high correlation between the 1-year ROE and CEO pay, suggesting that CEO pay should (at least partially) be performance related. Return on assets (ROA) gives some insight in how executives efficiently manage firm assets to generate earnings. It is calculated by dividing earnings before interest and taxes (EBIT) by total assets. Tosi et al. (2000) also found a positive correlation between ROA and CEO pay. They found however that ROE has higher correlation with CEO pay, and they argue that both performance proxies run the risk of being manipulated by executives since earnings can be influenced in favor of the executives. While this risk exists, both measures are still the best options since they give insight to directors how executives add value to the firm. The last performance proxy, earnings per share (EPS), represents a portion of firm profit allocated to each outstanding share of common stock. Akhigbe et al. (1997) found a positive and statistically significant relation between all previously mentioned performance proxies and executive pay.

2.6 Descriptive Statistics

<Insert Table 2 here, available in Appendix B>

Table 2 in Appendix B documents on the descriptive statistics of the variables used in the models. Mean annual bonus had a value of $1,190,880.00, whereas the mean LTIP value was $258,000.00. Salary has a considerably lower value on average, than the other pay components. It has a mean of $683,490.00. The value of stock options tops all other components with a mean value of $2,775,240.00. Considering the minimum and maximum values for the pay components, all components have minimum value of $0.00 in the sample. The maximum annual bonus is $29,000,000.00, whereas the maximum grant from LTIP is valued at $38,706,000.00. The maximum value of grants in LTIP is considerably high, indicating the prevalence of long-term incentives. The maximum value granted in stock options was $1,111,597,000.00. The average age of the CEOs in sample was 54.97, and on

average they stayed for 8.77 years in their job as CEO. The minimum age of a CEO in the sample is 31, the maximum 86. The minimum amount of years a CEO was in its position is 1 year; the maximum amount of years a CEO remained in its position was 42 years. On average the CEOs owned 3.93% of the firm they operated in, with a minimum of 0%, and a maximum of 34.4%. For my sample, the average market value of the firms amounted up to $49,382,800,000.00, with a minimum value of only $5,000,000.00, and a maximum value of $2,187,631,000,000.00. The average value in net sales was $5,253,840,000.00, with a minimum value of -$4,215,000,000.00, and a maximum value of $151,362,000,000.00. The performance variables: The average return on equity was 13.73%, with a minimum of -95.26% and a maximum of 98.16%. The return on assets had a mean value of 5.76%, with a minimum of -35.50% and a maximum of 74.80%. The average earnings per share were $2.42, with a minimum of -$32.35 and maximum of $34.

Chapter 3: Empirical Research of Remuneration Data

This section will focus on the regression of annual bonuses, long-term incentive plans and stock options against the performance proxies, controlling for firm size and CEO specific variables. The outcome will determine whether the CEOs in the financial, insurance and the real estate industry in the U.S. receive their incentivized compensation package based on their prior performance. In total three models will be tested. One model containing annual bonus level as dependent variable; one model with long-term incentive plans as dependent variable; and one model with stock options. Table 3 presents the three models which will be tested, and the variables involved.

Table 3: *Three models*

	Model 1	**Model 2**	**Model 3**
Dependent variable(s):	Annual bonus	Long-term incentive plan (LTIP)	Stock options
Independent variables:			
CEO-specific:	CEO age CEO tenure Ownership	CEO age CEO tenure Ownership	CEO age CEO tenure Ownership
Size variables:	Sales Market value	Sales Market value	Sales Market value
Performance variables:	EPS ROE ROA	EPS ROE ROA	EPS ROE ROA

This chapter is built up as follows: Chapter 3.1 will start with hypothesis development. Chapter 3.2 will document on the first model with annual bonuses as dependent variable. Chapter 3.3 will present the results of the second model with long-term incentive plans as dependent variable. Chapter 3.4 will present the results of the third model containing stock options as dependent variable. After presenting the results, chapter 3.5 will start a discussion on the three models, revealing which components are considered to be best performance-related.

3.1 Hypothesis development

In order to be able answer my main research question, several hypotheses need to be tested first. As you may recall from before, the main research question to be answered was:

Does firm performance have a meaningful relation with annual bonuses, long-term incentive plans, and stock options granted in the period 1992-2007 to CEOs in the financial services and real estate industry, or are other factors determining the level of these grants?

For the **first** model I test the following hypothesis:

H1: There is no statistically significant relation between annual bonus level and firm performance for CEOs operating in the financial and real estate industry in the U.S.

For the **second** model I test the following hypothesis:

H2: There is no statistically significant relation between long-term incentive plans and firm performance for CEOs operating in the financial and real estate industry in the U.S.

For the **third** model I test the following hypothesis:

H4: There is no statistically significant relation between the stock option level and firm performance for CEOs operating in the financial and real estate industry in the U.S.

3.2 Results Model 1: Annual Bonuses

This chapter will document on whether annual bonuses are based upon firm performance, and what variables play a greater role than others.

The following model will be tested for annual bonuses:

$$ANNUALBONUS =$$

$$\beta_0 + \beta_1\, CEO\_AGE + \beta_2\, CEO\_TENURE + \beta_3\, OWNERSHIP + \beta_4\, SIZE +$$

$$\beta_5\, FIRM\_PERFORMANCE + \varepsilon$$

Table 4 and 5 present the results of this model. These tables are available in Appendix C1. As can be seen from the tables, all performance variables have been tested separately from each other since they share similar characteristics. Table 4 presents the results with Sales as size proxy, whereas table 5 presents the model with Market value as size proxy. Note: significance level is indicated by a * for significance level of 5%, or ** for significance at the 10% level.

<Insert Table 4 and 5 here, available in Appendix C1>

In both tables the three performance variables are positively and significantly related to the annual bonus level. ROA has the strongest relation to annual bonuses, followed by ROE, and as last a lesser yet significant effect from EPS. The highest coefficients of performance are found when tested in the model with market value as size proxy. An increase of 1% point in ROA results in an increase of 3.12% in annual bonus; an increase of 1% point in ROE results in an increase of 1.54% in annual bonus; an increase of 1$ in EPS results in only 0.04% increase in annual bonus. Both tables share the result that both the age of the CEO and his tenure has no significant effect on the level of his annual bonus. For size proxy Sales, ownership of the CEO was positively related, but insignificant. For size proxy Market value the ownership stake of the CEO was positively related and significant when tested in the model with EPS with a coefficient of 2.35. This result indicates that an increase of 1% point in ownership yields a 2.35% increase in annual bonus level. For the other two performance variables the ownership variable was positive and close to significance, but it does not fall in the confidence interval of 90%. Both size proxies were positively and significantly related in all cases to annual bonus. Market value has a slightly stronger effect on annual bonus level than Sales does, with coefficients of 0.44, 0.43, and 0.38 for respectively ROE, ROA, and EPS.

In short: all performance variables are important determinants for the level of annual bonuses, the coefficients of ROA and ROE are relatively high. EPS has a considerably lower coefficient. Stock ownership is not that important in case of Sales as size proxy since no significant relation is found. It becomes more interesting when considering Market value as size proxy, because when tested in a model with EPS significant results are found. In case of testing it with ROE and ROA it approaches significance (0.101) with ownership. Therefore for this model ownership is considered the most important *CEO-specific* variable. As was expected, size is an important determinant of the level of annual bonuses; larger companies results in higher annual bonuses for CEOs. Although my initial belief was that annual bonuses were not performance related, my results tell otherwise. Hypothesis H1 is rejected.

There obviously is a meaningful relation between firm performance and the annual bonus a CEO receives.

3.3 Results Model 2: Long-term Incentive Plan (LTIP)

$$LTIP =$$

$$\beta_0 + \beta_1 CEO\_AGE + \beta_2 CEO\_TENURE + \beta_3 OWNERSHIP + \beta_4 SIZE +$$

$$\beta_5 FIRM\_PERFORMANCE + \varepsilon$$

Wharton Research Data Services describes that long-term incentive plans are regularly based upon three-year cumulative performance. Therefore I will present the model without a lag in performance variables, but also with a three year lag in the performance variables since the values of the pay components may be based upon performance delivered three years hence. Table 6 and 7 present the results for the above model, with long-term incentive plans as dependent variable, and without lagging the performance variables. Table 8 and 9 present the same model with a three year lag in the performance variables. These tables can be found in the Appendix C2 and C3.

<Insert Table 6, 7, 8 and 9 here, available in Appendix C2 and C3>

Again the performance variables are tested separately from each other. Table 5 and 7 presents the model with size proxy Sales. Table 6 and 8 present the results with size proxy Market value.

Considering the characteristics of long-term incentive plans one would expect it to be related to performance, since these long-term payouts are ought to be dependent on reaching certain performance targets. Since these plans typically cover a three year period we would expect the performance proxies to be stronger and more significantly related to the long-term incentive plans when lagging the performance proxies with three years. No such result was found. In fact, all tables show statistically insignificant results for all variables. All CEO-specific variables show no sign of a meaningful relation with LTIP. Where size proxies are very important in explaining the level of annual bonuses, no such relation is found for LTIP's. Both lagged and non-lagged performance proxies show no sign of explaining a meaningful relation with LTIP. This result indicates that the level of LTIP's are not based upon the performance variables chosen for this research. The level of LTIP is also not related to the age of the CEO, nor its tenure in his current position. Stock ownership does not contribute in any way in case of setting a level of LTIP. Considering long-term incentive plans my initial

belief was right, and hypothesis H2 is therefore accepted. As the results show, there exists no meaningful relation between long-term incentives of the CEO and firm performance[1].

3.4 Results Model 3: Stock options

This chapter will present results and discuss whether stock options are performance related or not. The model which is tested is presented below.

$$OPTIONS =$$

$$\beta_0 + \beta_1\, CEO\_AGE + \beta_2\, CEO\_TENURE + \beta_3\, OWNERSHIP + \beta_4\, SIZE +$$

$$\beta_5\, FIRM\_PERFORMANCE + \varepsilon$$

The results obtained from the regression with stock options as dependent variable differ from the results obtained in the annual bonus and LTIP models. As before, all performance proxies are tested in separate models. Table 10 presents the model with size proxy Sales, table 11 presents results with size proxy Market value. These tables can be found in the Appendix C4.

<Insert Table 10 and 11 here, available in Appendix C4>

CEO age is positively related to stock options in all cases, and for both size proxies. While statistically significant for ROA and EPS, for ROE it is not the case. CEO age when tested with ROE, approaches significance at the 10% level. Coefficients of CEO age are relatively low when tested with size proxy Sales; 0.017, 0.020, 0.018 when tested with respectively ROE, ROA, and EPS. With size proxy Market value approximately the same coefficients are found. These coefficients indicate when the age of the CEO increases with 1; stock option value will increase with respectively 0.017%, 0.020%, and 0.018%. CEO tenure and ownership are negatively and insignificantly related to stock option level. Both size proxies are positively related to stock option level, and are statistically significant in all cases. Market value has the strongest positive absolute effect of the size proxies, as consistent with the bonus model. Here, an increase of 1% point in market value would results in an increase of 0.33%, 0.40%, and 0.34% when tested respectively in a model with ROE, ROA, or EPS. Size proxy sales shows a bit lower coefficients than that of market value, indicating a less strong relation between sales and stock option level as compared to market value and stock options.

[1] In chapter 4 different panels will be tested with LTIP as dependent variable. Significant results are found there in some panels.

Of the performance proxies, only ROE was significantly related to the level of stock options for both size proxies, with a coefficient of 0.90. This indicates that when ROE increases with 1, stock option level is expected to increase with 0.90%. Both ROA and EPS were positively, yet insignificantly related to stock options level for both size proxies.

In short; of the CEO-specific variables, only CEO age presents a meaningful link with the level of stock options. This indicates that older CEOs are expected to receive higher stock options levels than their younger colleagues do. The other two CEO-specific variables showed no meaningful link to stock option level. Both size proxies seem important determinants in the level of stock options. Of the three performance proxies, only ROE shows a meaningful link with stock option level. Hypothesis H4 cannot be rejected completely, since ROE shows a meaningful link. But as ROE is only part of firm performance we cannot conclude that CEOs get stock option grants based upon their performance either. Stock option grants will be discussed in the next chapter.

3.5 Conclusion and discussion on Chapter 3

This section will review the results from the previous subchapters. I will try to provide reasonable explanations on why the results vary so much among different pay components. Eventually I will provide my view on which pay components could be used best by financial firms.

In order to be able to discuss the previously found results, I think it is wise to provide you, as a reader, with a small table containing the most important variables among the different pay components:

Table 12: *Overview of most important variables for annual bonuses, LTIP, and stock options*

	Annual Bonus	LTIP	Options
CEO age			X
CEO tenure			
Ownership	X		
Sales	XX		XX
Market value	XX		XX
ROE	XX		XX
ROA	XX		
EPS	XX		

X = important XX = very important

Annual bonuses

Annual bonuses, as evidenced by the results, show meaningful relations with performance. All performance proxies were positively related to annual bonuses. Return on assets presented the highest coefficient with annual bonus. Return on equity immediately follows after ROA also with a relatively strong positive relation. EPS shows a weak, yet significant, relation. Both size proxies, sales and market value, are very important in setting the level of bonuses. These results suggest that larger firms provide CEOs with larger bonuses, consistent with what one would expect. None of the CEO-specific characteristics, except for stock ownership, showed any meaningful relation with annual bonuses. Stock ownership was significant when tested in the model with market value as size proxy and EPS as performance proxy. When tested in the models with ROE and ROA it approaches 10% confidence level. Since the coefficient is relatively high, at least part of the annual bonus is determined through the percentage of stock owned by the CEO.

Long-term Incentive Plans

For the long-term incentive plans no meaningful relations were found. These plans usually have three year cumulative performance dependence, yet even when lagging the performance proxies with three years, no significant relation was found. This result would suggest that the level of long-term incentives are based upon something else than the performance the CEOs deliver. Chapter 4 documents on the sample divided in three size groups. Here I will be able to distinguish long-term payouts between different sizes of firms, and some interesting (significant) results will be presented.

Stock options

Stock options deviate greatly from the results of annual bonuses. Stock options, according to the regression, are related to the age of the CEO. Older CEOs, independent from their tenure, receive more stock options than their younger colleagues do. Their current ownership in the firm does not influence the level of their stock options. The size of the firms also matters a great deal. CEOs in service of larger firms get higher stock option rewards. As this may sound plausible, the following finding is somewhat contradicting: they do not get their stock option rewards for the performance they deliver. Only in case with ROE a significant relationship was found. This finding is consistent with the notion that CEOs have their own agenda, and do not necessarily operate in the best interest of the firm. Higher return on equity is plausible for CEOs as well. They provide good results to shareholders, and in return they receive a higher pay package in form of stock options. But return on assets on the other

hand is insignificant in all cases, providing us with the belief that the CEO may have its own agenda on how to perform for the firm.

Discussion

Now that we have reviewed the results of the annual bonuses, long-term incentive plans, and stock options, we are able to begin discussing whether firms should provide CEOs with either annual bonuses, LTIP's, or with stock options. When considering the results obtained from my regression the answer is straightforward: provide bonuses rather than long-term incentives or stock options. Annual bonuses provide the best relation to performance, and are therefore justified for a great part. The results of long-term payouts and stock options were not directly related to performance and could therefore be based on for example random choice. Yet, this recommendation is not without repercussions. Annual bonuses are provided to CEOs with the idea to reward him for his good *prior* performance. Obviously this pay component incentivizes the CEO to perform the best he can for that year. However, it has a major pitfall: a CEO could strive for high short-term gain, and good performance for this year does not necessarily result in good performance next year. The actions of the CEO may be value destructing rather than value creating for the longer term when applying that line of thought. Usually a long-term incentive plan is set up, or stock options are rewarded to provide CEOs with benefits in the future if they perform well. Long-term incentives provide the CEO with the incentive to provide good results for three years, since that is the typical duration of such a plan. But is three years long-term? Will a CEO make the right future decisions for that bonus which he will receive three years later? Does this result in value creation rather than value destruction for a firm? The answers to these questions are beyond the scope of this paper, but honestly I think a CEO will still be able to capture at least part of their long-term incentive while not aligning their interests with those of shareholders optimally. Stock options may better align these incentives since the duration is typically longer than three years. Duration of ten years is not uncommon for stock options. A combination of both long-term incentive plans and stock options may better align interests. Since the value of stock options is often a lot higher than the payouts in either annual bonuses or long-term incentives, executives would logically try to extract all the value of the stock options the best they can. The only way for executives to extract value through stock options is by raising stock prices.

On the one hand we had annual bonuses, which are performance related, but still give good incentives to the CEO to focus on short-term gaining. On the other hand, we could provide CEOs with merely stock options or long-term incentives, making sure that they will provide good future results. Honestly, no extreme between these two would be plausible. It is as

Jensen and Murphy (1990) suggested: It's not how much you pay, but how you pay the executives. They argue that the main problem underlying executive compensation is not the 'excessiveness' of pay per se, but rather the way they are paid. They argue that compensation to executives is virtually independent of performance in most publicly held companies; a finding partially supported by my findings (Jensen, Murphy, 1990). Why is the largest part of a CEOs pay package paid out in the form of stock options, when this specific component is mostly independent of performance? The composition of how the pay package is built up should be different. Considering my findings I would suggest to make the pay package more performance related. For example: longer duration of long-term incentives. Instead of using three year periods dependent upon cumulative performance, make it five year periods with relative performance between the years. By making the periods longer and relative to each year, we are able to correct for short-term gaining. If we see good performance in the first year, and less performance each year thereafter, we could conclude short-term gaining rather than value creation in the longer term. In case of short-term gaining the CEO would not receive extra incentives; in case of long-term value creation he could receive even more than he would by the current common long-term incentive plan. Another measure could be to decline the value in stock options granted. Since the performance relation is questionable, a decline in this value would be plausible. Some this value in stock options could be transferred to these long-term incentive plans, because a balance would be preferred. The extreme high values in stock options lets the CEO focus merely on raising stock prices, while there should be an appropriate balance in different facets of performance. Assets, net income, earnings per share. All should be in balance. In essence, stock options were expressed as a multiple of base salary. But due to the excessive growth of stock options, we can better put it the other way around: salary is expressed as a minor fraction of stock options. A larger fraction of stock *ownership* is more important, something common practitioners often forget. Jensen and Murphy (1990) and Murphy (1999) state that stock options do not provide the same incentives as stock ownership does. They provide the following reasons why stock ownership should be preferred over stock options. Jensen and Murphy (1990) argue that stock ownership rewards both price appreciation and dividends, which represents total shareholder returns. Stock options only reward stock-price appreciations, indicating that executives who hold stock options would prefer share repurchases over the payout of dividend (Murphy, 1999). Another reason why stock ownership should be preferred over grant of stock options is that with an increase in stock-price volatility the value of stock options increase. This provides CEOs with the incentive to engage in riskier investments (Murphy, 1999). Lowering stock options and increasing stock ownership could be partial solution to providing more efficient incentives.

In conclusion to this section it is important to note that annual bonuses, as performance related they may be, are not the only important pay mechanisms available. Long-term incentives and stock options remain important to stimulate and motivate CEOs to perform according to a long-term strategy. Note however that these incentives should be more performance related as they currently are. I have suggested a different approach to long-term incentive plans, and suggested more ownership in the firm and lower stock options as they are granted currently. Balance between incentives is important as well, because a CEO should not be focused on increasing one particular performance proxy, but rather on a variety of proxies throughout the firm.

Chapter 4: Empirical Research of different Panels

4.1 Introduction

Firm size, as discussed in section 1.2 and 1.3, has proven to be very important in determining the level of executive compensation. Larger firms, which are typically harder to manage, require talented CEOs. Obviously these CEOs require appropriate incentives to run a large firm optimally. In every research on executive compensation firm size was found to be the main determinant, rather than firm performance or even CEO-specific characteristics. Tosi et al. (2000) stated "…firm size accounts for more than 40% of the variance in CEO pay levels". Gabaix et al. (2007) even went one step further stating that "…the size of large firms explains many of the patterns in CEO pay, across firms, over time, and between countries. In particular, the baseline specification of the model's parameters, the six-fold increase of U.S. CEO pay between 1980 and 2003 can be fully attributed to the six-fold increase in market capitalization of large companies during that period".

My findings in chapter 3 confirm the prevalence of firm size in financial and real estate firms. It seems only logical to take a closer look at the size of the firms in my sample, and see if any differences exist between small, medium-sized, and large firms. This section will test whether differences occur between subgroups of firms. These subgroups, or panels, will be selected upon firm size. In total three panels will be selected with panel 1 containing the smallest firms, panel 2 the medium-sized firms, and panel 3 containing the largest firms. In chapter 3 we found that Market Value best explained the relation of firm size and CEO pay, and therefore selection will be based on Market Value as size proxy. I calculated the average of market value by adding all years together and dividing the number with the number of years. Then I sorted the market values from smallest to largest. Table 13 presents descriptive statistics of the panels:

Table 13: *Descriptive statistics of panel 1, 2, and 3.*

	Panel 1	Panel 2	Panel 3
Minimum of average MV *(in thousands $)*	$ 95,000.00	$ 4,130,000.00	$ 18,509,000.00
Maximum of average MV *(in thousands $)*	$ 4,004,000.00	$ 17,880,000.00	$ 852,669,000.00
N	78	79	79

All three panels are tested separately and the results are presented in tables 14, 15, 16, and 17. These tables are available in Appendices D1-D4. The same dependent and independent variables are used as in chapter 3. The only difference is that sales are no longer used because market value best explained the relation of firm size and CEO pay. Chapter 4.2, 4.3, and 4.4 will discuss the results, and chapter 4.5 will conclude on this part.

4.2 Results Annual Bonuses in panels

<Insert Table 14 here, available in Appendix D1>

Panel 1 – Small firms

In small financial and real estate firms the composition of annual bonuses for CEOs tends to be driven by performance and firm size. ROA had the strongest (positive) relation with annual bonuses, followed by ROE, and ultimately by EPS. ROA and ROE were both statistically significant at the 5% level, and EPS is insignificant. An increase in ROA with 1% point yields an increase of 2.35% in annual bonuses. When ROE increases with 1% point, annual bonus is expected to increase with 1.27%. Market value was tested three times, each time with another performance proxy. It was statistically significant in all cases and positively related with annual bonuses. The coefficients yielded that an increase of 1% point in market value results in an increase of 0.23%, 0.19%, and 0.17% in annual bonus for respectively ROE, ROA, and EPS. These results imply that better performance resulted in higher annual bonuses for the CEOs, and CEOs operating in larger firms received higher annual bonuses for this panel. The CEO-specific variables did not present any meaningful relation with annual bonuses.

Panel 2 – Medium-sized firms

Panel 2 represents the medium-sized firms. When looking at table 14 we see more or less the same conclusion as with panel 1: The composition of annual bonuses tends to be driven

again by firm performance and firm size. However, note the magnitude of change. The performance proxies ROA and ROE are considerably higher in panel 2 as in panel 1. ROA has a coefficient of 6.95, indicating that an increase of 1% point in ROA yields an increase of 6.95% in annual bonus. An increase of 1% point in ROE leads to an increase of 2.28% percent in annual bonus level. Where ROA and ROE are considerably higher in panel 2 as in panel 1, EPS coefficient is smaller, but still statistically significant. The economic relevance of EPS in panel 1 and 2 is doubtful to have impact on annual bonus level. Firm size in panel 2 also shows considerably higher coefficients compared to panel 1 as well. Firm size shows a plausible relation with annual bonuses; however, firm size coefficients are considerably lower than that of firm performance coefficients. An increase of 1% point in market value yields an increase of 0.77%, 0.83%, and 0.74% in annual bonus when tested in a model with respectively ROE, ROA, and EPS. Firm performance is definitely the main driver of annual bonuses in panel 2.

Panel 3 – Large firms

The results of panel 3 are comparable to those of panel 2. Only firm performance and firm size proxies were statistically significant, and the coefficients do not deviate much from those in panel 2. ROE is slightly lower as in panel 2 (1.67), but still higher compared to panel 1. ROA is slightly higher as in panel 2 (7.22). EPS is the approximately the same as in panel 2, but slightly lower as in panel 1. Panel 1 showed the largest coefficient for EPS. Firm size is slightly lower in panel 3 as it was in panel 2. Firm performance is the main driver of annual bonuses.

Conclusion Annual Bonus for different size panels

Panel 2 and 3 presented the most plausible evidence of annual bonuses being related to firm performance. In panel 2 I found the highest coefficients. Panel 3 presented slightly lower coefficients for both firm size, but also for ROE and EPS. ROA's coefficient was slightly higher here. Panel 1 shows the lowest coefficients for both firm size and firm performance. It appears that annual bonus level in medium-sized and large firms have a stronger relation with both firm performance and firm size as in smaller firms. Other variables such as age and tenure, or even ownership of the CEO did not show a meaningful relation in either of the panels.

4.3 Results Long-term Incentive Plans in panels

<Insert Table 15 and 16 here, available in Appendix D2 and D3>

Panel 1 – Small firms

Not enough data on the levels of LTIP in panel 1. This result could mean that long-term incentive plans are not regularly used in smaller financial and real estate enterprises.

Panel 2 – Medium-sized firms

Panel 2 does have enough data to perform analysis on. Table 15 presents the results of the model with no lag in the performance proxies. Table 16 presents the model with a 3-year lag in the performance proxies.

First I will review the results without lagging the performance proxies. Where we saw no significant variables in chapter 3, we do see some meaningful variables when we divide the sample in different size groups. CEO age is positively and significantly related to LTIP, suggesting that older CEOs receive higher long-term payouts. If a CEO gets 1 year older, this yields an increase of 0.40%, 0.34%, and 0.33% in LTIP when tested with respectively ROE, ROA, and EPS. CEO tenure was significant only when tested in a model with EPS. It has an inverted relationship with LTIP, suggesting that CEOs who work shorter for a firm receive higher long-term payouts than CEOs who have higher tenure in the firm. The coefficient in this case is relatively small (-0.12) and therefore does not explain much of the level of LTIP. Firm size, represented as market value, did explain a substantial amount of the level of LTIP. It has an inverted relation, suggesting that firms with lower market value grant more long-term incentives to their CEOs in panel 2. An increase of 1% point in market value results in -1.84%, -2.16%, and -2.42% in the level of LTIP for the models with ROE, ROA, and EPS respectively. This finding does not make logically sense since one would expect larger companies to be related with higher long-term incentives; however, ‘smaller’ firms are typically easier to manage, therefore also making it easier for CEOs to reach certain long-term targets. This would result in higher long-term payouts for ‘smaller’ firms. Performance proxies ROE and EPS were also positively and significantly related to LTIP, while ROA was statistically insignificant. An increase of 1% point in ROE is expected to increase LTIP with 3.30%. When EPS increases with 1$, we expect LTIP to increase with 0.38%. These results suggest that a higher return on equity and higher earnings per share result in higher long-term payouts. ROE is determined by dividing net income by stockholder’s equity. Thus creating value, by means of income, for shareholders leads to higher long-term payouts. Higher earnings-per-share is also a measure directly visible to shareholders. One could

carefully suggest that these measures may have been manipulated up to some degree, in order to present plausible results to shareholders. While this may be a reason, one could also suggest that medium-sized firms relate their long-term incentive plans better to performance than large firms (which show no significant results and even inverted relationships).

The lagged model shows differing results compared to the no-lag model. Stock ownership has an inverted relation with LTIP, as in the no-lag model. However, stock ownership is statistically significant in the lagged model, suggesting that long-term payouts increase when the CEO owns less of common stock. The coefficients are very high: an increase in ownership by 1% point is expected to lead to a decrease in LTIP of 21.26% or -19.01% when tested in a model with ROE or EPS respectively. As in the no-lag model, firm size still presents an inverted relation with LTIP; no big differences there. Note however the performance proxies. Where a positive and significant relation was shown in the no-lag model, it presents a strong inverted relation in the lagged model. This counteracts with what one would expect. We would expect it to be positively related to performance since no long-term payouts should be made in case of bad performance, however: this result suggests that when performance increases, LTIP payouts decrease.

Panel 3 – Large firms

Again, I will first discuss the model without lagging performance proxies. Panel 3 presents different results compared to panel 2. Where CEO age and tenure were significant in some cases in panel 2, this is not the case in panel 3. The coefficient of stock ownership is prominent. Ownership is statistically significant in all cases. The extremely high coefficients of ownership clearly present what is determining long-term payouts of large firms. An increase of 1% point in ownership is expected to lead to an increase of 321.63%, 375.06%, or 311.65% in LTIP payouts when tested in a model with ROE, ROA, or EPS respectively. The logic behind this finding is that CEOs who own a larger share of the firm's outstanding stock, receive higher long-term incentives as well. This finding supports the managerial power theory as Bebchuk et al. (2002) described it. They noted that when a CEO has high stock ownership in a firm, usually higher rent is extracted from the firm. Firm size also presents positive and statistically significant results. Where firm size had an inverted relation in panel 2, it shows a positive relation in panel 3. This finding suggests that larger firms in terms of market value provide their CEOs with higher long-term payouts. Where LTIP was, at least partially, performance related in panel 2; panel 3 shows no relation between performance proxies and LTIP at all. All performance coefficients are highly insignificant.

The lagged model shows different results. Where in the no-lag model no significant relation was found for the age and tenure of the CEO, the lagged model does present significant results for these variables. CEO age has an inverted relation with LTIP indicating that older CEOs receive less long-term payouts. The coefficients are not that high, so the effect of CEO age is relatively small. CEO tenure presents a positive relation with LTIP suggesting that CEOs with higher tenure in the firm receive higher long-term payouts. An increase of 1 year in tenure is expected to result in a 0.67%, 0.27%, or 0.39% increase in LTIP payouts when tested in a model with ROE, ROA, or EPS respectively. Stock ownership had a significant and strong positive relation with LTIP in all cases in the no-lag model. The lagged model does not support this finding however. Only when ownership is tested in a model with ROA it shows a significant and strong positive relation with LTIP. The coefficient of ownership is again extremely high (295.46), supporting the suggestion made in the no-lag model: when a CEO has high stock ownership in a firm, usually higher rent is extracted from the firm (Bebchuk et al., 2002). Another contrasting result with the no-lag model is the performance relation. Whereas these proxies showed an inverted and insignificant relation with LTIP in the no-lag model, it presents a strong positive and significant relation in the lagged model. When ROE increases with 1% point, we expect LTIP to grow with 7.01%. For ROA a 1% point increase could yield a 41.24% increase in LTIP. EPS shows the smallest coefficient: an increase of 1$ in EPS is expected to lead to an increase in LTIP of 0.08%. Beside the statistical relevance of these proxies, the economic relevance is also clearly visible since the coefficients are high. In the lagged model the level of LTIP is definitely performance related.

4.4 Results Stock Options in panels

<Insert Table 17 here, available in Appendix D4>

Panel 1 – Small firms

In panel 1 stock option values tend to be determined mostly by firm size. Firm size presents a positive and statistically significant relation with stock option grants, suggesting that larger firms in panel 1 tend to pay their CEOs more in stock options. An increase in market value of 1% point could result in an increase in stock options of 0.61%, 0.62%, or 0.57% when tested in a model with ROE, ROA, or EPS respectively. CEO age shows no significant relation to stock options, while its tenure does present an inverse relation when tested in a model with ROA and EPS. However, the coefficients are so small that the true impact on stock option values is relatively small too. The percentage stock ownership of the CEOs does not present a meaningful relation. None of the performance proxies show a meaningful relation with stock options, indicating that these option grants are not dependent on performance in small firms. In short, stock option grants in panel 1 are determined partially by the size of firm. The

coefficients of firm size are relatively small, which could suggest that the selection of stock options in small firms is based on random choice.

Panel 2 – Medium-sized firms

Stock option grants in medium-sized firms present a meaningful relation with firm performance. An increase of 1% point in ROE is expected to result in an increase of 3.73% in stock options level. An increase of 1% point in ROA is expected to results in an increase of 12.17% in stock option grants. EPS does not show a meaningful relation with stock options. The coefficients of both ROE and ROA are high, and therefore economically relevant for determining stock option grants. As opposed to panel 1, firm size is insignificant in panel 2. This indicates that the level of stock option grants is not influenced by the size of the firm in terms of market value. The coefficient of return on assets is the strongest, and is therefore the most important determinant of stock options in panel 2, followed by return on equity. No other variable presented meaningful relationships with stock options.

Panel 3 – Large firms

Firms in panel 3, labeled as the largest firms in my sample, did not show any meaningful relation between stock options and the independent variables. CEO-specific proxies such as age, tenure, and stock ownership did not explain anything. Firm size had no significant relation with stock options, indicating that even the size of the firm did not influence the level of stock options. The performance proxies showed small coefficients, but on top of that high insignificance. It is pretty clear that stock options granted to CEOs of large firms is not based on performance, size, or any of the CEO specific characteristics. It presents clear evidence that other factors determine these levels, such as random choice. This result could support the managerial power theory, meaning that the level of stock options could be the result of CEOs exerting power on the board of directors.

4.5 Conclusion on size panels

Chapter 4.1 - 4.4 document on three different panels. Panel 1, contained the smallest firms based upon average market value. Panel 2 contained the medium-sized firms and panel 3 contained the largest firms. The goal of dividing my initial sample into three panels was to find whether differences in pay components exist between different size groups. This practice was not in vain, differences were found indeed. In this chapter I will review my findings. I should be able to better stipulate the pay-for-performance relationship in the financial and real estate industry correcting for the size of the firms. I will structure the conclusion by comparing the pay components gathered from the three panels with each other.

Annual bonuses

Annual bonuses in all three panels were determined through firm performance and firm size. The initial sample presented stock ownership as a significant variable, but in none of the three panels this variable is significant. Of the three panels, panel 1 shows the weakest pay-performance link. The coefficients of firm performance and firm size in panel 1 are considerably lower than presented in panel 2 and 3. Panel 2 and 3 present the strongest pay-performance link. ROA is considered the most important performance proxy, since the coefficient is the highest of all three performance proxies. EPS is considered the least important, since its coefficients are relatively low. All CEO-specific variables show no meaningful relation to annual bonuses in neither of the panels.

In short; small firms, medium-sized firms, and large firms all pay annual bonuses to their CEOs partially based upon their prior performance that year. The pay-performance relationship is higher for medium-sized and large firms, than for smaller firms. The size of the firm is also important, indicating that larger firms (in either of the panels) result in higher annual bonus payouts.

Long-term Incentive Plans

Long-term Incentive Plan is a pay component which is not used by all firms. I found that small firms do not use this specific component that much. Therefore I was unable to gather statistical results for small firms. For medium-sized and large firms however, interesting results were found. In the no-lag model, medium-sized firms tend to pay their CEOs long-term incentives based upon their respective age, firm size (inverted relation), and firm performance. A strong positive relation was found between ROE and LTIP, a less strong but positive relation between EPS and LTIP. ROA was insignificant. Firm size has an inverted relation with LTIP indicating that within the panel medium-sized firms, smaller firms receive higher long-term payouts than larger firms. CEO age has a weak positive and significant relation with long-term payouts as well, indicating that older CEOs receive higher long-term payouts. The lagged model showed different results. Stock ownership had a significant and inverted relation with LTIP, and the performance proxies were no longer positive and significantly related to LTIP; instead we observe a strong inverted relation with LTIP. The inverted relation with the performance proxies makes no sense since it basically says that when performance increases, LTIP payouts decrease.

Large firms (panel 3) present completely different results as opposed to panel 2. Neither CEO age, nor firm performance had a significant relationship in the no-lag model. Firm size does not longer have an inverted relation with LTIP, but a positive relation, indicating that

larger firm payout more in long-term incentives to their CEOs. What is notable as well is the very high coefficient of stock ownership. It is very clear that the level of LTIP in large firms is driven by stock ownership and firm size, rather than by performance. The no-lag model did not present a meaningful relation with LTIP for the rest of the variables. The lagged model did show such a relation for CEO age and tenure. CEO age presented a weak inverted relation with LTIP, suggesting that older CEOs receive less long-term payouts. CEO tenure had a weak positive relation with LTIP, indicating that CEOs with higher tenure receive higher long-term payouts. The lagged model also presented strong positive and significant results for the performance proxies. This result indicates that the level of LTIP is indeed partially performance-based for large firms.

Stock options

Stock options are, as we saw before, deemed the most prominent pay components since the huge increase since the 90s. The results of different size groups are very important for this specific component because it gives us some more insight in how firms justify the level of stock options they grant. Only for medium-sized firms I found evidence suggesting that CEOs receive their stock options based upon performance. Both ROE and ROA presented a strong positive relation with stock options. Medium-sized firms did not present another meaningful relation with any of the remaining variables. Small firms (panel 1) did present a meaningful relation with both firm size and CEO tenure, but not with firm performance. Large firms (panel 3) did not present a meaningful relation with any of the variables. In large firms there is clear evidence of the selection of stock options being based on random choice. It also supports the managerial power theory, suggesting that managers may have selected the value of their stock options themselves through exerting power on the board of directors.

Conclusions and Recommendations

The credit crunch as we experience it has been the result of financial firms investing in too risky portfolios for at least a decade. These investments yielded high short-term gains, but in the long-term they appeared as value destroying. The CEOs of these companies received huge incentives in this decade, and even when the crisis hit, the bonus pools did not adjust accordingly. This fact gained the constant attention of the media; “As markets crash and retirement dreams fade away, media and the public are full of outrage at everyone from mortgage brokers and Wall Street CEOs to real estate investors to experts who failed to predict the crisis was coming” Bloomberg Business Week literally stated. President Obama and his administration were well aware of the fact that the compensation packages of the CEOs led to the practices causing this crisis. They did note however, that the excessiveness was not necessarily the problem here. Rather the structure of the incentives lacked, making

excessive risk taking interesting. President Obama was obviously not the first to notice this, as Jensen et al. (1990) already acknowledged that excessive pay was not the big issue here, but rather *how* the CEOs were paid. This issue of lacking structure is exactly where the *agency theory* has its roots. The agency theory, in short, means that a principal engages an agent to perform some service on his or her behalf by means of a contract. Obviously the mere essence of this contract is to optimize the value of both the principal and the agent (Jensen, Meckling, 1976). In order solve this *agency problem* two theories have been developed to minimize the (agency) costs involved in finding the appropriate optimal contract between the principal and the agent. The first discussed theory was the *optimal contracting theory.* Basically this theory considers executive pay as a (partial) remedy for the agency problem. By providing optimal incentives to an agent, in this case a CEO, it will operate in the best interest of the firm and shareholders. In order to reach this optimal contract a board of directors is appointed to monitor the performance of the CEO. These directors eventually determine the pay package for the CEO. Limitations to this view are that usually the board of directors does not act independently from the CEOs, creating opportunity for the CEOs to influence their pay package (managerial discretion). Furthermore, limitations on the power of market forces and limitations on the power of shareholders points out that an optimal contract may not be easily reached (Bebchuk et al., 2002). The second theory is defined as *managerial power theory.* Basically this theory acknowledges the fact that executive compensation, besides being a partial remedy, also functions as being a part of the agency problem. In practice, maintaining an arm's length relationship between directors and CEOs is not possible (Bebchuk et al., 2002). In many cases the board of directors is dominated up to some degree by the CEO. Furthermore, lack of renegotiation on contracts makes sure that large deviations of an optimal contract are inevitable (Zingales, 1998).

Basically a contract consists of several pay components. Here I will only state the components which have been used in my research:

- Base salary
- Annual bonus
- Long-term Incentive Plans (LTIP)
- Stock options

Base salary is the foundation of a contract, a fixed component. The other three components are variable and dependent upon performance (or is it not?). LTIP are plans set up to provide CEOs with proper incentives to perform with a long-term strategy rather than short-term gain. Stock options are granted with the idea that CEOs perform in a value maximizing way, since the value of their stock options is tied to their performance on the stock market (Murphy,

1999). Stock option grants have grown over the past decades to become the largest pay component in a contract, with no substitution effect in non-equity compensation (Raviv et al., 2009). For CEOs this given fact meant that they could gain a lot from these stock options, while carrying only limited downside risk because of the high non-equity compensation. Stock options could thus encourage risk-taking to provide the CEO with high short-term gains, leading to value destruction on the longer term.

While reviewing literature on executive compensation in the financial, insurance, and real estate industry, I noticed that no concluding evidence was available which could pinpoint exactly where the level of CEO pay comes from. Firm size is an important determinant of pay throughout most literature, but firm performance in relation to CEO pay showed unclear results. Other CEO-specific characteristics did not show meaningful relationships with pay either. Most literature focused on one specific industry, and used relatively small timeframes. This research utilizes a larger timeframe: 1992-2007. This timeframe is suitable to get some information on how executive pay has developed through time, up to the point where the crisis struck. The goal of this research is to give a *basic insight* in the pay for performance relationship of CEOs operating in financial, insurance, and real estate firms. This led to the following research question:

Does firm performance have a meaningful relation with annual bonuses, long-term incentive plans, and stock options granted in the period 1992-2007 to CEOs in the financial services and real estate industry, or are other factors determining the level of these grants?

The sample is based upon the industry code, Standard Industrial Classification (SIC), where an eventual sample of 236 firms is used. In order to be able to answer the research question, three models were tested. One model explaining the level of annual bonuses, one model explaining the level of LTIP, and one model explaining the level of stock options. The independent variables which were used are CEO age, CEO tenure, CEO ownership, sales, market value, ROE, ROA, and EPS. Chapter 3 documents on these three models, and the following results were found: annual bonuses show meaningful relations with performance. All performance proxies showed positive and statistically significant results. ROA presented the highest coefficient, followed by ROE and EPS. Annual bonuses also show a positive and statistically significant relation with firm size (both sales and market value). Market value as size proxy had a higher coefficient as Sales. Stock ownership, when tested with market value, also presented a meaningful relation with annual bonuses. The coefficients were pretty high; approximately 2.30% increase in annual bonus when ownership increases with 1% point. In short, annual bonuses have a meaningful relation with firm performance.

Besides a mere performance relation, also firm size and stock ownership presented a meaningful relation with annual bonuses.

For the total sample, LTIP showed less plausible results when talking about a performance relation. Since LTIP typically has cumulative performance duration of three years, both a lagged model as a no-lag model was presented. Whereas one would expect LTIP to be related to firm performance, no such relation was found for both the lagged and no-lag model. No meaningful relation with firm size or CEO-specific characteristics was found either. This finding could suggest that the level of LTIP was determined through random choice rather that firm specific variables. Note however, in Chapter 4 I distinguished between different size groups. In chapter 4 more sophisticated results were found for LTIP.

Stock options are very important in this research, because the major part of executive payouts is through this component. My expectation for this specific component was that no strong performance relation would be found since the absolute value of these options were often so large, making it almost impossible that these values were accounted for by firm performance. Indeed my expectation was, at least partially, right. Only ROE showed a meaningful relation with stock options, however, its coefficient was not that large. In fact, when increasing ROE with 1% point, this only results in an increase of 0.91% of stock option level. The remaining performance proxies (ROA and EPS) did not present a meaningful relation with stock option grants. Firm size did present a positive and statistically significant result in all cases. An increase of 1% point in either market value or sales results approximately in an increase in stock option level of 0.30-0.40%. Of the remaining variables, only CEO age showed a statistically significant result. Its economic relevance however is questionable. Only a small amount of stock option level is determined through the age of the CEO.

If I were to answer my research question from this point, I would have to conclude that only annual bonuses presented a clear meaningful relation with firm performance for the financial, insurance, and real estate firms. But be that as it may, a great deal of the variation in the level of the pay components is based upon other factors than merely firm performance. Firm size showed a consistent meaningful relation with both annual bonuses and stock options. Financial literature all found strong positive relations with firm size and CEO pay. Therefore I considered it necessary to divide my initial sample in three different size groups. This division in size groups led to the following three testable panels:

- Panel 1: Small firms
- Panel 2: Medium-sized firms
- Panel 3: Large firms

The tests performed on these panels do not differ from those in Chapter 3, only sales as size proxy is excluded since market value presented better relationship with the pay components. The following conclusions have been drawn from these tests.

When considering annual bonuses, all three panels show a meaningful relation with firm performance. However, the magnitude does differ between panels. Panel 1 showed the weakest relation to annual bonuses compared to panel 2 and 3. Note however that the performance relation of panel 1 is still meaningful, only panel 2 and 3 show considerably higher coefficients for ROE and ROA. This finding suggests that medium-sized and large firms tend to pay annual bonuses based on prior firm performance for a greater deal than smaller firms do. Firm size still presents a meaningful relation within the panels. In all cases a positive and statistically significant result is shown. Note that the coefficient of firm size is also larger for panel 2 and 3 than it is for panel 1.

Long-term Incentive Plans (LTIP) present more sophisticated results when we test it in different panels. Again I test both a lagged model and a no-lag model. Panel 1 had too few observations on LTIP; therefore no statistical results could be extracted. When testing a no-lag model with medium-sized firms I was able to conclude that long-term payouts are driven mainly by firm performance, followed by firm size (inverted relation), and finally by CEO age. For the lagged model medium-sized firms present an inverted relation with firm performance, stock ownership, and firm size. CEO age still provides a positive relation. This result does not make sense since increasing performance would result in less long-term payouts. Large firms, in the no-lag model, tend to be paid not for performance. Firm size does present a meaningful relation with LTIP, but the strongest relation is definitely found with stock ownership. This result could incur what Bebchuk et al. (2002) stated when they described the managerial power approach. An important assumption of managerial power was when ownership of a CEO in a firm grows, so does his incentive to extract rents. That could exactly be what is happening here. Higher stock ownership is related to extremely high growth in long-term payouts. However, when we lag the model with three years we observe still this ownership importance, but on top of that also a strong performance relation.

Stock options also show differing results between panels. Smaller firms tend to pay out stock options partially based upon firm size. However, the coefficient is not that large, and therefore most of the level in stock option grants is not accounted for by firm size. Firm performance, CEO-specific characteristics did not present a meaningful relation. Medium-sized firms on the other hand did not show a meaningful relation with firm size, suggesting that the level of option grants is not dependent on how big the firm is. It does present a strong positive relation with firm performance. For medium-sized firms I found a meaningful

relation between stock option grants and firm performance. For large firms I was not able to find any meaningful relation for the level of option grants, with neither of the independent variables.

Now that I have reviewed on all the theory and results I believe the research question can be answered. Consistent with the results of the initial sample, but also with the three different size groups, I can conclude that annual bonuses present a meaningful relation with firm performance. My expectation that no such meaningful relation would exist is therefore wrong, however: long-term incentive plans and stock options are not that clear. When looking at the sample as a whole, LTIP does not show a meaningful relation with firm performance. When looking at each size group separately: small firms tend not to use this form of compensation. Medium-sized firms present a partial meaningful relation, meaning that only ROE and EPS were significant. These results however could suggest manipulation of earnings, since both measures are exactly what shareholders are interested in. Nevertheless, medium-sized firms show a meaningful relation with firm performance (only when performance proxies are *not* lagged). Large firms show no relation between LTIP and firm performance when performance measures are not lagged. But with a lag of three years we experience strong relation between LTIP and firm performance. What is notable here however, is the ownership coefficient. An increase in ownership results in a major increase of LTIP in both the lagged and no-lag model. This finding supports the managerial power theory, stating that higher stock ownership is related to higher rent extraction (Bebchuk et al., 2002). But in the end, I must conclude that for medium-sized and large firms at least partially a meaningful relation is found between LTIP and firm performance. When I consider stock options, less evidence is found to support the hypothesis that stock options are indeed related to firm performance. When I test stock options with the whole sample, I find stock options to be related with just ROE. Both ROA and EPS are insignificant here. This finding is not really convincing, but when we look at the different panels I find the following: small firms do not show a meaningful relation between stock options and firm performance. Medium-sized firms do support high performance relation with stock options, whereas large firms find no such relation. In conclusion I only find a performance relation with stock options for medium-sized firms. Small and large firms show no performance relation with stock options.

This concludes my research on the pay-performance relationship in financial, insurance, and real estate firms for the period 1992-2007. Personally I am very satisfied with my findings. What you see and hear in the media may the exaggerated, but they are right up to a certain degree. Whereas annual bonuses, and partially LTIP and stock options, may have been accounted for; there is still a lot of variation in the level of pay for CEOs which is

unaccounted for. Honest compensation or misuse of power? I would have to say the truth lies in between.

Suggestions for future research

This research has shortcomings in some areas. The test I performed generalized the sample, and gave overall effect of performance on pay. Future research in this area could perform an overall test, but additionally testing the different segments within industries. One could do this by selecting firms more specifically by using the appropriate Standard Industrial Classifications (SIC). Another addition which could be made is transforming the outcome and predictor variables in standard scores, also called z-scores. This makes it possible to assess the relative strength of a certain variable compared to another. In this case you would be able to better see the relative magnitude of a variable.

As I just mentioned, I generalized all firms into one sample, but when we relate executive compensation to the credit crunch it is unlikely that all firms are equally responsible for causing this crisis. It is more likely that the largest financial institutions had the most impact on the cause, whereas most of the other firms had no idea, or no choice to play the game along. Identifying these large financial institutions and testing them separately from the others may present an interesting research topic. An event study could also be possible in this area.

In order to assess managerial power present in a firm it would be necessary to have some power index measuring the power of the manager in a firm. Managerial power is one of the greatest topics within executive compensation, and would therefore be very interesting for future research. Especially when relating it to our current credit crunch.

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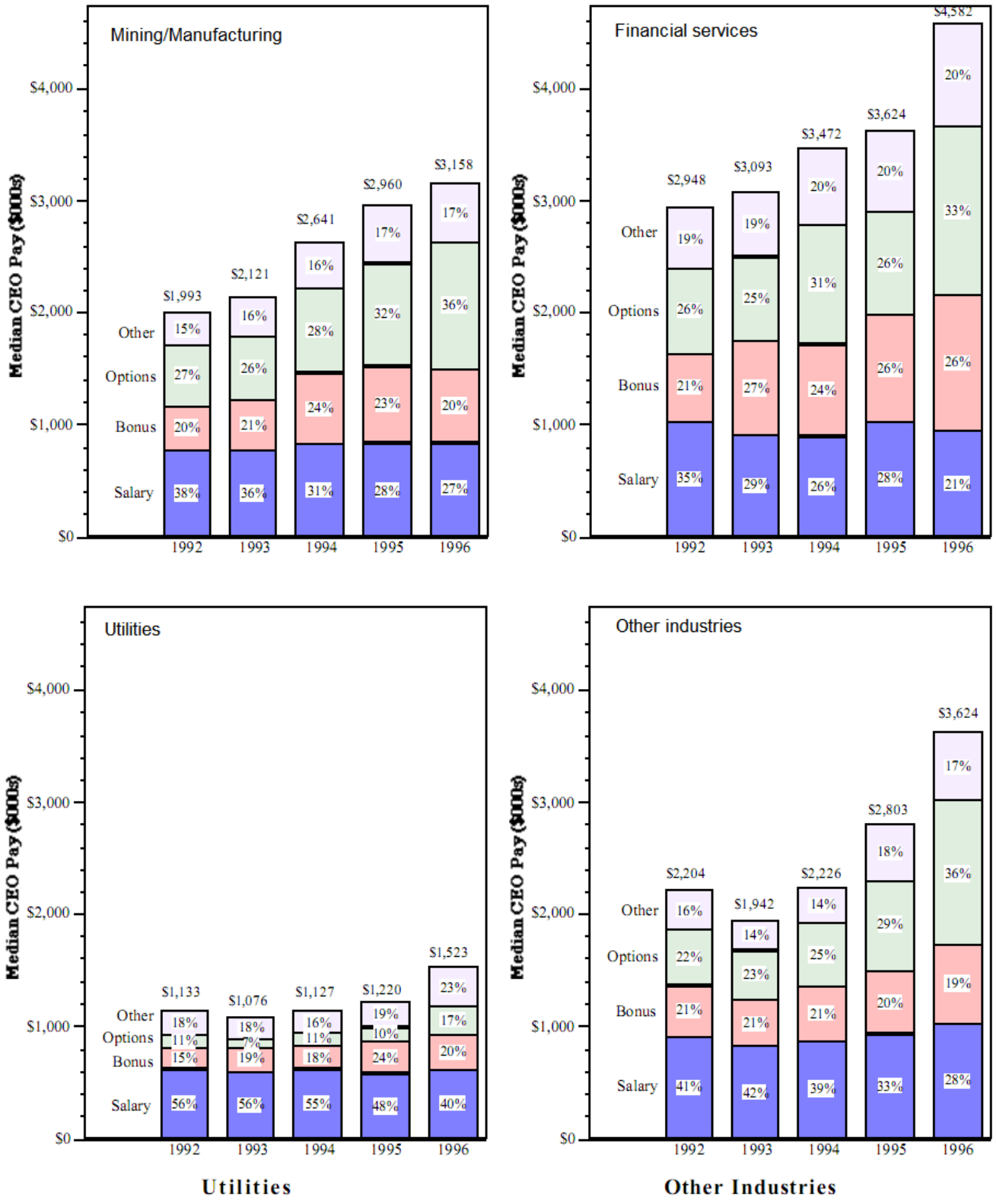
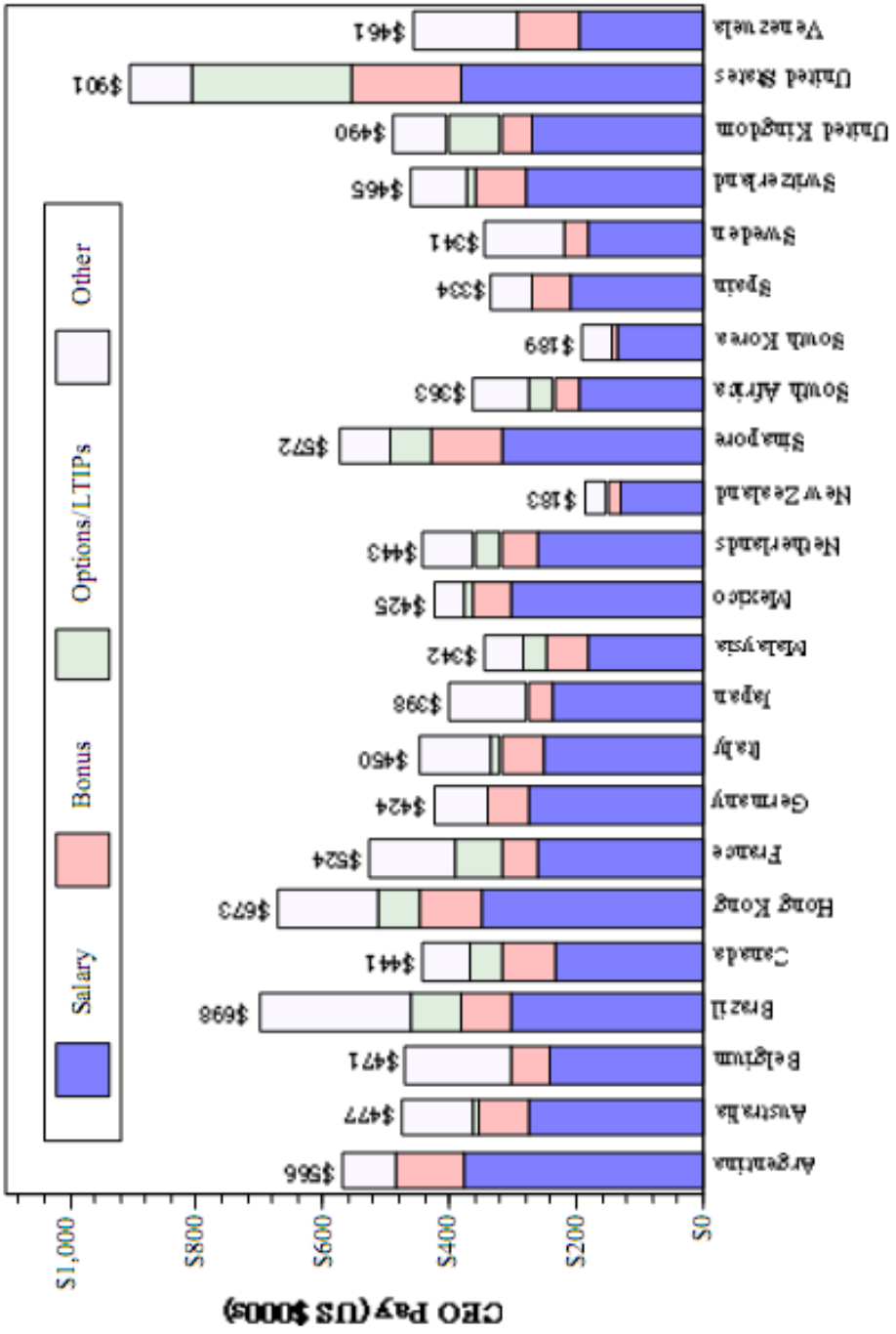
Appendices

Appendix A: Level, composition, and international comparison.

A1: Figure 1: *"Level and composition of CEO pay per industry"* (Murphy, 1999)



A2: Figure 2: *"International comparison of CEO pay levels and structures in 1997"* (Murphy, 1999)



Appendix B: Descriptive Statistics

Table 2: *Descriptive Statistics*

	MEAN	ST.DEV.	MINIMUM	MAXIMUM
Annual Bonus	1,190.88	2,268.333	0	29,000.00
LTIP	258.75	1,421.549	0	38,706.00
Salary	683.49	318.1689	0	3,000.00
Stock Options	2,775.24	21,310.93	0	1,111,597.00
CEO age	54.97	7.25	31	86
CEO tenure	8.77	7.52	1	42
Market value	49,382.80	149,028.3	5	2,187,631.00
Net sales	5,253.84	12,238.90	-4,215.00	151,362.00
ROE	0.137269	0.1153283	-0.9525936	0.9816044
ROA	0.0575901	0.0778546	-0.3549891	0.7480054
EPS	2.42	2.80	-32.35	34.05
Ownership	0.0393044	0.0548594	0.00009	0.344

Appendix C: Results of Empirical Research

C1: Table 4: *Results with Annual Bonus as dependent variable and sales as size proxy.*

	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
CEO AGE	0.0091412	0.539	0.0153227	0.333	0.0144453	0.343
CEO TENURE	-0.0012593	0.912	-0.0048513	0.693	-0.001422	0.905
OWNERSHIP	2.020197	0.158	2.109884	0.162	2.050358	0.154
LOGSALES	0.3735938	0.020*	0.3301878	0.078**	0.3119323	0.096**
ROE	1.409798	0.000*	-	-	-	-
ROA	-	-	2.365702	0.000*	-	-
EPS	-	-	-	-	0.0441098	0.005*
Within R^2						
Between R^2						
Overall R^2	0.3429		0.3075		0.3060	
F-value	14.42		13.04		12.09	
Prob>F	0.0000		0.0000		0.0000	

* = significant at 5% level ** = significant at 10% level.

Table 5: *Results with Annual Bonus as dependent variable and market value as size proxy.*

	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
CEO AGE	0.010163	0.445	0.0160912	0.255	0.0153628	0.262
CEO TENURE	-0.0029509	0.779	-0.0065628	0.560	-0.0032299	0.770
OWNERSHIP	2.243913	0.101	2.37847	0.101	2.351775	0.086**
LOGMVALUE	0.4409824	0.001*	0.434413	0.003*	0.3801451	0.004*
ROE	1.542094	0.000*	-	-	-	-
ROA	-	-	3.118863	0.000*	-	-
EPS	-	-	-	-	0.0418094	0.007*
Within R^2						
Between R^2						
Overall R^2	0.2301		0.2758		0.1966	
F-value	13.71		11.98		11.81	
Prob>F	0.0000		0.0000		0.0000	

* = significant at 5% level ** = significant at 10% level.

Table 6: *Results with LTIP as dependent variable and sales as size proxy. No lag.*

	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
CEO AGE	-0.037435	0.694	-0.0407	0.598	-0.0717842	0.345
CEO TENURE	0.0316834	0.459	0.0264685	0.412	0.0339794	0.333
OWNERSHIP	2.843513	0.509	5.346386	0.152	4.196746	0.230
LOGSALES	-0.2812998	0.698	-0.1507688	0.842	0.2334151	0.736
ROE	1.283277	0.465	-	-	-	-
ROA	-	-	-3.035183	0.647	-	-
EPS	-	-	-	-	0.0310384	0.652
Within R^2	0.3776		0.3655		0.2607	
Between R^2	0.0008		0.0187		0.0851	
Overall R^2	0.0053		0.0001		0.0599	
F-value	39.60		132.82		477.70	
Prob>F	0.0000		0.0000		0.0000	

* = significant at 5% level ** = significant at 10% level.

Table 7: *Results with LTIP as dependent variable and market value as size proxy. No lag.*

	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
CEO AGE	-0.0288082	0.712	-0.0232462	0.707	-0.054213	0.424
CEO TENURE	0.0299876	0.390	0.0224774	0.347	0.0289169	0.326
OWNERSHIP	1.227299	0.782	3.531789	0.402	3.561665	0.372
LOGMVALUE	-0.3405234	0.484	-0.3412886	0.500	-0.0006137	0.999
ROE	1.252568	0.462	-	-	-	-
ROA	-	-	-3.625815	0.624	-	-
EPS	-	-	-	-	0.0326246	0.653
Within R^2	0.3822		0.3720		0.2585	
Between R^2	0.0077		0.0131		0.0344	
Overall R^2	0.0002		0.0007		0.0046	
F-value	41.70		50.28		73.70	
Prob>F	0.0000		0.0000		0.0000	

* = significant at 5% level ** = significant at 10% level.

Table 8: *Results with LTIP as dependent variable and sales as size proxy. Performance variables lagged 3 years.*

	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
CEO AGE	-0.0219816	0.822	-0.0355352	0.739	-0.0196076	0.835
CEO TENURE	0.0061134	0.910	0.0122017	0.821	0.0095335	0.838
OWNERSHIP	8.808994	0.426	8.271203	0.499	6.363796	0.559
LOGSALES	-0.2652666	0.765	-0.1076492	0.915	-0.0847273	0.926
ROE – 3	1.451048	0.581	-	-	-	-
ROA – 3	-	-	-0.6219033	0.950	-	-
EPS – 3	-	-	-	-	-.0729977	0.308
Within R^2	0.3404		0.3248		0.3582	
Between R^2	0.0037		0.0355		0.0976	
Overall R^2	0.0071		0.0022		0.0341	
F-value	267.04		14.72		8.97	
Prob>F	0.0000		0.0000		0.0000	

* = significant at 5% level ** = significant at 10% level.

Table 9: *Results with LTIP as dependent variable and market value as size proxy. Performance variables lagged 3 years.*

	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
CEO AGE	0.0094532	0.919	-0.0021197	0.983	0.013091	0.886
CEO TENURE	0.0012248	0.982	0.0106997	0.843	0.0088123	0.855
OWNERSHIP	3.584322	0.744	2.284154	0.836	0.4211413	0.970
LOGMVALUE	-0.5338468	0.331	-0.471916	0.421	-0.4527345	0.390
ROE – 3	1.636682	0.529	-	-	-	-
ROA – 3	-	-	-0.0753592	0.994	-	-
EPS – 3	-	-	-	-	0.0700193	0.302
Within R^2	0.3526		0.3356		0.3686	
Between R^2	0.0025		0.0070		0.0314	
Overall R^2	0.0020		0.0004		0.0037	
F-value	10.10		5.78		16.77	
Prob>F	0.0000		0.0001		0.0000	

* = significant at 5% level ** = significant at 10% level.

Table 10: *Results with stock options as dependent variable and sales as size proxy.*

	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
CEO AGE	0.0172142	0.103	0.0196968	0.055**	0.0183547	0.068**
CEO TENURE	-0.0037896	0.738	-0.0052451	0.635	-0.0051346	0.631
OWNERSHIP	-0.2656634	0.775	-0.1754825	0.852	-0.0959651	0.920
LOGSALES	0.2971692	0.001*	0.3081551	0.000*	0.3010225	0.000*
ROE	0.9000832	0.061**	-	-	-	-
ROA	-	-	1.192664	0.285	-	-
EPS	-	-	-	-	0.0006832	0.957
Within R^2	0.2869		0.2643		0.2747	
Between R^2	0.2018		0.2229		0.2078	
Overall R^2	0.2695		0.2747		0.2713	
F-value	-		-		-	
Prob>F	-		-		-	

* = significant at 5% level ** = significant at 10% level.

Table 11: *Results with stock options as dependent variable and market value as size proxy.*

	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
CEO AGE	0.0178987	0.104	0.0196842	0.074**	0.0188957	0.074**
CEO TENURE	-0.0054925	0.636	-0.0069096	0.552	-0.0066757	0.549
OWNERSHIP	-0.0488171	0.960	0.2358391	0.806	0.161437	0.870
LOGMVALUE	0.3329582	0.007*	0.3999256	0.001*	0.3391413	0.005*
ROE	0.9282625	0.060**	-	-	-	-
ROA	-	-	1.84609	0.102	-	-
EPS	-	-	-	-	0.0039402	0.765
Within R^2	0.2874		0.2685		0.2730	
Between R^2	0.1086		0.1425		0.0987	
Overall R^2	0.1722		0.1903		0.1669	
F-value	-		-		-	
Prob>F	-		-		-	

* = significant at 5% level ** = significant at 10% level.

D1: Table 14: *Regression Annual Bonuses for panels 1, 2, and 3*

Appendix D: Results Empirical Research different panels

	Panel 1				Panel 2				Panel 3							
	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.
CEO AGE	-0.003114	0.834	0.008253	0.646	0.003921	0.806	0.03537	0.196	0.03555	0.213	0.03802	0.146	-0.00792	0.784	-0.02159	0.490	0.00015	0.995
CEO TENURE	0.006552	0.569	0.003143	0.827	0.006218	0.636	-0.01796	0.306	-0.01845	0.306	-0.021012	0.237	0.00866	0.533	0.00902	0.683	0.00343	0.800
OWNERSHIP	1.54609	0.381	1.761698	0.304	2.073676	0.237	0.61100	0.831	1.3961	0.690	1.42055	0.621	1.5313	0.479	2.20788	0.239	1.02683	0.568
LOGMVALUE	0.233252	0.003*	0.190108	0.012*	0.168241	0.028*	0.76893	0.000*	0.83174	0.000*	0.74146	0.000*	0.6415591	0.004*	0.81863	0.003*	0.63096	0.002
ROE	1.268373	0.001*	-	-	-	-	2.28214	0.009*	-	-	-	-	1.6683	0.283	-	-	-	-
ROA	-	-	2.352416	0.001*	-	-	-	-	6.95949	0.060**	-	-	-	-	7.21806	0.010*	-	-
EPS	-	-	-	-	0.077926	0.108	-	-	-	-	0.0571	0.015*	-	-	-	-	0.01907	0.035*
Within R^2	0.3611		0.3572		0.3341		0.5545		0.5463		.0.5290		0.6219		0.6039		0.6154	
Between R^2	0.0383		0.0822		0.0297		0.0400		0.0864		0.0245		0.2960		0.2850		0.2767	
Overall R^2	0.1426		0.2105		0.1418		0.0615		0.1048		0.0395		0.3490		0.3604		0.3245	
F-value	10.35		7.5		9.85		19.81		23.40		19.26		118.00		54.07		242.30	
Prob>F	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	

D2: Table 15: *Regression LTIP without lag for panels 1, 2, and 3*

	Panel 1						Panel 2						Panel 3					
	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.
CEO AGE	-	-	-	-	-	-	0.39888	0.010*	0.33941	0.019*	0.32618	0.000*	0.08770	0.800	-0.04277	0.613	-0.09651	0.300
CEO TENURE	-	-	-	-	-	-	-0.13952	0.113	-0.09101	0.244	-0.12314	0.003*	-0.21288	0.471	-0.08343	0.131	-0.03529	0.436
OWNERSHIP	-	-	-	-	-	-	-14.4972	0.221	-18.4295	0.112	0.56131	0.945	321.626	0.000*	375.059	0.000*	311.653	0.001*
LOGMVALUE	-	-	-	-	-	-	-1.84375	0.017*	-2.16081	0.002*	-2.42216	0.000*	2.77082	0.000*	2.89470	0.002*	2.73496	0.002*
ROE	-	-	-	-	-	-	3.29627	0.062**	-	-	-	-	-2.72380	0.514	-	-	-	-
ROA	-	-	-	-	-	-	-	-	10.7859	0.443	-	-	-	-	-0.53988	0.990	-	-
EPS	-	-	-	-	-	-	-	-	-	-	0.38035	0.012*	-	-	-	-	-0.00158	0.963
Within R^2	-	-	-	-	-	-	0.8938		0.8790		0.9178		0.8303		0.8339		0.8226	
Between R^2	-	-	-	-	-	-	0.0401		0.0432		0.0185		0.0252		0.0200		0.0206	
Overall R^2	-	-	-	-	-	-	0.0738		0.0962		0.0404		0.0360		0.0231		0.0230	
F-value	-	-	-	-	-	-	318.95		216.42		980.67		183.35		59.99		42.01	
Prob>F	-	-	-	-	-	-	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	

D3: Table 16: *Regression LTIP with 3-year lag for panels 1, 2, and 3*

	Panel 1						Panel 2						Panel 3					
	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.
CEO AGE	-	-	-	-	-	-	0.204821	0.014*	0.334998	0.006*	0.313134	0.000*	-0.278793	0.009*	-0.168351	0.102	-0.212702	0.067**
CEO TENURE	-	-	-	-	-	-	0.016763	0.641	-0.074240	0.174	-0.036714	0.133	0.671058	0.001*	0.266549	0.007*	0.388173	0.003*
OWNERSHIP	-	-	-	-	-	-	-21.26228	0.001*	-17.99214	0.107	-19.01181	0.018*	-67.02209	0.321	295.4571	0.006*	140.4232	0.129
LOGMVALUE	-	-	-	-	-	-	-2.105865	0.002*	-1.131882	0.182	-2.26506	0.000*	-0.915564	0.150	2.34463	0.021*	1.142626	0.146
LAGROE	-	-	-	-	-	-	-6.444256	0.009*	-	-	-	-	7.007617	0.000*	-	-	-	-
LAGROA	-	-	-	-	-	-	-	-	-45.70274	0.061**	-	-	-	-	41.24222	0.012*	-	-
LAGEPS	-	-	-	-	-	-	-	-	-	-	-0.314173	0.016*	-	-	-	-	0.078479	0.089**
Within R^2	-	-	-	-	-	-	0.9050		0.8881		0.8897		0.8472		0.7956		0.7959	
Between R^2	-	-	-	-	-	-	0.0365		0.1100		0.0354		0.0045		0.0199		0.0202	
Overall R^2	-	-	-	-	-	-	0.0143		0.0118		0.0097		0.0051		0.0216		0.0281	
F-value	-	-	-	-	-	-	86.21		66.96		221.60		907.26		26.30		12.77	
Prob>F	-	-	-	-	-	-	0.0000		0.0000		0.0000		0.0000		0.0000		0.0003	

D4: Table 17: *Regression Stock options for panels 1, 2, and 3*

	Panel 1						Panel 2						Panel 3					
	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.	Coef.	P-val.
CEO AGE	0.020571	0.241	0.022070	0.167	0.020917	0.206	0.01225	0.642	0.01085	0.691	0.01601	0.531	0.05482	0.311	0.04204	0.464	0.03573	0.578
CEO TENURE	-0.015912	0.145	-0.01840	0.048*	-0.01637	0.085**	0.00423	0.923	0.01282	0.797	-0.00590	0.896	-0.01426	0.612	-0.01313	0.606	-0.00729	0.815
OWNERSHIP	-0.911344	0.663	-0.73065	0.726	-0.92700	0.651	-1.64404	0.548	-0.25733	0.936	-0.09548	0.972	0.80096	0.684	1.32178	0.481	1.71732	0.369
LOGMVALUE	0.608575	0.000*	0.617977	0.000	0.565978	0.000*	0.18249	0.352	0.21948	0.290	0.16127	0.442	0.16300	0.224	0.17949	0.209	0.14902	0.296
ROE	0.747936	0.149	-	-	-	-	3.73352	0.014*	-	-	-	-	1.01215	0.481	-	-	-	-
ROA	-	-	1.55403	0.155	-	-	-	-	12.172	0.064**	-	-	-	-	-0.98948	0.868	-	-
EPS	-	-	-	-	0.011885	0.721	-	-	-	-	0.05642	0.237	-	-	-	-	-0.00937	0.53
Within R^2	0.2751		0.2818		0.2701		0.2771		0.2651		0.2328		0.4912		0.4457		0.4890	
Between R^2	0.0001		0.0084		0.0000		0.0646		0.1475		0.0659		0.2423		0.2013		0.2042	
Overall R^2	0.0406		0.0669		0.0433		0.1150		0.2565		0.1142		0.2771		0.2521		0.2909	
F-value	39.47		38.27		36.56		6.36		8.43		6.79		46.96		17.00		20.55	
Prob>F	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	