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DIPLOMOVÁ PRÁCE

**Principal-Agent Theory and Executive
Compensation**

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Prohlášení

Prohlašuji, že jsem diplomovou práci vypracoval samostatně a použil pouze uvedené prameny a literaturu.

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Abstrakt

V této práci analyzuji odměny výkonných ředitelů veřejně obchodovaných amerických společností a vliv různých faktorů na tyto odměny, především vliv negativních faktorů a vliv faktorů, které zohledňují výkon společnosti. Ukázal jsem, že vliv negativních faktorů na odměny výkonných ředitelů ve vybraném vzorku 285 společností (v roce 2003) byl nad hranicí 10 %. Akcionáři by získali značnou hodnotu, kdyby byl vliv těchto negativních faktorů filtrován.

Dále jsem potvrdil, že korelace odměn a výkonnostních ukazatelů firmy není vysoká, přesněji řečeno, výkonnostní ukazatele firmy vysvětlují okolo 10-11 % složky bonus, 10 % hodnoty udělených opcí a 8-9 % celkových kompenzací. Uzavírám tvrzením, že nadále existuje prostor pro další racionalizaci odměňování výkonných ředitelů ve veřejných amerických společnostech.

Abstract

We examine executive compensation and the impact of various factors on it, more precisely the influence of extraneous factors and performance indicators. We find that the impact of extraneous factors on our sample of executive compensation of 285 companies and their CEOs in 2003 is above 10%, which is a large impact and shareholders would save substantial value filtering the effect of such factors.

We also find that the relation of executive compensation and performance indicators of the company is not very strong, more exactly - performance indicators explain about 10-11% of component Bonus, 10% of component Value of Options Granted and 8-9% of Total Executive Compensation. Concluding, there is still space for further rationalizing of executive pay in large US publicly traded companies.

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1) INTRODUCTION

Are the compensations awarded to Chief Executive Officers (CEOs) of large publicly traded companies of United States excessive? This is the major question we attempt to answer in this study.

Looking for an objective measure to say whether the executive pays are excessive or not is a cumbersome issue. There have been cases where CEOs were able to withdraw up to \$ 120 millions in executive compensation from company accounts. It is hard to believe that this amount of money is a reasonable compensation, but still, we should not say “it is too much” without knowing the background. We should not judge it subjectively and we must look for an appropriate way to show possible excessiveness of executive pay.

We have decided to use empirical approach. We define “excessive executive pay” as redundant pay. Redundant pay does not have to be necessarily paid to chief executive officer to achieve maximum company value. An “excessive pay” is paid as premium above level of executive compensation that is sufficient to maximally incite CEO to raise company value. This “sufficient” level can be explained by standard factors such as profitability. “Excessive pay” does not bring any additional value to the shareholder in form of better performance. In other words, CEO does not increase company value when this additional pay is awarded and, thus, the additional pay is redundant.

We will conclude that the pay is excessive whenever there prove to be redundant factors that determine, however partially, executive compensation. If there are such factors, shareholders could filter the effect of these factors on executive compensation, which would result in cutting the additional excessive pay without any, *ceteris paribus*, decline in company value.

For example, if executive pay increases with sunspots we propose that the pay is excessive and shareholders would benefit from cutting it – “filtering the impact of sunspots on executive compensation”. On the other hand, if executive compensation is determined by e.g. CEO’s experience or by company performance, the pay is appropriate and shareholders get good value for their money invested in a CEO.

As to the structure of the study, in Chapter 2 we start with identifying all possible factors that might influence executive pay. To support them, we screen recent

literature of executive compensation. We summarize them and we analyze all possible impacts these factors could have on executive compensation.

In Chapter 3 we examine current regulatory background of executive compensation. We analyze the impact of section 162(m) of Internal Revenue Code that restricts deductibility of executive pay for corporate tax. Then we summarize impacts of Sarbanes-Oxley Act that brought a substantial change to financial reporting of public companies and have further important implications for corporate governance. Finally in this chapter, we show what the trends and recent developments are in regulation of executive pay in 2003.

In Chapter 4 we summarize several models for executive compensation that are used in literature for executive compensation.

In Chapter 5 we use the analysis from Chapter 2 to draw hypotheses about overall executive compensation and also about its major elements – salary, bonus and stock option awards. We propose equations that we should test by regression analysis on current compensation data.

In Chapter 6 we survey empirics to confirm or reject hypotheses introduced in Chapter 5 and we comment results that come from regression estimations with dependent variables salary, bonus, option grants value and total direct executive compensation.

In Chapter 7 we draw conclusions.

Motivation and Background

Providing incentives to managers of publicly owned companies is the classic example of the principal-agent problem (Berle and Means 1932)¹, but since 1990s there has been increasing public concern, whether the incentives that should solve principal-agent problem are not starting to be distorted. The public disagreement with level of executive compensations further increased with the numerous accounting scandals (Enron, Global Crossing, Tyco, WorldCom) and since than, a lot of regulatory work has been done to relate compensation to performance and to decrease managerial compensation to some acceptable level.

¹ Berle, Adolf and Gardiner Means. 1932. „The Modern Corporation and Private Property,” New York, Macmillian

The practices of executive compensation that resulted in perverse behaviour of some executives has led to wide shareholders' and public skepticism about the corporate governance and its efficiency in the field of rewarding of executive officers.

Pressure was exercised to constrain executive compensation, increase directors' accountability, improve transparency and ensure reliability of financial disclosures.

Both academics and practitioners have been intensely involved in evaluating the recent developments, bringing large scale of explanations what has happened.

The increasing concern with executive compensation is based on its development that is clearly seen from Figure 1.

Figure 1: Development of executive pay related to average annual earnings of production workers



Source: Hall and Murphy (2003), p.25

The involvement of general public in this issue is justified, as the rate of CEO total pay to average annual earnings of production worker increased from approximately 50 at the beginning of 1980s to 500 in 2000 when the expectation bubble peaked. "In

*2000, CEO compensation in the firms making up the 1500 company ExecuComp dataset was on average 7.89% of corporate profits*²

Even though the data show some decline in executive compensation after 2000, there are still questions about executive compensation that need to be answered.

Composition of Executive Compensation

The overall executive compensation can be divided into three parts: 1) flow compensation, 2) changes in the value of the CEO's portfolio of stock and options and 3) the possibility that the market's assessment of the CEO's human capital will decrease following termination because of poor performance or change in control (Core, Wayne and Larcker, 2003) or possibility that the market's assessments of the CEO's human capital will increase following success and company good performance.

Executive compensation paid out in flow compensation usually includes five elements i) base salary, ii) short-term (annual) incentives or bonuses, iii) restricted stock and option grants that are base for long-term incentives plans, iv) employee benefits and v) perks³ (Malkovich and Newman, 1993). Due to changing tax legislation, attractiveness of these elements differs over time.

Changes in the value of the CEO's portfolio is the appreciation of his/her stock option holdings and stock holdings. This part is inherently influenced by stock market price changes.

As there is a tendency to camouflage executive pays⁴, in addition to the elements listed above, Bebchuk and Fried (2003) describe stealth compensation, which generally means remuneration that is paid out after retirement of CEO (pension plans, deferred compensation and post-retirement perquisites and consulting contracts) and other stealth compensation, e.g. executive loans⁵. Stealth

² Bebchuk and Fried (2003), p. 20

³ Executive perquisites include internal perquisites (luxury offices, executive dining rooms, special parking etc.), external tax-free perquisites (company-paid membership in clubs/associations, hotel payments, resort, airplane, car expenses etc.) and external perquisites with different tax status (low-cost loans, personal and legal counseling, free home repairs, personal use of company property, expenses for vacation homes etc). Malkovich and Newman (1993)

⁴ Bebchuk and Fried (2003) or Bebchuk, Fried and Walker (2002) describe what camouflage means in terms of executive compensation and why this phenomena occurs.

⁵ Loans for executive officers have recently been prohibited by Sarbanes – Oxley Act.

compensation is mostly not included in the SEC (Security and Exchange Commission) filings and thus doing any further analysis is unfeasible.

The third part, the reputation loss/gain is the hard-to-measure component of executive compensation. There is certainly impact of this part of compensation on CEO behaviour, however, it will be very individual and depends on ones' career road map and future plans.

2) FACTORS OF EXECUTIVE COMPENSATION

Executive compensation policies should follow objectives of corporate governance, recognized as: “1) *to maximize the incentives for value enhancing investments, while minimizing inefficient power seeking*; 2) *to minimize inefficiency in ex-post bargaining*; 3) *to minimize any “governance” risk and allocate the residual risk to the least risk-averse parties.*”⁶

In this chapter, we will discuss factors that determine executive compensation and that also might lead to excessive compensations. This will serve us as starting point to form our hypotheses.

For purposes of further analysis we divide the factors that determine executive compensation into two groups. They are analyzed in following two sections: 2.1 Market Based Factors and Optimal Contracting Approach and 2.2 Factors not related to company value.

This division is used in order to list firstly the factors that, in our opinion, are good and desirable and these factors should be reflected in executive compensation as they are connected to performance and subsequently to firm value. Secondly we list and describe factors that possibly influence executive compensation but the impact is not explicable in terms of company value maximization – they decrease the efficiency of executive compensation and in our terminology they are redundant. Positive vs. negative influence of company size on executive compensation is also discussed.

2.1 Market Based Factors and Optimal Contracting Approach

Let us discuss executive compensation-determining forces, which are based on market processes and lead to optimal executive compensation⁷. They are based on firm performance and also on external-to-firm market-based factors that reflect CEO labor market characteristics - both of those lead to firm value maximization. Firstly,

⁶ Zingales, Luigi (1997), p. 10

⁷ The executive compensation in optimum would be defined: “... executive compensation arrangements can generally best be understood as instruments that the board uses in the shareholders’ interest to address the agency problem.” (Bebchuk, Fried and Walker (2002), p. 12)

we show that optimal contracting requires several conditions of optimal executive compensations that are not fulfilled. Then we analyze possibility to relate executive compensation to company value via company performance.

Firstly, In the optimal contracting view, optimal level of executive compensation is explained under several assumptions: i) the board of directors is arm's length bargaining with the CEO, ii) the board acts on basis of maximizing shareholders' value and most importantly iii) all contingencies can be put down into the underlining contract so that no "surprising" (unpredictable) event occurs. As it is usual in economics, we consider the assumptions to be the Achilles' heel of the approach⁸:

i) The neutrality of bargaining

The neutrality of bargaining between the CEO and the board of directors is questioned by the existence of several conditions: CEO's nominations for directors, elitism⁹, information asymmetry between the board and CEO.

As we ask whether the CEO is well motivated to maximize the shareholders' value, the same logics of questioning applies to the board of directors. If the directors are not well motivated, neither will be the CEO – i.e. the executive compensation will never be set properly and also, board directors are not motivated to arm's length bargaining. However, we should take into consideration that there are many fewer deviating incentives in the case of directors than in the case of CEO as directors do not possess direct executive power.

ii) Directors and value maximization

The directors, however honored and independent they may be, would be still optimizing their personal values. If a) they are not well incited to act in favor of shareholders' interests and if b) satisfaction of their own utility goes in different

⁸ For deeper discussion on the limitations of optimal contracting approach within the context of executive compensation see Bebchuk and Fried (2002), Bebchuk, Fried and Walker (2002).

⁹ We use the term „elitism“ for behaving of CEO in such a way as not to harm their social group, which could result in harming his/her own interests. When the directors are often CEOs or other high positioned executives in their primary job, they will not act against the CEO as e.g. the level of their compensation in their first job is given by overall level of compensations and as they will be persuaded about their, and subsequently the CEO's, personal importance. Let us include also friendship into this concept. The literature does not use this term

direction than satisfaction of shareholders' utility would, they will not act properly to maximize firm value.

- a) Similar shortcomings of CEO's compensation apply also for compensation incentives of corporate directors – it is not linked to corporate performance, hence, the directors need not do “all their best” to fulfill interests of shareholders.
- b) Deviation of directors' utility function can appear. The directors act in favor of the CEO to please him/her. As a reward they might expect re-nomination for the board, various perquisites, better cooperation with CEO. We assume that also friendship might be a significant factor.

For example, to replace CEO or to reduce significantly his/her compensation when he/she does not work perfectly would be very costly for the director without bringing him/her sufficient benefits¹⁰ (Bebchuk, Fried and Walker, 2002).

iii) Possible contingencies

The contracts cannot trace all possible outcomes that occur during his/her employment. However sophisticated the contracts that underline CEO employment are, it is not realistic that they will deal with all possible problems in sufficient depth. This is a sub problem of general contracting view, most clearly explained by Zingales, Luigi (1997, p.3): “*.the contracts, most likely, will be incomplete, in the sense that it will not fully specify the division of surplus in every possible contingency (this might be too costly to do or outright impossible because the contingency was unanticipated).*”

For example, mergers and acquisitions create so many possible outcomes that trying to include necessary features into the contract before the event occurs might be even more costly than dealing with the issue after it happens.

Secondly, if the value of executive compensation would be perfectly correlated with firm value, there would not be the principal - agent issue. This is obviously untrue in real conditions.

¹⁰ E.g. when board is satisfied with the CEO performance for several years, he will not penalize him immediately after one-year-long bad performance (Cyert, M. Richard, 1997).

Performance measures are built in into the executive compensation schemes¹¹. Executive compensation is usually, on a certain level, correlated with performance and the levels of compensations of particular CEO depend on firm performance. However, we are obliged to raise a question whether executive compensation is related to company value sufficiently. Garen (1994) demonstrates the empirical pay-performance sensitivity is not strong enough to align shareholders' interests fully with CEOs'.

Executive compensation depends on firm performance that is quantitatively measured and is reached in short to medium term. Nevertheless, there is a shortcoming with influencing executive compensation by partly or completely immeasurable performance indicators – e.g. number of registered patents¹² (research and development), established trademarks, goodwill, stability or resistance of the firm against external shocks. The value caused by these factors that is brought to firm value is hard to estimate but it is surely transferred into measurable performance indicators in longer term (i.e. the value of a patent is hard to estimate now but the contribution to firm value will be clear when it is transferred into future sales that are induced by the patent). The unfeasibility of evaluating these factors make the optimal contracting view again a bit weaker. It is almost unfeasible to connect qualitative indicators to current executive compensation to make sure CEO is perfectly correlated with shareholders' long term interests. Even though the market is certainly good place to assess these problematic indicators, there will still remain a large portion of insider information that the public will not have, e.g. about the research of the company, and that could alter the fair share price.

2.2 Factors Not Related to Company Value¹³

Here, we want to summarize and survey other than company value-related factors that mainly influence structure and level of executive compensation. Let us call such

¹¹ Malkovich and Newman (1993) show that bonuses related to performance are given approximately to 87% of executives and the size of these bonuses varies from a 35% to 60% or more of executive compensation, depending on the firm's industry or sector. Long term incentives as stock options are also based on performance and are often used (about 75% of executives received stock options in 1989, Malkovich and Newman, 1993).

¹² Day, Mang, Richter and Roberts (2002) demonstrate that executive compensation does not reflect development activities of executives.

¹³ „Whereas pay in the contracting view is an attempt to solve moral hazard, pay in the skimming view is the result of moral hazard.“ Bertrand and Mullainathan (2000), p. 3

factors redundant. We suppose that these factors, described in the text below, contribute to distortions, enable rent extraction and support inefficiencies in executive compensation¹⁴. If existence of such factors is confirmed we may believe the executive compensation is excessive.

The literature on executive compensation provides us with a list of factors whose existence is supported by empirical evidence. In the text we discuss their relevance and the impact of the most important is estimated in the empirical section of the work. We propose the factors that do not connect company value to executive compensation are: i) Board of directors characteristics, ii) Shareholders' structure, iii) Size of company¹⁵. We look for evidence on these in the empirical part of the work. Then we briefly discuss some other factors: iv) Anti-takeover legislation, v) Anti-takeover provisions vi) Presence of compensation consultants, vii) Golden goodbyes - Power to resist, and viii) Existence of factors that influence manager's compensation without being under their control.

i) Board of directors

The optimal contracting approach assumes that directors are generally independent when setting executive compensation. CEO should play a sterile¹⁶ role and "only" supply information and proposals to the board of directors. These assumptions do not have to hold. It is probable that directors and managers are dependent as there is a handful of interconnections. CEO influences appointing of directors¹⁷ and directors certainly wish to be re-appointed, knowing that their position is well paid and prestigious. The chairman of the board is often CEO. Furthermore, CEOs have important influence on the board when providing information and affect also directors' compensation in form of perquisites. *"...it is clear that the personal interaction between the members of the BOD and the executive will likely influence*

¹⁴ Not surprisingly, the inefficiencies caused by factors of this kind usually cause more harm to the shareholder than the act of rent extracting itself. E.g. Bebchuk (2002) suggests that inefficiencies caused by the CEO when trying to camouflage his/her rent extracting intentions is much more costly for the firm than the excessively high compensation paid to the CEO itself.

¹⁵ This factor will be discussed as desirable as well as undesirable factor

¹⁶ By „sterile“ we mean that CEOs should not alter the information they supply to directors in order to ensure their personal interests

¹⁷ Bebchuk and Fried (2003) suggest that the re-appointment possibility is the most important driver for directors to cooperate with CEO, either explicitly or implicitly.

*compensation apart from productivity and incentive considerations*¹⁸. For this reason we should survey influence of board characteristics on executive compensation.

Strength and independence of boards

The level of executive compensation is positively influenced by the influence of CEO over the board of directors and by its relative strength. We would find various variables that might indicate strength and dependence of directors. Bebchuk and Fried (2003) show that executive compensation is larger when there are more directors on the board (and to oppose the high level of executive pay is harder) when more of the outside directors have been appointed by the CEO (and thus might feel a sense of gratitude or obligation to please the CEO), when the outside directors are older and when outsiders serve on three or more boards (decreasing their ability to concentrate on particular tasks). Also, the CEO pay is 20-40% higher when CEO is chairman of the board. Directors' ownership of company shares influences negatively executive pay as directors feel more responsibility for their own property and will tend to oppose to excessive executive pays.

Hermalin and Weisbach (2001) also confirm that board composition and size influences board decision on executive compensation.

Board compensation

There are several reasons why board compensation may influence executive compensation.

Firstly, the interconnection between board and CEO might cause level of executive compensation being dependent on level of board compensation. The board influences executive pay and CEO influences board pay in perks. We would expect that this reciprocal relation can lead to a paradox situation, when both sides act in accordance to increase their pays.

Secondly, compensation of board members may create a benchmark for directors when setting executive pay. Than an increase in directors' pay would subsequently lead to an increase in executive pay. Furthermore, directors' ability to recognize excessiveness of executive pay decreases with their own pay increase.

Connection of level of board compensation to level of executive compensation may be one of the factors that underline recent growth in executive compensation. Board

¹⁸ Cyert, M. Richard (1997), p.1

is facing increasing responsibility for decision-making and success of the firm, the possibility of shareholders' suits against their actions is getting to be more common. This increased risk of board members must attract higher compensations to them (Malkovich and Newman, 1993). *Ceteris paribus*, the ratio between executive pay and director pay would decline because of the rise in board compensation. In this case, growing directors' compensation would attract further increase in executive compensation.

ii) Shareholders' structure

Presence of a large shareholder

Presence of a large shareholder ensures better execution of governing rights over the board of directors and the CEO. There are two slightly different views. The first shows that executives likely influence their pay when there is no large shareholder. The second approach shows that presence of a large shareholder ensures some reduction of windfall payments to the executives.

Bebchuk and Fried (2003) suggest that presence of a large shareholder is likely to result in closer monitoring and reducing of executive's influence over setting his/her pay. They find evidence that there exists negative relationship between the equity ownership of the largest shareholder and the amount of CEO compensation. Bertrand and Mullainathan (2000) find that better governed firms (defined as those with a large shareholder on the board) use significantly less "pay for luck"¹⁹ than worse governed firms. A large shareholder on the board, with 5% stake or larger, exercises strong governance role. Bertrand and Mullainathan (2000) find that existence of such a shareholder decreases pay for luck by 23-33%.

Presence of institutional investors

A larger concentration of institutional shareholders can have similar consequences as presence of a large shareholder described above – there is more monitoring over CEO and better control over his/her actions when setting executive pay. Bebchuk and Fried (2003) survey literature about this effect and find out that it depends on what kind of relationship the institutional investors have with the firm. Some institutional investors have no other business relationship with the firm and they are

¹⁹ Luck is defined as observable shock to performance beyond the CEO's control. Bertrand and Mullainathan (2000) measure luck e.g. by changes in oil price for the oil industry.

concerned only about the maximization of their profit, they are management pressure resistant. Some institutional investors do have other business relationships with the firm (e.g. managing a pension fund) and thus these investors are vulnerable to management pressure. CEO pay is positively correlated with presence of pressure-sensitive investors and negatively correlated with presence of pressure-resistant investors. The pressure of investor without business connection to the firm is applied on both on the CEO and board. (Bebchuk and Fried, 2002)

CEO share ownership

To list all the consequences that shareholders' structure can have on the executive pay we must mention that the share ownership of the CEO is also a traceable factor of executive compensation. Bebchuk and Fried (2002) find some evidence that executive pay is correlated with the stock ownership of the CEO. Optimal contracting approach predicts that board would not feel necessity to award additional stock options to the CEO as he/she already have substantial incentives in the form of his/her stock ownership. This idea is in line with Holderness (2003) that brings different results to the study of Bebchuk and Fried (2002) and says that a firm's board considers executive's stock ownership when negotiating compensation contracts and that use of incentive-based compensation declines with stock ownership of CEO.

Holderness (2003) also summarizes another study²⁰ that brings results that CEO ownership tends to increase CEO compensation. However, the impact is marginal (23 000 to 34 000 dollars). He concludes that this amount cannot effectively be an incentive for the CEO to invest millions of dollars into the company equity.

To sum it up, we can say, that we have evidence that performance incentive compensation declines with CEO ownership and performance-neutral compensation is likely to increase with CEO ownership resulting in rather small overall effect.

iii) Company size

*"The link between pay and size is not surprising, since larger firms in general require (and must pay for) managers with increased skills and abilities."*²¹ Company size is highly correlated to executive compensation (Joskow and Rose, 1994). There are

²⁰ Holderness, Clifford G., and Dennis P. Sheehan. 1998. "The Role Of Majority Shareholders in Publicly Held Corporations." *Journal of Financial Economics* 20: 317-46,

²¹ Murphy, J. Kevin. 1995. „Executive Compensation an the Modern Industrial Revolution“

several factors that may be the reasons for increase in executive compensation with an increase in company size.

Complexity of a company: Large company is more complex in management and decisions are more risky due to possible large loss caused by bad decision. The question is, whether all the increase in executive compensation caused by company size can be explained by these influences and not by e.g. larger possibilities to camouflage excessive executive pays²². We will try to point out some effects we could filter away from the effect of company size on executive compensation.

Larger companies require managers with better experience, hence if the experience is correlated with company size, we could filter²³ it out from the effect of company size. It can be done by considering variables such as tenure or age of CEO. These variables should attract major part of the effect of experience on executive compensation and separate it from the effect of company size.

Manager of large company bears higher risk originating from his-her decisions²⁴. We can neglect the part of the increase in risk that is covered by company officers' liability insurance²⁵. The insurance does not cover all damage his-her decision could cause. However, certain part of the risk is decreased by the liability insurance and this partial effect is instantly deduced from the overall effect of company size. In other words, increase in executive compensation due to company size is in a way explainable by increase of risk connected to larger company, but only by that part of the risk that is not hedged by the insurance of officers' liability.

If CEOs of large companies should be more skilled to ensure better performance, we filter the impact of additional performance that CEOs could bring to a larger company by performance indicators.

²² Larger possibility to camouflage means two things. CEO, when interconnected with board members by various links (as discussed in previous chapters), has possibility to influence his/her pay. In large firms the executive compensation cost is better camouflaged by company size. Also, the increase in executive pay with company size can be explained to shareholders by the company size itself, arguing that larger company size (complexity of management) is an objective reason.

²³ We are trying to filter the optimal factors from the executive compensation

²⁴ Wrong decision can lead to higher loss. There is a possibility of suits against the manager for higher amounts of money.

²⁵ Officers liability insurance has become a core component of corporate insurance. Majority of companies maintain this insurance (Gische and Fishman)

After filtering these effects the residual effect we obtain can still be divided into two parts – the one that is rational for setting executive pay (e.g. further complication for a manager of a large firms, e.g. increased reputation risk) and the other that is caused by increased possibility to camouflage excessive executive compensation in large firms.

In our opinion, it not possible to split these parts of the effect of company size - the good effect and the bad effect of company size on executive compensation. For this reason, in the empirical part, we evaluate the effect of company size in both ways – as being desirable and also as being undesirable.

Some other reasons why company size may effect executive compensation, are presented e.g. by Wayne and Larcker (2003). They defend company size as a rational determinant of increased executive compensation through stock options²⁶. They hypothesize that required levels of managerial equity ownership are related to firm size and monitoring difficulty connected to it. They show that there is an optimal firm size related to optimal level of managerial ownership. In this setting, we find motivation for why firms make new grants of stock-based compensation when the firm gets bigger – the managers' equity level of incentives become misaligned with the level of incentives desired by shareholders. The misalignment is caused by change of company characteristics – in our case by change of company size.

The subsequent award of options or restricted stock, that is a consequence of change in company size, has two impacts on i) compensation flow - compensation in value of options and stock grants (in current fiscal year) and on ii) equity based compensation – the change in the portfolio value will be larger due to larger stock and option holdings resulting from the grant (in following fiscal years).

iv) Anti-takeover provisions

Threat of a takeover is a determinant of CEO behavior. In a normal case, CEO faces possibility that when company performs poorly, a hostile takeover will take place. As a consequence, his employment will be declined followed by decrease in his/her reputation. Anti-takeover provisions that are associated with compensation contracts

²⁶ They summarize a work of Demsetz, H., and K. Lehn. 1985. „The Structure of Corporate Ownership: causes and consequences.“ *Journal of Political Economy* 93, no. 6: 1155-77

lower CEO's incentive to perform sufficiently well to prevent a takeover. It also decreases risk of reputation harm associated with CEO position.

When the threat of a takeover on CEO is somehow reduced by anti-takeover provisions and subsequently his/her performance can decrease. Decline in risk of executive officers is not followed by decline in executive compensation which mean the executive payment remain relatively higher to a unit of risk in comparison to the previous state. Under optimal contracting, decline in takeover threat should be followed either by forcing CEO to buy stocks (as stock holding bears performance incentives) to increase his/her company-specific risk involvement or to decrease his/her pay.

Bebchuk and Fried (2003) go even further in showing possible problems of anti-takeover provisions. They find evidence that firms that adopted anti-takeover provisions and that had already been paying above-market executive compensation before the adoption of such provisions tend to increase the excess executive compensation significantly.

v) Anti-takeover legislation

On the other hand Bertrand and Mullainathan (1998) find evidence on two consequences of the anti-takeover legislation. One that can be clearly explained by contract theory and the other not – the other shows that CEO might be able to influence his/her pay. Bertrand and Mullainathan (1998) show that anti-takeover acts increased the sensitivity of CEO pay to performance and raised mean CEO pay. Both of these impacts have been described above and under optimal contracting they should go only in described directions - increase stock holding of CEO and/or decrease his/her pay - and thus the result that these variables (pay and performance sensitivity) behave differently is rather inconsistent with optimal contracting approach. But Bertrand and Mullainathan (1998) conclude in coherence with our line of argumentation that even though CEO faces tougher pay incentives, they may well have left them better off on the whole.

vi) Presence of compensation consultants

Bebchuk, Fried and Walker (2002) say that board lacks information to set executive pay effectively. It usually hires a consultant agency to supply needed information, but there is too much space for discretion when choosing appropriate peer group (appropriate sector, industry, etc.). At the same time, there is a significant influence of the CEO (see subchapter viii)

Most firms use a compensation committee composed of members of the board of directors to prepare contract with executive and the executive compensation. Typically, the compensation committee relies on research and recommendations from the human resource department that usually cooperates with external compensation consultants (Bizjak, Lemmon and Naveen, 2000). The aim of these consultants is to supply expert opinion and design compensation packages. They survey industry data that are usually not publicly shared to improve the design of compensation packages.

Compensation consultants are meant to be independent in their opinions to enable maximizing shareholders' value. There are several problems that indicate breaching of the independency of compensation consultants and leading again to "worse" outcomes when negotiating executive pay.

Bebchuk, Fried and Walker (2002) see strong incentive for the compensation consultants to please the CEO in the possibility of further cooperation with the company or in the wish to continue any other current assignments that are usually much larger than the CEO compensation assignment. To please the CEO is not much complicated, e.g. choosing the "right" peer group of comparative companies for benchmarking of the executive pay is one of the easiest ways²⁷.

Bizjak, Lemmon and Naveen (2000) find out that competitive benchmarking substantially influences the growth of the overall level of executive compensation. *"The vast majority of the firms that use peer groups set pay levels at or above the 50th percentile of the peer group. A number of firms, however, seek to keep pay well above the median of the peer. ... CEOs that are paid below the median level of their peers in firms of similar size and industry receive significantly larger pay*

²⁷ Malkovich and Newman (1993) shows three possible strategies how executive compensation packages can be designed to please the CEO under any circumstances:

- *If the CEO is truly underpaid:* Compensation consultant reports to the board that the CEO is truly underpaid. Salary is increased to a competitive or higher level.
- *If the CEO is not underpaid and the company is doing well:* Compensation consultant chooses for the comparative group companies that are on the top end in terms of executive compensation. CEO appears to be underpaid and the salary is increased.
- *If the CEO is not underpaid and the company is doing poorly:* CEO laments to the compensation consultant that the salaries are so low (the CEO's including) which could cause departure of good people from the top management. Consultant recommends salary increase to avoid future turnover.

*increases...*²⁸ Concluding from the above, competitive benchmarking weakens the link between pay and performance and contributes to a continuous upward shift of executive pay levels.

Further, directors usually lack incentive to negotiate executive compensation. Even if they are incited well, there is a problem of information asymmetry between the CEO and the board.

vii) Golden goodbyes - power to resist

A “golden goodbye” is a pay that the CEO receives after leaving the position. These arrangements provide insurance against being fired for bad performance (Bebchuk and Fried, 2003). The significant point of this reward is that board is not required by the contract with the CEO to do so. Golden parachutes are paid even to badly performing CEOs and are not generally based on previous performance. Taking into consideration that these pays are significant in comparison with the other compensation²⁹ we find that it is not consistent with optimal contracting and even more, we find it is one of the key factors that may let CEO deviate from best reachable performance or/and incite CEO to behave perversely.

In a way, we can say that poorly performing CEO will more probably be released and thus will more probably receive generous golden parachutes. Going even further, a rent seeking CEO who will be released when these activities are revealed will get further compensation for being under-performing. In the worst possible case, CEO gets compensation for being a rent seeker.

We find two reasons for such generous pays that are paid without being based on quality or performance of his/her work. Firstly, these arrangements are made to break CEO's resistance and his/her power over the company management. When the company is to be merged or acquired by another one, this looks like a good tool how to impede CEO resistance that could be at the end more costly for the shareholders.

Secondly, Bebchuk and Fried (2003) suggest that golden goodbyes are awarded because of CEO's relationship and influence over the board. This hints on some non-

²⁸ Bizjak, Lemmon and Naveen (2000), p. 3

²⁹ Literature usually describes only single cases of excessive/pervasive golden goodbyes (e.g. Bebchuk, Fried and Walker, 2002) and we do not show any general statistical evidence on this statement however we assume it as a fact. Accessible executive compensation statistics do not provide data on this.

neutral relationship between these two (e.g. friendship). We assume that these relationships are badly statistically measurable and derivation of such behaviour will not be easy.

viii) Existence of factors that influence managers' compensation without being under their control

Let us define executive compensation in a simple linear function $C = a + b.x$, where C is total compensation, a is the static part of compensation, b is performance sensitivity and x is a measure of performance. Factors beyond manager's control refer to factors that are either not given by the individual company performance (incorporated in variable b) or they are a part of company performance that is not caused by CEO's work. To incorporate the company performance caused by external-to-manager factors, we rewrite the equation (2.1) to:

$$y = a + b.\alpha.x + b(1-\alpha)x \quad (2.1)$$

Where $\alpha \in (0,1)$ allows us distinguish the part of the performance that is not caused by CEO's work α and the rest that is caused by CEO's work $(1 - \alpha)^{30}$. Now, part $b.\alpha.x$ expresses windfall pay that should be deducted from executive compensation to reflect accurately executive contribution to company performance. We firstly show what the pros for deducing the external factors effect are and then we hypothesize why the externally-caused increase of performance is not necessarily a bad factor.

Bebchuk and Fried in their works (see e.g. Bebchuk and Fried, 2003, Bebchuk, Fried and Walker, 2002) describe windfall as the portion of company performance that is contributed by general market rises and manager is being rewarded for it through performance-based compensation scheme³¹. But there are other views that do not confirm the windfall gains should be filtered out.

³⁰ Here, by term "part that is caused by CEO's work" we understand only all performance that is not caused by firm-external market factors, we of course neglect any further personal contribution of other management team members, location of the enterprise or any other internal advantages. We do not underestimate e.g. personal contribution of other employees but this is clearly beyond any measurability and beyond board ability to control it.

³¹ Bebchuk, Fried and Walker (2002) notes, one study of U.S. stock prices over recent ten years (See Simon Patterson and Peter Smith, *How to Make Top People's Pay Reflect Performance*, *Sunday Times*, Bus at 12 (Aug 9, 1998)) showed that only 30% of share price movement reflects corporate

Firstly, e.g. market indexing of performance-based compensation could lead to a paradoxical situation when low variability of market companies' performances would diminish the performance-based part³². It would be easier to reward executives even for lower-than-market average return and to offset subsequent increase in total compensation (caused by general market growth) by decrease in the fixed part of compensation. That means, total compensation for a executive of market underperforming company should be lower, however this does not have to be done through decrease in the variable part of the compensation. Instead, it would be better to decrease the fixed part of compensation. Then, adjusting the compensation to market performance would not cause decline in performance sensitivity of managers pay.

Secondly³³, according to Hall and Murphy (2003), even though indexing reduces the company's cost of granting an option, it reduces the executive's motivation even more because risk-averse executives attach very low values to options likely to expire worthless³⁴.

Thirdly, Core, Wayne and Larcker (2003) confirm that the lack of explicit relative performance evaluation in a bonus payment is substituted by the implicit relative performance evaluation, which is caused by a CEO's current wealth that is possibly constituted of some market portfolio of shares. In other words, CEO that would otherwise hold portfolio with usual market return may be required to hold certain part in the company's shares, which exposes him to company specific risk.

Fourthly, executive compensation is made on annual fiscal-year-end basis and thus adjusting it according to share performance would cause bias due to possible seasonal and longer cycles of stock exchange indexes.

performance and that the remaining 70% is driven by market conditions such as changes in the economy, industry, interest rates declines etc.

³² According to Bizjak, Lemmon and Naveen (2000), available sources differ on how the compensations are related to relative company performance and how the windfalls are filtered out by the executive contract.

³³ There is another practical matter that motivates firms to issue regular options rather than indexed options – index options must be expensed in accounting statements. Unindexed options do not have to be expensed at the moment, but new accounting rules should change this.

³⁴ „Option incentives become weaker as options fall underwater, leading to pressures to reprice options or restore incentives through additional grant of equity-based pay.” Hall and Knox 2002

Concluding on the windfall rewards issue, we agree with the view of Bertrand and Mullainathan (2000), which defines windfall compensation in a rather narrower way than market-wide and presumable firm-external average performance of shares. The source of windfall performance (negative or positive) is, according to them, based on changes of other external conditions like changes in oil prices.

Windfall rewards through “in-the-money” options

According to Bebchuk, Fried and Walker (2002) there are several shortcomings with stock options we can find when rewarding CEO for performance. First, stock options that are paid as compensation to executives are usually at or in-the-money (Bebchuk and Fried, 2003). They identify a problem that CEO is instantly rewarded without showing any performance at the moment the option is awarded.

On the other hand, Hall and Murphy (2003) show that increasing the exercise price above the market price on the grant date saves the company some money, but it also reduces the marginal value of a change in the stock price to the executive since these options are more likely to expire underwater. Moreover, significant increase in the stock price may bring little value to the executive resulting in weaker incentives per dollar spent on compensation by the firm. Hence, as demonstrated in the earlier works of Hall and Murphy, the company should grant options in or at-the-money to ensure maximum performance incentive – immediate marginal change of wealth rises and falls in the stock price.

So, it would be ideal to award to CEOs only in-the-money options. The amount that is instantly gained by executive when he/she is awarded stock options (the difference between exercise price and market price on the grant day) should be dependent on performance indicators (so that the award is not a “windfall”) or reciprocal value should be deduced from salary, performance-neutral part of executive compensation. This would solve the windfall gains through in-the-money options issue.

3) REGULATION AND ITS IMPACT ON EXECUTIVE COMPENSATION

Recently, there have been two acts that have significant impact on executive compensation. First, we will discuss the section 162(m) of Internal Revenue Code from 1993, that capped the corporate tax deductibility of top management compensation at \$ 1 million per executive unless it qualified as substantially “performance based.”

Second, we will discuss the impact of Sarbanes-Oxley Act³⁵ from 2002, that requires confirmation of company regular reports by CEO and CFO and brings some other changes into executive compensation and accounting reporting principals. This “information-improving” Act is important as the financial accounting information is involved “...to discipline managers to direct resources toward projects identified as good and away from projects that primarily benefit managers rather than owners of capital, and to prevent stealing...”³⁶.

Finally, we discuss latest updates of regulation policy and rules adopted in 2003.

3.1 Section 162(m) of Internal Revenue Code 1993

Introduced by Clinton’s administrative, section 162(m) of Internal Revenue Code was presented as the provision that should decrease executive compensation as general public opinion was persuaded that it had reached an “excessive” level. It was the first thorough attempt to regulate specific components of executive compensation arrangements.

Section 162(m) poses a cap on corporate tax deductibility of top management compensation at 1 million of US dollars per executive unless it qualifies as substantially “performance-based.” There are two important exemptions to the tax deductibility cap of 1 million dollars: it is applied only to top five executives and the

³⁵ The accounting and disclosure rules in the US are maintained and regulated by SEC under the oversight of the Congress. SEC also cooperates with Financial Accounting Standards Board and the Emerging Issues Task Force, which in turn solicit input from business leaders, academic researchers, and regulators around the world (Bushman and Smith, 2003).

³⁶ Bushman and Smith (2003), p. 66

compensation that is performance-based is not limited by this Act and remains to be tax deductible.

The first provision limits efficiency of the cap, as the compensation can be deferred until the retirement of an executive and then the deferred compensation would be fully tax deductible. This poses certain cash restrictions to the executives, but these could be overcome simply by granting an executive loan³⁷ that would be repaid by the deferred compensation. If CEOs are supported by directors to evade section 162(m) – CEOs get the loan and the compensation that would otherwise exceed one million is deferred – the provision ensured by section 162(m) would be completely useless.

The second requirement, that the compensation is substantially performance-based – i.e. it is evaluated by objectively set performance measures, effectively excludes share option grants from the limit.

Rose and Wolfram (2000) hypothesize that the performance-base exemption could have a serious effect on executive compensation. Reduced board discretion about executive compensation makes boards increase the range of payouts generated by the performance incentive plans. In case the compensation is higher at the end of the period that the board would want it to be, the final performance-based payout can be reduced ex-post, bringing the discretion back to the board.

However, the ex-post reduction of performance pay would possibly never happen. In the simplest model, this would mean that the overall executive compensation would rise followed by increase in the performance sensitivity. This would lead to a different result than the measure was supposed to – the compensation might increase.

Rose and Wolfram (2000) conclude their empirical survey of the effects of section 162(m), that it is nearly impossible to evaluate the net effect as the compensation schemes are developing through the time (preventing cross-time analysis) and as the beginning of the nineties was full of other regulatory provisions, not directly connected to executive compensation (preventing to refine the net effect of 162(m)). However, Rose and Wolfram show that firms with salaries near to the 1 million cap would restrain their salary increases.

In our opinion, evaluating section 162(m) from another perspective, it had the opposite impact on compensation than the desired one – compensation increased.

³⁷ The possibility of loans of executive officers was prohibited under the Sarbanes-Oxley Act.

This tax provision favored another element of executive compensation - the option grants, that are exempt from this tax cap³⁸. They become very popular during late nineties and might have also been one of the principal causes of the great accounting scandals. Nowadays, there is regulatory pressure to decrease the impact of stock options on executive compensation, however, the value of option grants is still noteworthy (e.g. Vranceanu R., 2003).

3.2 Sarbanes-Oxley Act of 2002

The Sarbanes-Oxley is consistently called the broadest-sweeping legislation to affect corporations and public accounting since 1933 and 1934 securities acts. It also brings important implications for executive compensation.

Background

In recent years, technical progress and information technologies change the way the financial markets work; the information is distributed instantly and throughout the world. This situation leads to almost perfect competition but, as a byproduct, there is a large risk of expectation bubbles. This risk is fostered by information disclosure of privileged traders (managers) and their possible inaccurate or “manipulated” information. This immensely influences the corporate governance and also managers’ behavior itself. “ .., *managers found out that the way they communicate on firm performances has also a large influence on share prices. Since they dispose of privileged information about their firm’s true situation, they may be tempted to use this information in their own self-interest. Huge financial deregulation and development of the financial market opened the door for new forms of opportunistic behavior, such as put forward during the last crisis*³⁹”

One of the explanations of the last expectation bubble that resulted in the accounting scandals of Enron, WorldCom or Global Crossing can be explained by the executive compensation trends and more precisely by the stock options programs.

After 1993 when the section 162(m) went into effect including \$ 1 million limit for executive compensation tax deduction, the stock options’ popularity started to rise as

³⁸ They also do not have to be expensed

³⁹ Vranceanu R. (2003), p.8

they were not subject to this restriction⁴⁰. Stock options are naturally performance sensitive and they do not have to be deducted from accounting earnings until they are vested. Hence, they are advantageous for a couple of reasons, because of lower corporate tax, they do not directly require cash and, finally, they do not burden company accounting earnings.

These two factors, the influence of privileged traders' (managers') information that was given to public and extensive use of stock options for executive compensation, were good start for "creative accounting" and "earnings manipulation." The scenario used to be very simple. Managers of some large dotcom-companies⁴¹ were awarded options as a part of executive compensation. Manager then reports "adjusted" accounting numbers and "forgets" to report bad news, which inflates price of shares. This is done until he/she expects immediate drop in share prices and exercises the options with huge profit. Soon the company usually goes bankrupt and the shareholders pay the bill (E.g. the Enron CEO cashed 120 million dollars options a few weeks before the company went bankrupt, Vranceanu R., 2003).

The Act

Reacting to a series of scandals, the US government prepared a new Act that was meant to change the corporate behavior with introducing a large portfolio of new restrictions and regulations, especially concerned with accounting results' reporting principals. There are several implications for CEOs and executive compensation originating from this Act:

- i) CEO (and CFO) is obliged to certify periodic reports filed with the SEC (Security and Exchange Commission). The officers will face penalties for false certification - \$ 1 million and up to 10 years of imprisonment for violation that was „knowing“ and \$ 5 million and up to 20 years of imprisonment if the violation was „willful.“
- ii) Personal loans to CEO are prohibited

⁴⁰ Furthermore, when future corporate tax rates are expected to be higher, the future tax deduction from deferred compensation can be favorable relative to the immediate tax deduction received from cash compensation (Core, Wayne and Larcker, 2003).

⁴¹ We have described why these expectation bubbles are more possible to occur in the "new-economy" – the fast diffusion of information. The effect is further amplified by the fact that the use of stock options and restricted stock in high-technology, „new-economy“ firms substantially exceeds the equity compensation in large, „old-economy“ manufacturing firms (Core, Wayne and Larcker, 2003).

- iii) The reporting of trades executed by insiders is dramatically accelerated
- iv) Prohibition on insider trades during pension fund blackout periods⁴²
- v) Disentanglement of CEO compensation and profits if the company is required to restate its financial statements due to material noncompliance with financial reporting requirements

Furthermore, there was a set of new rules that should ensure more transparent reporting.

The Sarbanes-Oxley Act is important because objective, verifiable accounting information facilitates shareholder monitoring and the effective exercise of shareholder rights and facilitates directors to enhance shareholder value (Bushman and Smith, 2003). However, the direct impact on executive compensation is, in our opinion, limited.

The Act influences the value of executive compensations by stocks and stock options holdings appreciation, but it directly does not influence the awards itself. Even though the Act does not influence the awards, the wave of disappointment with corporate leaders did have influence on the awards. There is a pressure exercised on compensation committees that are much less willing to give bonuses than ever before. *“Before the scandals, the compensation committee would generally sign off on what management asked for unless there was a good reason to say no. Now, the compensation committee says no, unless there is a good reason to say yes.”*⁴³

Assessing the part of Sarbanes-Oxley Act that requires commitment of CEO and CFO for accuracy and completeness of financial reporting, several conclusions can be suggested. We see a major contribution in prevention of creation of expectation bubbles and prevention of spectacular compensations in appreciation of stocks and options connected to it. This should ensure that similar crisis like the most recent one with accounting scandals does not appear again.

⁴² According to the Sarbanes-Oxley Act from 23.1.2002 p. 36 a blackout period „means any period of more than 3 consecutive business days during which the ability of not fewer than 50 percent of the participants or beneficiaries under all individual account plans maintained by the issuer to purchase, sell or otherwise acquire or transfer an interest in any equity of such issuer held in such an individual account plan is temporarily suspended by the issuer or by a fiduciary of the plan.“

⁴³ Jeffrey Kanter in *Corporate Legal Times*, March 2004, Volume 14, Number 148

However, we do not see any direct impact on executive compensation originating from stricter financial reporting. The dot-com bubble is no more a problem and we would expect that CEOs that are hired for longer periods would avoid “creative accounting” reporting, as in the longer term the fundamental values is sooner or later revealed.

3.3 Trends in Regulation 2003⁴⁴

Following on the dramatic changes in regulation during 2002, 2003 brought further important developments in the regulation of executive compensation. We would like to do a brief summary of the events.

Approval requirements for equity compensation

Since June 2003 NYSE requires all equity compensation plans and any material revisions to such arrangements must be subject to shareholder approval. This rule is applicable for employees as well as for management compensation. This is a clear sign that the discretion is shifted from the board of directors to the shareholders' meeting. The aim is to protect long-standing shareholder from possible dilution caused by non-approved plans and the repricing of outstanding stock options.

This shift from the discretion of board of directors can be also caused by decreasing credibility of board of directors and the willingness of shareholders' to convey their ownership rights to the board.

The impact of such a provision can be, in our opinion, large. In the empirical part later on, we show that the value of option grants is significantly influenced by some board features, caused by the interconnections that necessarily exist among directors and managers. If the decision about these equity compensation plans is transferred to the shareholders, some of these impacts of board qualities would be disconnected, with possible subsequent decrease in executive compensation. We would certainly expect that the board would still be the subject that supplies information to the shareholders and thus may keep influence on the equity compensation plans approvals.

However, if this transfer of responsibilities should be applied to further decisions of the board, the current structure of corporate governance would have to be rebuilt as the board of directors would lose its importance.

⁴⁴ The overview is mainly based on Frederic W. Cook and Co., Inc. monthly reporting alerts and the Executive compensation Year in Review (2003), in the text referenced as the Review.

The NASDAQ rules are not as comprehensive but follow the same line of reasoning. The logic is, that company should not choose its listing according to disparities in governance standards. The convergence should be ensured by SEC.

Expensing of fair value of stock options grants

As we have shown in the Chapter 3.2 the fact that the value of option grants does not have to be reflected in company income statements (except for the footnotes) is an important driver for option grants – they do not reduce company accounting earnings. Hall and Murphy (2003) show that the principal driver for companies to grant stock options is that the perceived cost is lower than the economic cost. As options are not expensed, the real value (the real cost) is known as soon as the option is exercised, and until then no cost for the company is perceived. But this initial low perceived cost is lower only due to regulatory rule that allows options not to be expensed – hence the wide usage of stock options is partly caused by regulation instead of economic calculation. This creates a bias in favor of stock options and against other types of stock-based compensation plans.

This should change. The Financial Accounting Standards Board (FASB) is preparing new regulation that should implement requirement of expensing value of option grants base on their “fair value”. The standard would be effective for fiscal years beginning after December 2004, earlier adoption would be encouraged. The outstanding issue is the methodology for valuing stock options. It is expected that a modified version of the Binomial option-pricing model will be adopted.

We expect substantial impact of this provision. It would reduce financial benefits of stock options due to the requirement to expense their “fair value.” Firstly, the impact would be caused by the fact that they were not expensed at all before the standard is in effect and the sudden change should have important influence.

Secondly, we expect the provision to have a large impact, as the personal value of stock options for a manager is lower than the value estimated by Black-Scholes formula due to outside wealth and its impact on risk exposure⁴⁵ (Hall and Murphy, 2003, see also Chapter 5.2). It means, the option that will have to be expensed will have a lower value for CEO than for the company. In other words, once the option

⁴⁵ CEO is risk averse and not completely diversified. When he gets additional options, he is exposed to additional company specific risk that he would not face if he could diversify his portfolio optimally, which means the value that is brought to him is lower for him than for a diversified investor.

must be expensed, it would be “cheaper” for the company to pay out the performance sensitive compensation through e.g. cash pay for performance rather than through stock options. The cash payments are of same value for the company and for the manager.

We expect that the expensing provision would have an impact on stock option grants. Its usage will most likely decline and it will also lose some of its importance as part of executive compensation.

There is one more thing that is worth noting about stock options as executive compensation. Companies paying options instead of cash are effectively borrowing from executives/employees, receiving employment services today in return for highly variable payouts in future. *“But risk-averse undiversified employees are unlikely to be efficient sources of capital, especially compared to banks, private equity funds, venture capitalists and other investors who specialize in managing risk and providing capital.”*⁴⁶

Recommendations

In the following text, we describe some recommendations that are given by relevant authorities. Recently, a lot of institutional research has been done in the field of executive compensation. We assume that some of the recommendation will be incorporated into the SEC rules and regulation, so that a company which follows these guidelines will have fewer problems with implementing them when they go into effect.

SEC recommendations

In August 2003, the SEC recommended to companies several provisions regarding executive compensation. We quote the main important ones.

According to SEC, the company should increase the proportion of cash compensation (the same goal is also followed by the provisions described above). The company should prohibit use of large retention payments that are not connected to performance. The employee contracts should be less than 3-year contracts. Directors' compensation should be paid exclusively in cash and directors should be required to make purchase of company stock in value of 25 percent of their annual compensation.

⁴⁶ Hall and Murphy (2003) p. 13

In other words, the SEC is aiming at decreasing equity compensation grants followed by compensation with tighter connection to performance.

National Association of Corporate Directors (NACD) recommendations

The executive pay decisions should not be driven by competitive precedent⁴⁷, which caused that the compensation rose sky-high. Company should develop a long term compensation policy guidelines and philosophy so that the executive compensation is not disturbed by some short-term opportunistic managerial behavior. The compensation consultant should be required to be independent from CEO, without any task being assigned from management to the consultant – compensation consultants are assumed to be one of the elements that create the unhealthy so-called “competitive” pressure when setting executive pay.

⁴⁷ Competitive precedents is situation where the executive compensations are set according to executive compensation of other companies. This scheme is only seemingly competitive, because the payments are usually set above the median of the peer group which leads in continuous increase of executive compensation.

4) OVERVIEW OF EXISTING MODELS ON EXECUTIVE COMPENSATION

There are a lot of different approaches to model executive compensation and behavior of agent and principal in setting executive pay. The approaches can be generally sorted into two approaches of modeling. The first is the approach based on mathematical optimization of utilities of agent and principal. The second approach is based on creating of single equation of executive compensation.

Approach with optimization

The first approach of modeling executive compensation would include models used by Garen (1994), Mayersson and Svensson (2003) or by Baker and Hall (1998). These are models with mathematical background. Basically, they first identify utility function of the principal and of the agent and then under certain condition optimize the outcome. They test the model outcome on empirical results.

For example, goal of the basic principal-agent model introduced by Garen (1994) is to derive predictions regarding how the parameters of the CEO compensation schedule change with various exogenous influences. In this model, CEO maximizes utility function based on effort, income and risk aversion and the shareholder maximizes expected net return. The principal finding of this model is that variables associated with greater variability of firm and CEO income reduce the pay-performance sensitivity and increase salary. It means that as the output of company becomes riskier, the insurance component of pay (salary) is increased and the incentive component is reduced.

Empirical approach

The second approach firstly identifies determinants of executive compensation and forms hypotheses about it. Based on the hypotheses they form a single equation for executive compensation as dependent variable. Then they estimate the equations coefficients on empirical data and conclude about suggested hypotheses. This approach includes models by Joskow and Nancy (1994) or by Rose and Wolfram (2000). We use similar approach in modeling executive compensation.

Overview of the model of Joskow and Nancy (1994) is briefly presented in the following chapter.

4.1 Model with Memory, Asymmetries and Alternative Performance Measures

This model was introduced by Joskow and Nancy (1994) and its basic goal is to show that executive compensation responds to past performance outcomes, that both accounting⁴⁸ and market⁴⁹ performance measures influence compensation and, thirdly, that the salary and bonus component of pay as well as total compensation have become more sensitive to firm financial performance over the past two decades. They also, in contradiction with our approach, show that boards do not generally fail to penalize CEOs for poor financial performance and that board may discount extreme performance outcomes both high and low – relative to performance that lies within some “normal” band in setting compensation.

Joskow and Rose start with a simple dynamic model of the relation between compensation and firm performance over time:

$$\ln Compensation_{it} = \ln C_{0it} + \sum_{s=0}^t \beta_s Return_{i,t-s} + \varepsilon_{it} , \quad (4.1)$$

where C_{0it} is the base (non-performance related) compensation for CEO i in year t , $RETURN$ is the market return in each year of CEO i 's tenure (0-t). A change in x percentage points in $RETURN$ in any year of CEO tenure influence compensation in current year and the impact is given by subsequent β s. The first difference form of this model is:

$$\begin{aligned} \ln C_{it} - \ln C_{i,t-1} &= (\ln C_{0it} - \ln C_{0i,t-1}) + \beta_0 (Return_{it} - Return_{i,t-1}) \\ &+ \beta_1 (Return_{i,t-1} - Return_{i,t-2}) + \dots + \beta_{t-1} (Return_{i1} - Return_{i0}) \\ &+ \beta_t Return_{i0} + (\varepsilon_{it} - \varepsilon_{i,t-1}) \end{aligned} \quad (4.2)$$

Then, we can discuss three cases described by equation (4.2). First case is without history, in second case compensation depends on previous return and in the third case compensation schedule contains temporary memory – forgetting observation far in the past. The approaches differ in the assumptions about β s.

⁴⁸ By accounting performance we mean profit performance that is indicated in financial statements.

⁴⁹ Share performance

First, the model does not bear any historical memory and this means all β are equal. In the first difference form, the returns in subsequent years of his/her tenure $(1-s)$ are reciprocally deduced and we find out that the compensation is dependent only on current performance Return_{it} .

Secondly, all β , except for β_0 , are zero and thus the model is based on the difference of current and previous performance. This implicates that difference in executive compensation is caused by difference in return.

Thirdly, β is decreasing for more distant returns and thus implementing a myopic aspect to the executive compensation.

Joskow and Rose decide to test all three possibilities on empirical data to find out which one is the most realistic scenario.

Basic empirical results

Joskow and Rose regress logarithm of CEO compensation on logarithm of sales, performance (as a vector of various variables), CEO tenure, age, on dummies regarding outside-CEOs and founder-CEOs and on industry the firm is performing in.

They find out that firm's market return triggers a permanent increase in current and future compensation, which is consistent with possibility two. They show that the impact of previous market performance on current compensation drops sharply after one year.

They demonstrate, that executive pay is sensitive to both accounting and market measures of firm performance and that the sensitivity considerably increased during 1980s. This result is explained by increased use of stock options in compensation packages.

5) MODEL

In this chapter, we synthesize the ideas and findings from Chapter 2. Upon this knowledge we express hypotheses about salary, bonus, stock option grants and total direct compensation and we suggest equations that determine these elements. In Chapter 6 we survey validity of our findings on empirical data.

Generally, our approach relates executive compensation and its elements to performance-neutral factors and to performance-related factors.

Salaries are generally not perfectly (and usually almost not at all) connected to employee performance. The individual is rewarded according to firm performance or a working team performance. Boss that observes employees at work usually plays the key role in rewarding employee for performance. The same process can be hardly applied for observing performance of a CEO. Shareholders and board directors cannot observe CEO's work in sufficient detail. It would be very costly and, they are not even supposed to do it. Corporate structure should ensure shareholders' interests are fulfilled, observation of CEO's work is sufficient and executive compensation is not excessive.

Other mechanism than regular employee compensation policies and processes must determine executive compensation. The goal of an optimal executive compensation plan is to incite CEO to maximize shareholders' value at the lowest costs.

In our model we want to show that it is not only shareholders' cost-minimizing factors which enter into the arrangement of executive compensation. In reality, there are other factors that cause that executives are somewhat more expensive for the shareholder than they need to be.

Overall executive compensation

Executive Compensation (EC) can be described by equation:

$$EC = a + b(\text{performance}), \quad (5.1)$$

where a stands for the performance-insensitive part of compensation and function $b(\text{performance})$ connects the executive compensation to firm performance.

Existence of such a compensation scheme with static part and performance sensitive part is supported by literature (see e.g. Garen, 1994). The performance sensitive part

$b(\text{performance})$ is usually described by linear function. This is also consistent with empirical results of previous studies. There are some assumptions about these two parts of executive compensation that need to be elaborated upon.

The performance-neutral part of executive compensation (variable a)

Into this part of compensation, we suggest to include all factors that are not influenced by company performance and are influenced by other company characteristics. Variable a_0 is the part determined by CEO labor market characteristics and a_1 is determined by personal qualities of CEO (such as experience). The other a 's reflect company characteristics. All these other factors could influence ability of CEO to obtain excessive compensation and could create corporate environment that enhances excessive compensation. How far it is done is proved in the empirical part of this work. The variable a is then defined as:

$$a = \alpha_0 \cdot a_0 + \alpha_1 \cdot a_1 + \alpha_2 \cdot a_2 + \dots + \alpha_n \cdot a_n \quad , \quad (5.2)$$

where a_k is value of k -th characteristic and α_k is the coefficient that identifies whether it increases or reduces the executive compensation ($\alpha > , < 0$). In our particular case, we propose three basic characteristics that may influence compensation, as they were introduced in Chapter 2. These characteristics mainly concern board characteristics, ownership structure, and company size.

$$a = \alpha_0 \cdot (\text{labor market}) + \alpha_1 \cdot (\text{CEO characteristics}) + \alpha_2 \cdot (\text{board characteristics}) + \alpha_3 \cdot (\text{ownership structure}) + \alpha_4 \cdot (\text{company size}) \quad (5.3)$$

Labor market sets the minimum value of executive compensation (expression $\alpha_0 \cdot (\text{labor market})$) and is constant across the firms. We simplify the labor market influence and assume that there is a constant that gives a starting point for further compensation calculation.

There are CEO characteristics that influence compensation, such as experience (given e.g. by his/her age), tenure, etc. Board strength decreases executive compensation because directors are able to oppose CEO large compensation scheme. Board member average compensation influences executive compensation because it creates a benchmark for directors to set executive pay and, also, CEO influences perks that are provided to board members. This could induce cooperation in setting their pays. Larger ownership by a large owner or by an institutional owner causes closer monitoring of CEO and subsequent his/her lower compensation.

Company size can be judged from two points of view. First, as a measure of complexity of management and risk connected to it - this can be perceived as an objective measure of manager's workload and should influence the level of executive compensation.

On the other hand, company size serves CEO to camouflage activity that ensures him/her excessive compensation. In this view, level of CEO compensation is relatively smaller to company as the company size grows, hence it is less notable. It is also probable that large firms will offer CEO larger perks, which are, rather than to company performance, related to absolute accounting values (let us say to absolute value of profit).

We are not able to separate these two impacts, the desirable (complexity) and the adverse (camouflage). We take into consideration both of these approaches later on in the empirical part, not to lose generality of our conclusions.

Sensitivity to performance

We suggest that the firm value is basically given by current accounting performance⁵⁰ and by current market performance. Market performance is bearer of substantial information about the firm performance, because it is given by supply and demand of great number of agents that possess sufficient information⁵¹. Market performance of company shares definitely reflects some part of accounting performance, however we take accounting performance into consideration separately so that the part of accounting performance that is not reflected in market performance is covered by our analysis. These jointly reflect the firm value.

The part $b(\text{performance})$ of equation (5.1) reflects performance sensitivity of executive compensation. We assume this function is linear and that the performance variables are both accounting and market return indicators. The compensation has some kind of backward-looking characteristics, i.e. the compensation also depends on past performance. We can write:

$$b(\text{performance}) = \beta_1 \cdot b_1 + \beta_2 \cdot b_2 + \dots + \beta_n \cdot b_n, \quad (5.4)$$

where b 's stand for performance measures and β 's for the level of their effect. We suggest the performance sensitivity function is defined by following variables:

⁵⁰ E.g. profit, operating profit etc.

⁵¹ It is generally assumed that US capital markets are behaving like efficient markets.

$$b(\text{performance}) = \beta_1(\text{shares market performance}) + \beta_2(\text{lagged shares market performance and its growth}) + \beta_3(\text{accounting performance}) + \beta_4(\text{lagged accounting performance and its growth}) \quad (5.5)$$

All the performance variables positively influence executive compensation. We do not have any a priori assumptions about magnitude of their significance.

5.1 Executive Compensation Decomposition

We have decomposed compensation to performance-related and performance-neutral part. Now, we will propose how these are split into the individual executive compensation components and we propose hypotheses about individual elements Salary, Bonus, Value of Option Grants and about Total Direct Compensation. The hypotheses that are described further in this chapter, have been derived from analysis introduced in Chapter 2.

Total executive compensation is decomposed in following equation:

$$\text{Executive Compensation} = \text{Salary} + \text{Bonus} + \text{Value of Option Grants} + \text{Other Compensation} + \text{Restricted Stock Grants} + \text{Shares and Options Appreciation} \quad (5.6)$$

Further on, we define Total Direct Compensation as compensation that excludes equity appreciation and Restricted Stock Grants:

$$\text{Total Direct Compensation} = \text{Salary} + \text{Bonus} + \text{Value of Option Grants} + \text{Other Compensation} \quad (5.7)$$

Hypotheses about salary

Here, we draw hypotheses about salary performance insensitive element of executive compensation. Composition of Salary can be described by following equation:

$$\text{Salary} = \alpha_0.(\text{labor market}) + \alpha_1.(\text{CEO characteristics}) + \alpha_2.(\text{board characteristics}) + \alpha_3.(\text{ownership structure}) + \alpha_4(\text{company size}) + \beta_1(\text{lagged market performance}) + \beta_2(\text{lagged accounting performance}) \quad (5.8)$$

In the following text we express hypotheses about individual parts of the equation (5.8)

In our opinion, Salary is influenced by variables that describe qualities of board of directors. More precisely, if board is stronger and more independent of the CEO, the CEO will be better monitored by board in such a manner so that the cost of a CEO's compensation is minimized. Higher independence and strength of board thus mean lower salary. We suggest the board strength and independence could be reflected e.g. in board size that prevents easier and efficient decision-making, number of older directors can reflect ability to withstand pressures for a higher executive salary, number of directors that are active CEOs in other companies reflects their "lack of time"⁵² to fulfill their duties properly, etc.

Board compensation influences salary as it serves as a benchmark for directors to set Salary of CEO. Similar logic could be valid for compensation of chairman of board of directors. CEO has influence over some parts of board compensation, which could lead to situation, when CEO behaves in concordance with board so that both achieve higher pays.

Shareholder structure influences salary as well. Higher stake in hands of institutional and/or larger shareholder means lower salary as the shareholders that are more efficient in exercising control over the company would be monitoring CEO and his activities concerning executive compensation better.

Salary positively depends on company size. This is, as we expressed earlier, due to larger management complexity and it also might be caused by easier camouflage of executive pay.

Salary, from definition, is not dependent on any current performance measures. It could be dependent on lagged performance variables as CEO might be rewarded for good performance in past by subsequent good payments. It means board could feel obliged to ensure CEO higher "constant" salary for his good performance in past. However, this would apply only to CEOs whose tenure is longer.

Performance-based elements of compensation and hypotheses

In the following section, we draw hypotheses about performance based elements of executive compensation - Bonus and Stock Option Grants. Composition of Bonus and Stock Option Grants is as follows:

$$(Bonus + Stock Options Grants) = \alpha_1.(board\ characteristics) + \alpha_2.(ownership\ structure) + \alpha_3(company\ size) + \beta_1(shares\ market\ performance) + \beta_2(lagged\ shares)$$

⁵² By „lack of time“ we generally mean not enough concentration on the board duties.

$$\text{market performance and its growth}) + \beta_3(\text{accounting performance}) + \beta_4(\text{lagged accounting performance and its growth}) \quad (5.9)$$

Bonus and Stock Option Grants are specified by the same variables but the hypotheses about their magnitude and effect slightly differ.

Bonus

Bonus is influenced by qualities of board and lower strength of board prevents efficient monitoring of CEO performance. Board compensation and compensation of the chairman of the board influence bonus, for the same reasons as for Salary.

Shareholders' structure influences bonus. Large and institutional shareholders will monitor CEO more closely and will tend to decrease performance bonuses in the case they are excessive or inappropriate.

Further, bonus depends on company size. Again, there is some space for camouflage of excessive bonuses. Bonus is dependent on performance indicators of current year. It is possibly also dependent on performance indicators of previous years and/or on its growth. We have no hypotheses about the relative size of impact of accounting or of market return.

Stock Option Grants

For Stock Option Grants we draw several hypotheses:

We expect that the impact of board characteristics on level of Stock Option Grants is large, because option grants can serve as a good tool for CEO to achieve higher compensation with the help (rather implicit) of board of directors. There is always a good explanation that option grants ensure performance incentive for CEO. It depends how much the board would identify with this explanation. We would expect that weaker board will be easier to persuade the additional stock option award to CEO is desirable firm value maximizing policy.

Large and institutional owners play important role in awarding Stock Option Grants. These owners possess superior knowledge about executive compensation policies and about the perils of stock options. They are also more effective in board and company monitoring.

Level of option grants depends on company size. This could be caused by two reasons. Firstly, there are approaches (Core, Wayne and Larcker, 2003) that show that monitoring difficulty of CEO increases with company size. Then the equity compensation should be increased to ensure better alignment of interests of CEO

and shareholders. But this can also lead to excessive compensation without any alignment of interests of shareholder and of CEO – the CEO is “overcompensated” to performance and he can be incited to “manage” accounting results to show better performance, causing damage to shareholder.

Secondly, the camouflage of large firms plays its role again. The relative cost to large firm is perceived to be small.

Apart from performance incentives, there is another motive to award option grants to CEO – outstanding performance. We expect that options will be awarded depending on outstanding performance in current year in comparison to recent years.

We expect there is a large variability in stock options awards because of large number of outliers. Thus, a significant part of stock option awards will be not possible to explain.

Other Compensation

We expect that Other Compensation is very diverse and that it will be difficult to find any logic behind this variable. Other compensation includes Long Term Incentive Payouts, Perquisites and other compensation. We would expect that Other Compensation will be influenced by company size. The part of executive compensation that is paid out through Other Compensation is rather marginal, with low possible impact on excessiveness of executive pay.

Restricted Stock Grants

This element of executive compensation brings large value to several CEOs, however, we are not able to assess the value of these awards as the restrictions differ among the companies. It means, it is possible that a large amount that is virtually awarded will never be paid out as the restriction, possibly a performance goal, might never be reached. Hence, modeling of this part is futile, as we do not have any tools to test it empirically.

Shares and Options Appreciation

A relatively large amount of executive compensation is acquired through appreciation of equity holdings of CEO, i.e. through holdings of stocks and stock options. If we evaluate stock options only by the differential between the exercise price and market price, we can simplify the rewards from equity appreciation in following way:

$$\text{Shares and Options Appreciation} = \beta_1(\text{shares market performance}) \quad (5.10)$$

Shares and Options Appreciation represents the value that a CEO gains by change in stock price during the fiscal year. The additional value is perfectly correlated to stock price, which is clear representation of performance. The value of this part of compensation is not possible to estimate as we do not own perfect information about CEO share and option holdings and changes in it during the fiscal year.⁵³ The value of the appreciations is perfectly correlated with the stock performance, so we can assess the appreciation relative value without knowing exact distribution of shares and options among the executives.

The absolute value of these appreciations, moreover, heavily depends on previous CEO options and stock grants and overall background (e.g. contractual requirement by which CEO is obliged to hold certain part of his/her wealth in company stocks).

The performance sensitivity that is induced by option and stock holdings is significant in view of the fact that e.g. industrial S&P and financial S&P companies CEO median holdings were \$ 30 million and \$ 55 million, respectively (Core, Wayne and Larcker, 2003).

5.2 Notes to Stock Option Holdings and Shareholdings Appreciation as an Element of Executive Compensation

Stock option holdings and adding convexity to compensation contracts

Ideally, the derivative of $b(\text{performance})$ function in (5.1) would be positive to fulfill the purpose of executive compensation and to follow proposal that rise in firm value raises executive compensation and respectively, decrease in firm value decreases executive compensation.

Stock Options holdings in CEO portfolio cause that the derivative of $b(\text{performance})$ is not always positive (it can reach zero) and it is not constant. Stock options mean that manager is not penalized for bad performance in the same way as he is rewarded for good performance⁵⁴. The decline in the value of CEO portfolio is less

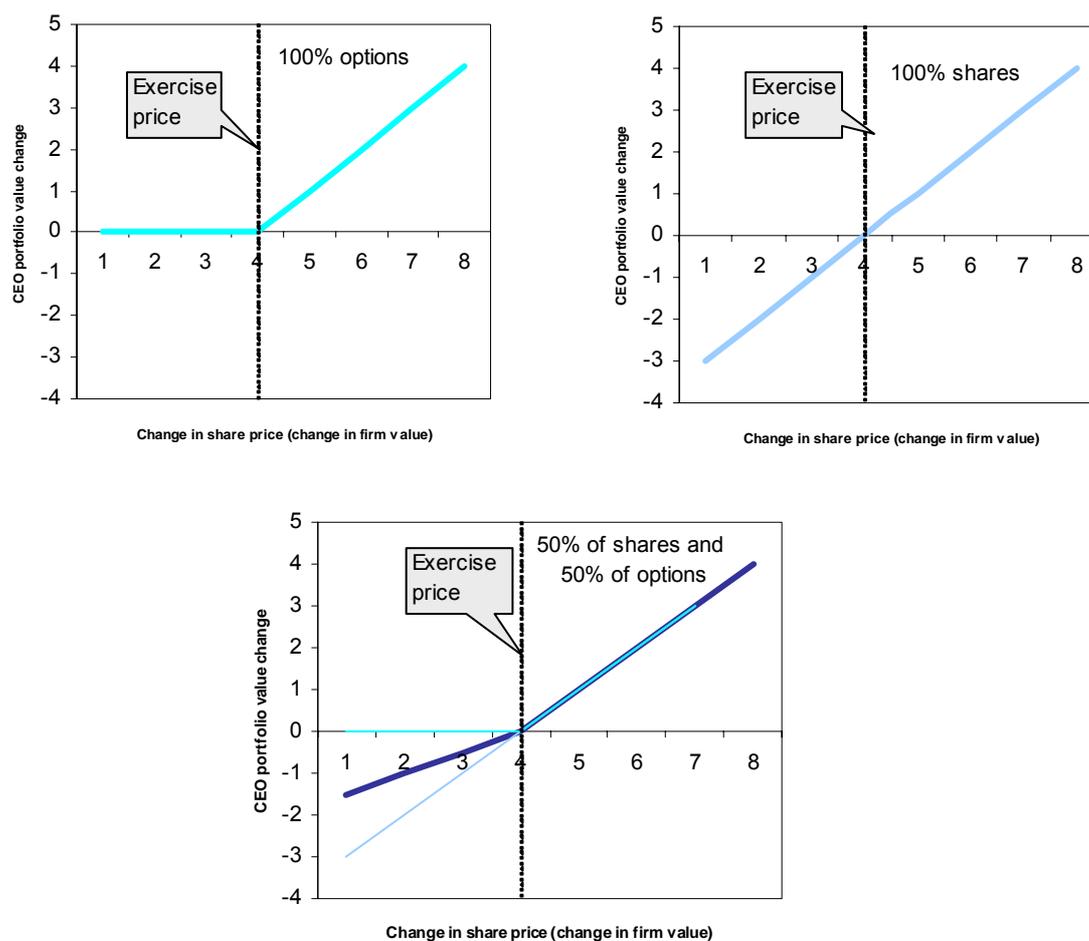
⁵³ The changes are certainly reported, but due to a large number of transactions executed by CEO every fiscal year, any calculation of their average option and share holdings would be excessively difficult.

⁵⁴ Joskow, L. Paul and Nancy L. Rose (1994) also survey possible different compensation responses to performance gains and losses. However, they are rather skeptical about its economic significance during the 1980s.

step to the left from the exercise price of his/her options (see Figure 2, the lower figure). The magnitude of the change of the slope at the moment of exercise price depends on how many stock options CEO holds relatively to his/her share holdings.

For this subchapter, we will neglect performance incentives that are given in cash compensation and we will assume only equity compensation incentives by stock options and stock holdings.

Figure 2: Impact of CEO option holdings on his/her portfolio value



Stock options are performance sensitive only when the market price is above exercise price (first picture). If the market price is below exercise price, then the stock option holdings lose their value and the portfolio value is determined only by stock holdings. It means that below exercise price of options, only stocks are performance sensitive.

Stock option holdings lead to a situation that when the market price is below exercise price, the option holdings just do not create any negative performance incentive and

also do not create marginal upward incentive (up to the exercise price). Once it happens, CEO does not care how much the market price declines if he possesses only stock options. In other words, the CEO is differently motivated when the market price is below, and when it is above exercise price. This causes CEO to choose riskier portfolio of projects or actions as he/she is “insured” against bad performance by exercise price of stock options⁵⁵. This shapes function $b(\text{performance})$ in following way (see also Figure 2, the lower figure)

$$b(\text{performance}) = b_1 \cdot x \text{ for } x \in (0, E) ; b(\text{performance}) = b_2 \cdot x \text{ for } x \in (E, \infty), b_1 < b_2 \quad (5.11)$$

where E is exercise price of CEO stock options, b_1, b_2 sensitivities to performance.

Stock options add convexity⁵⁶ to CEO performance incentives. Higher incentives are connected to higher performance and vice versa.

Decreasing marginal utility of CEO could be also a good reason to add convexity to managers' contract. It has an impact on desire of CEO to perform well with increasing compensation. In other words, the better the CEO performs the smaller further personal incentive he has when there is not enough convexity.

Impact of hedging on executive compensation

Other issue is that CEO is usually not fully prohibited from hedging against his/her current stock and stock option position. Usually, there are some measures or restrictions incorporated in the contract, however, there is still some space for hedging. We assume that CEO is also well informed to predict future firm value changes so that he is able to hedge out certain part of decline in firm-value that would subsequently cause decline of his/her compensation through equity holdings depreciation⁵⁷. This would have similar impact as the effect of stock options holdings

⁵⁵ Hall and Murphy (2003) observe similar situation to ours that is a consequence of having stock options holdings. They argue that a manager that has out-of-the-money options will have incentives to undertake riskier investments than will have an executive holding in-the-money options.

⁵⁶ Similar reasoning use Core, Wayne and Larcker (2003) when talking about “adding convexity to compensation contract,” where they state that managers with very large stock holdings undertake risk reducing activities and it might seem optimal to add convexity to managers' contracts. Good tool for adding convexity are stock options.

⁵⁷ It is exactly the case of accounting scandals.

– it decreases CEO loss when a decline occurs. CEO again chooses riskier portfolio of projects and actions. However, we still must take into consideration decreasing marginal utility, as in the previous case.

Certain simplification of the static impact of hedging can be described by variable $\eta \in (0,1)$:

$$b(\text{performance}) = a + (1-\eta) \cdot v(\text{performance}), \quad (5.12).$$

where η is a measure of CEO hedging against his/her performance based on compensation schemes.

Core, Wayne and Larcker (2003) analyze the hedging problem in a more complex way. As the CEOs have outside wealth that is unknown to the principal when the compensation contract is prepared, the effect of hedging that is provided by the outside wealth can be significant. Besides that, they show that ignoring manager's wealth when constructing the contract is costly for the principal, because the valuation by Black-Scholes method overestimates value that it carries for the manager who is risk-averse and less diversified. *"The intuition is that paying compensation in stock or options to a risk averse executive can be more costly to the firm than delivering to the executive the same value in cash"*⁵⁸

5.3 Note to Decreasing Marginal Utility and Risk Aversion

What we consider as having a rather crucial impact on executive compensation is the concept of decreasing marginal utility. We can say that motivating CEO to perform better will always cost more on a unit of additional return for shareholder. This is similar for regular employee, but the effect is augmented by increased necessity of performance incentives for CEOs, as the monitoring would be always more costly for a CEO than for a regular employee.

Preferably, shareholder (represented by board) would try to balance marginal cost of CEO compensation with marginal return from performance that originates from CEO actions. As the utility decreases, company must pay to CEO more to achieve better performance.

⁵⁸ Core, Wayne and Larcker (2003), p. 36

In fact, we find several tools in executive compensation that show some variability in elasticity of compensation to firm performance, such as e.g. stock options in CEO portfolio.

Impact of CEO wealth accumulation

Furthermore, higher attention should be given to CEO wealth. The accumulation of wealth of CEOs is very fast and we would expect that the impact caused by decreasing marginal utility is high. Without providing any statistical evidence on this, we suggest that some part of the growth of average CEO compensations over years can be caused by this factor.

Core, Wayne and Larcker (2003) show that wealth is a significant problem when there are different risk-aversions at different levels of wealth. They show simple example. We consider one CEO in two possible situations. Firstly, CEO inherits a lot of money or secondly he loses all outside wealth in divorce. In the first case, he would be working less and in the second one he would be taking fewer risks. Only if CEOs have constant absolute risk-aversion would there be no benefit to wealth-based contracting.

6) EMPIRICAL PART

In this part of our work, we survey whether the hypotheses drawn in previous chapter are valid and whether they can be confirmed on empirical data from year 2003. As we have indicated in the Introduction, the aim of this work to show excessiveness of executive pay can be achieved in two ways:

Firstly, we will try to demonstrate excessiveness of compensation by showing dependence of executive compensation on factors that we believe do not minimize shareholders' wealth.

Secondly, we will estimate the magnitude of impact of performance indicators in setting executive pay. If we find that significant part of executive pay is explained by company performance, our hypothesis of excessive compensation is refuted. Showing that the executive compensation is not given by performance indicators in a significant part would rather support the hypothesis of excessiveness of executive pay. In reality at least some performance indicators will be significant in explaining executive compensation. However, if the share of executive compensation explained by these performance indicators is below some 50% of Bonus (the cash element of executive compensation most related performance), we may suggest that non-performance indicators play a significant role in executive pay setting.

Data

The data for our survey have been collected from various sources. The US public companies are required to submit SEC filing DEF-14a that includes executive compensation data on CEOs. There are several providers that gather this information and create extensive databases. The database for executive compensation we used in our work has been obtained from the web site *ecomponline.com*. It also contains some board characteristics. Other board characteristics like number of independent members, number of female directors, over 70 years old directors etc. were taken from the web site *www.thecorporatelibrary.com*. Financial company data were taken from *finance.yahoo.com* and Reuters and share prices for corresponding fiscal year ends were taken from *cbs.marketwatch.com*. For detail description of all variables we have used in our analysis see Chapter 9.2. Variables that proved to be significant in following regressions are described bellow in Table 1. The Current year is 2003.

Table 1: Specification of used variables

Variable (abbreviation)	Specification or note	Source of data
Executive Compensation Data		
Salary	Base salary	ecomponline.com
Bonus	Cash bonus	ecomponline.com
Other Compensation (OC)	Long Term Incentive Payouts (plans over one year), perquisites and other cash and non cash compensation,	ecomponline.com
Value of Options Granted (VOG)	The aggregated value of all the fiscal year end individual Options Grants valued on the date of grant.	ecomponline.com
Total Direct Compensation (TDC)	The sum of Salary, Bonus, Other Compensation and Value of Options Granted	ecomponline.com
Board characteristics and CEO characteristics		
Board Size (BOARDSIZE)	Number of members of board of directors. Larger number expresses lower strength of the board.	ecomponline.com
COB Compensation (COBC)	Compensation of the Chairman of the board. It is equal to zero when COB is the same person as CEO.	ecomponline.com
Board member compensation (BOARDCOMP)	Average board member compensation	ecomponline.com
Separate chairman (SEPCHAIR)	Dummy for companies where COB is not the same person as CEO	ecomponline.com
Large owner (LARGEOWNER)	Percentage ownership of all large owners with > 5% stake	ecomponline.com
Directors active CEOs (CEOELSEP)	Active CEO directors / board size	ecomponline.com
CEO age	CEO age	ecomponline.com
Financial indicators and company characteristics		
Number of employees (EMPLOY)	Measure of company size - number of employees of the company	ecomponline.com
Liabilities 2002 (LIAB02)	Liabilities in previous year (2002)	finance.yahoo.com
Return (RETURN02, RETURN03)	Market return on share during fiscal year.	cbs.marketwatch.com
Total Assets (TA03)	Measure of company size - Total Assets in 2003 (current year)	finance.yahoo.com
Growth difference of ROA (ROAG)	Growth difference of ROA (computed: (ROA 2003-ROA2002)-(ROA2002-ROA2001))	calculated, finance.yahoo.com

Some of our sources do not provide historical data on SEC (Security and Exchange Commission) filings, thus the analysis must have been based on compensation data for fiscal year that ends in 2003. For this reason, the first filter for our database was availability of data for fiscal years ending in 2003 in *ecomponline.com* – from the whole database of 12 000 firms, only 360 observations were available for 2003 fiscal year end. From the 360 observations we needed to exclude further about 40 ones that did not included the board analysis numbers. Other constraints were put by availability in *thecorporatelibrary.com*, which resulted in some 285 observations available.

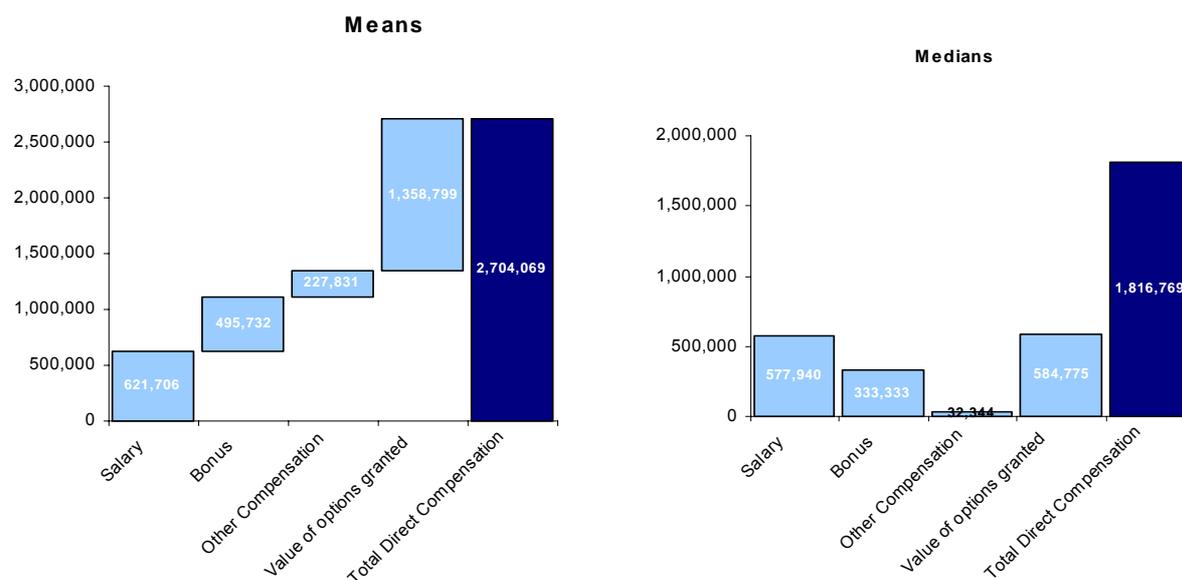
Due to the data process retrieving, the sample is skewed toward larger firms with better information reporting standards. This is not a problem, however, as we are more concerned with large firms and with large executive compensations.

Table 2: Sample specification

	Total Assets 2003 (000)	Return on Total Assets 2003	Return on Equity 2003	Profit 2003 (000)
Mean	3,695,968	0.105	0.054	187,813
Median	1,198,275	0.107	0.049	49,563
Maximum	79,571,000	1.537	0.782	9,993,000
Minimum	62,672	-1.238	-0.437	-2,058,000
Std. Dev.	8,912,042	0.212	0.085	738,568

CEO compensation

For purposes of empirical survey we use four basic elements: Salary, Bonus, Other Compensation and Value of Options Granted in the fiscal year. Other Compensation includes all other items, e.g. perks, Long Term Incentive Pays and others. Summing all these together we gain Total Direct Compensation. Composition of average executive compensation elements in our sample is presented in Figure 3.

Figure 3: Composition of executive compensation – sample means and medians

Other Compensation and Value of Options Granted are skewed – the median is typically smaller than the mean – one-half of the firms are well below the average. There are a couple of very large observations in Value of Options Granted that significantly influence the average⁵⁹.

We can see that the Value of Options Granted amounts to some 50% of total compensation on average and it is a similar result we find in the executive compensation literature⁶⁰ – options amounts to a significant part of executive compensation. From Table 3 it is clear that it is also the part of compensation with very large variability with extreme maximum and very large difference between median and maximum. This suggests that trying to find a good regression will be difficult, as we do not observe comparable variation in performance indicators.

Table 3: Composition of executive compensation – sample descriptive statistics

	Salary	Bonus	OC	VOG	TDC
Mean	621,706	495,732	227,831	1,358,799	2,704,069
Median	577,940	333,333	32,344	584,775	1,816,769
Maximum	1,600,000	3,000,000	4,602,427	15,015,132	15,714,309
Minimum	80,769	0	0	0	100,000
Std. Dev.	253,298	513,028	596,475	2,067,042	2,555,569
Skewness	0.75	1.28	4.40	2.98	2.25
Kurtosis	3.45	4.72	24.28	14.85	9.29

⁵⁹ Cyert, M. Richard (1997) has similar specification of the sample.

⁶⁰ See. e.g. Vranceanu R. (2003)

Table 4: Correlation between compensation components

	Salary	Bonus	OC	VOG
Salary	1.000	0.594	0.292	0.355
Bonus	0.594	1.000	0.299	0.242
OC	0.292	0.299	1.000	0.107
VOG	0.355	0.242	0.107	1.000

Value of Options Granted is more correlated to Salary than to Bonus. Relatively low correlation of Bonus and Option Value Grants indicates, that the compensation policy of awarding bonuses and options is not the same. The VOG is not determined by plain performance indicators but rather by the growth of it and there are probably other factors that determine VOG.

In the following four chapters, we present our results of regressions with explained variables Salary, Bonus, and Value of Options Granted⁶¹. Further on, we regress the Total Direct Compensation on chosen variables.

To measure performance, we used several performance indicators. We tried to incorporate them into the regression and to find the most significant ones. As there is large correlation between them we regressed them separately so that we could determine which ones are the most significant⁶².

The R-squared are not very high for the following regressions but this should not be a trouble for us as we look for dependencies and we are not attempting to predict executive compensation on basis of the model. We want to confirm or reject significance of factors we have introduced so far.

First, we estimate the regression, we present the results and then we estimate relative regressors' importance.

⁶¹ There would be some efficiency gain regressing the individual equations in a system of equations, but as we cannot ensure correspondent assumptions are fulfilled we estimate only individual equations.

⁶² Bushman and Smith (2003) also show that the various performance indicators are used differently across the population of public US companies for executive compensation. They demonstrate the companies use various or only one performance measure and that they use both accounting and market return indicators.

Method for measuring relative importance of regressors

For the decomposition of importance of regressors we have used idea of variation portioning, decomposing of R-squared.

First, consider regression of dependent variable y and explanatory variables $x_1, x_2 \dots x_n$. Then, fraction [a] measures the proportion of the variance of y explained by variable x_1 when the other explanatory variables ($x_2, x_3 \dots$) are held constant with respect to x_1 only and not with respect to y ⁶³.

For regression with two explanatory variables, fraction [b] measures the proportion of the variance that is explained jointly by the two variables without taking into consideration their separate (net) effect. Then R-squared of the regression with both explanatory variables (x_1, x_2) is equal to fraction [a] + [b] + [c]. Separate effect x_1 is fraction [a], separate effect of x_2 is fraction [c] and the joint effect is fraction [b].

Instead of using fraction [a] for one variable, we used this computation for two groups of variables. The calculation was based on the same method⁶⁴ as for simple two explanatory variables regression.

We always compare two groups of regressors. Then, the net effect of group 1 is computed as R2 of regression of regressors included in both groups minus R2 of regression of the regressors included in group 2. (fraction [a] of group 2 = R2 of all regressors – R2 of group 1)

We standardized⁶⁵ our data and we computed R^2 for various groups of regressors. The fraction [a] of a regressor group is computed by deducting the opposite group effect (fraction [b] + [c]) from R2 for regressors of both groups jointly (fraction [a] + [b] + [c]).

⁶³ Fraction [a] of x_1 is the part of variation in dependent variable y that is explained solely by variable x_1 and does not include the part that is explained jointly with other variables, that are correlated to x_1 .

⁶⁴ The calculation is based on following, for x_1 and x_2 we substitute groups of variables:

1. Regression of y on x_1 yields fraction [a] + [b]
2. Regression of y on x_2 yields fraction [b] + [c]
3. Multiple regression of y on x_1 and x_2 yields fraction [a] + [b] + [c]

Fraction [a] (resp. fraction [c]) measures variance that is explained by variable x_1 (resp. x_2) when the other variables are held constant with respect of x_1 (resp. x_2). Fraction [b] is explained by both, x_1 and x_2 , because they are correlated. If the variables x_1 and x_2 are uncorrelated, the [b]=0 (Borcard, 2002)

⁶⁵ From the original data, we deduce means and divide them by standard deviation.

Table 5 is calculated in following way. Column (1) is counted as R-squared for each group of regressors on standardized data (with zero constant). Column (2) is then always counted for two groups of regressors and reflects marginal effect of each group related to regression where the regressors from both groups would be taken into consideration. Joint effect (3) is computed as R2(4) of group 1 and group 2 minus net effects (2) of group 1 and group 2.

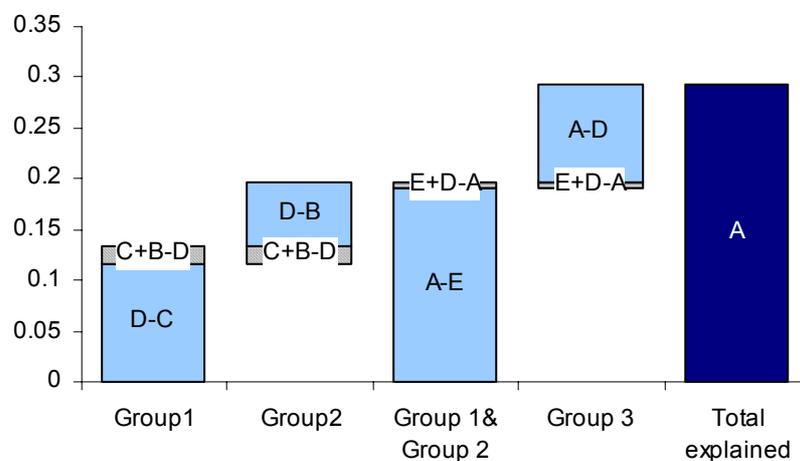
Table 5: Example of computation of relative importance of group of regressors

Regressors	R2 ⁽¹⁾	Fraction [a] ⁽²⁾	Joint effect ⁽³⁾	R2 ⁽⁴⁾	Fraction [a] ⁽⁵⁾	Joint effect ⁽⁶⁾
All regressors	A					
Group 1	B	D-C	D-(D-C)	D	A-E	A-(A-E) -(A-D)
Group 2	C	D-B	-(D-B)			
Group 3				E	A-D	

Note: D is R2 of regression where using all regressors of group 1 and group 2

For the analysis, we also use charts. Figure 4 is calculated in the same way as Table 5. The pale blue color indicates fraction [a] (or fraction [c]), white color indicates fraction [b].

Figure 4: Example of computation of relative importance of group of regressors



6.1 Salary

First, we have estimated regression, where variable Salary is the dependent variable. We explain Salary by following variables, see below.

Table 6: Regression estimation output – dependent variable SALARY

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	126425.3	110301.2	1.146182	0.2527
EMPLOY	2.250169	0.449700	5.003713	0.0000

LIAB02	0.012959	0.003650	3.550162	0.0005
FEMALEP	490194.7	113114.5	4.333615	0.0000
COBC	0.579475	0.217531	2.663875	0.0082
CEOAGE	3511.548	1755.462	2.000355	0.0464
BOARDCOMP	0.217686	0.095163	2.287508	0.0229
SEPCHAIR	-89640.79	30128.60	-2.975272	0.0032
BOARDSIZE	19105.51	6440.074	2.966660	0.0033
R-squared	0.496812			

In the following text, we will discuss the impact of the above-listed variables on Salary and we discuss whether our hypotheses are proved or not.

EMPLOY (number of employees) was used for company size. The model shows that salary is positively dependent on company size. This confirms our hypothesis about importance of company size in setting executive compensation. It still does not, however, show what approach about company size is more appropriate – whether company size indicator is desirable or adverse factor.

LIAB02 (liabilities in 2002) positively influences salary. For this effect we find following explication: Larger liabilities at the beginning of current year (as from financial statement for previous fiscal year end) make the board offer to the CEO higher fixed part of the compensation (Salary) in the current year as the accounting result of current year will be negatively influenced by the debt service and also, the stock return will be influenced by possible increased risk that is connected to large debt. CEOs also face larger risk of reputation harm in companies with higher debt.

COBC (compensation of the chairman of the board, it is zero when chairman is CEO) and SEPCHAIR (dummy for case when chairman of the board is not CEO) must be treated jointly. SEPCHAIR is one when COBC is zero and SEPCHAIR is zero whenever COBC is not equal to zero. Coefficient of SEPCHAIR is –89 640. Number 89,640 can be presented as retainer for CEO for being Chairman of the board. Whenever CEO is not chairman it is deduced from compensation. CEO is not compensated any fee for being chairman through additional chairman pay, thus CEO is rewarded for chairmanship through his regular CEO salary as indicated. Average retainer for chairman (in our sample) that is not CEO is 104,402.

Alternatively, when CEO is not chairman, his/her compensation is positively dependent on retainer of chairman of the board. This result was also confirmed by estimating the same regression equation with exclusion of observations where chairman is CEO. On this sample, all chairmen are different persons to CEO (SEPCHAIR=1) and the regression estimation shows very similar results. Concluding

from this, executive compensation depends on retainer of chairman of the board. This confirms our hypothesis that compensations of board members (here particularly chairman of the board) influence CEO compensation. We suggest that this is caused by benchmarking of executive pay to chairman pay or/and by interconnections within the board and executive management of the company.

FEMALEP (percentage of female directors). We have found significant positive influence of FEMALEP on Salary. The underlining hypothesis is that smaller strength of board of directors can cause inability of board to prevent CEO to achieve excessive compensation. We assume that female directors are weaker negotiators and less tough players. This is of course only a hypothesis, and sociological survey would have to be led on confirming or rejecting this idea and we must admit that this part of argumentation lacks sociological background.

CEOAGE (age of CEO) is here used as measure of CEO's experience. Older CEOs have longer experience and are awarded a premium salary for it.

BOARDCOMP (average board member compensation) positively influences Salary. This impact is done by benchmarking of executive pay to board compensation and by possible cooperation of CEOs and board directors when setting their pay (CEOs influence perks that are provided to directors).

BOARDSIZE (number of members of the board of directors) positively influences Salary. This confirms our hypothesis that smaller strength of board prevents board to monitor effectively CEO and CEO is not prevented from influencing board to raise his/her pay. The rationale behind this was explained in Chapter 2: to oppose the high level of executive pay it is harder when there are too many directors.

We have not confirmed hypothesis that salary would be dependent on lagged performance variables. Neither is Salary dependent on current performance variables.

We also regressed salary on percentage ownership of institutional shareholders and of large shareholders but these variables did not prove to be significant in the regression. We could not confirm hypothesis that larger and institutional shareholders would be more efficient in monitoring CEO and that his/her activities that are related to setting of Salary.

Relative importance of regressors - Salary

Now, we will decompose explanation of variance of SALARY by groups of regressors. First we divide regressors into two groups – these that are shareholders' cost minimizing and these that are not (positive and other factors).

*Positive factors vs. other factors*⁶⁶

Positive factors: LIAB02, CEOAGE, SEPCHAIR.

Other factors⁶⁷: FEMALEP, COBC, BOARDCOMP, BOARDSIZE

Let us consider two variants. In variant A, company size is regarded as a positive factor, in variant B company size is regarded as factor with adverse effect. It means in case A, we will include company size measure (EMPLOY) into the first group of "good" regressors. In case B, we include company size into the second group of other factors.

We always compare two groups of regressors (their R2):

Variant A

Positive factors + Company size versus Other factors

And, to know the influence within the left-hand-side group, we further compare:

Positive factors versus Company size

Variant B

Positive factors versus Other factors + Company size

And, to know the influence within the right-hand-side group, we further compare:

Other factors versus Company size

⁶⁶ Other factors here means factors with adverse effect

⁶⁷ Other factors here means factors with adverse effect

Table 7: R-square for individual groups of regressors – Salary

Regressors	R2 ⁽¹⁾	Fraction [a] ⁽²⁾	Joint effect ⁽³⁾	R2 ⁽⁴⁾	Fraction [a] ⁽⁵⁾	Joint effect ⁽⁶⁾
All	0.497					
Positive factors ^A	0.315	0.062	0.253	0.396	0.219	0.177
Company size ^A	0.334	0.081				
Other factors ^A				0.277	0.100	
Other factors ^B	0.277	0.106	0.172	0.440	0.182	0.258
Company size ^B	0.334	0.163				
Positive factors ^B				0.315	0.057	
All without company size	0.451	0.162	0.288			
Company size	0.334	0.046				

Note: A: variant A, where company size is positive factor

B: variant B, where company size is adverse factor

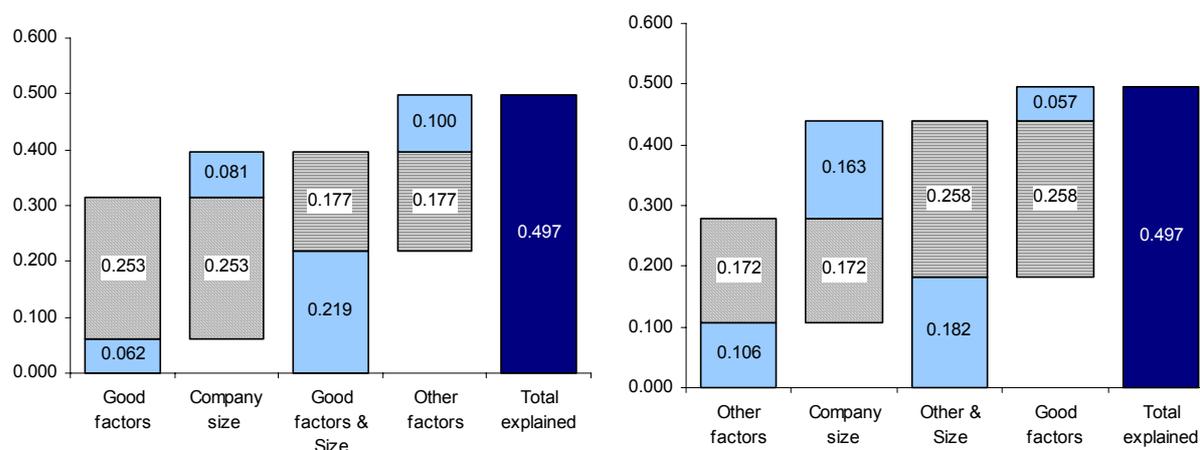
Company size is the regressor with large effect on Salary. It explains about (net effect) 4.6% (resp 33% as combined effect, fraction [a] + [b])⁶⁸ variation in salary. This is in line with previous empirical studies that confirm company size is one of the major drivers of executive compensation.

The decomposition of explanation of variation in dependent variable can be also seen from the Figure 5.

The chart on the left (variant A) shows decomposition where size is taken as positive factor. Effect of company size is summed with the effect of good factors and than these are jointly compared to other factors.

The chart on the right (variant B) shows the case where size is considered to be an adverse factor. Effect of other factors is summed to the effect of company size and than these are jointly compared to positive factors.

⁶⁸ In the following text we use this quotation: The first number indicates the net effect – fraction [a]. The number in the brackets is combined effect - fraction [a] + [b], written as (resp. XX%)

Figure 5: Decomposition of variance explanation – Salary (variant A, variant B)

Our model explains about 50% of variation in Salary.

If we assume that company size is not a disturbing factor when salaries are being set, then the group of adverse factors (other factors) explains about 10% (resp. 27.7%, the fourth column from the left) and all the positive factors explain 21.9% (resp 39.6%, the third column from the left).

If we assume, that the company size is an undesirable factor which causes that executive compensation is not ideal, than the adverse factors explain about 18% (resp. 44%, third column from the right, right hand side figure) and the group of cost minimizing factors would explain 5.7% (resp 31%, second column from the right) of Salary.

From the above, it is clear that the adverse factors contribute to the explanation of salary with quite a large portion (at least by 10%, in variant A) no matter whether we assume size is a desirable or adverse factor. This would confirm our hypothesis that Salaries are influenced by factors that are not related to company value and thus they are redundant for determining Salary. As these factors increase Salary, we confirm there is certain part of Salary that is excessive (at least 10%). This conclusion is, however, conditioned by one assumption – there are not any other unidentified positive factor that explain variance in salary which are at the same time correlated with our group of adverse factors. If there was such a factor it would lower the effect we assign to adverse factors and we could not come to any conclusion without analyzing this further factor. These factors could be factors are specific to individual companies' corporate structure and not observable on the population, however, we assume that their impact is rather marginal.

6.2 Bonus

First, we have estimated regression, where variable Bonus is the dependent variable. We explain Bonus by several variables, see below.

Table 8: Regression estimation output – dependent variable BONUS

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-214029	102892.7	-2.08011	0.0384
ROE0203	51344.97	13447.34	3.818224	0.0002
RETURN02	260882.5	51921.31	5.024575	0.0000
RETURN03	324900.3	46694.06	6.958065	0.0000
TA03	0.023776	0.003782	6.287267	0.0000
BOARDSIZE	56883.07	11764.24	4.835253	0.0000
BOARDCOMP	0.875187	0.218734	4.001151	0.0001
CEOELSEP	244106	39988.76	6.104365	0.0000
R-squared	0.46194			

From the very large portfolio of accounting performance indicators, ranging from the absolute measures like profit, to equity or assets based ratios of both operating and total income, we have finally chosen ROE (return on equity) as the most significant measure of company performance for our estimation of Bonus.

Figure 6: Performance indicators correlation – sample 2003

	ROE	ROA	Net Profit	Operating res. /TA	Operating res./EQ	Operating result
ROE	1.000	0.563	0.217	0.477	0.839	0.215
ROA	0.563	1.000	0.213	0.850	0.513	0.184
Net Profit	0.217	0.213	1.000	0.119	0.149	0.976
OPA	0.477	0.850	0.119	1.000	0.678	0.155
OPEQ	0.839	0.513	0.149	0.678	1.000	0.201
Operating Result	0.215	0.184	0.976	0.155	0.201	1.000

We can see that the performance indicators are correlated. Absolute measures as Net Profit and Operating Result are less correlated with the relative measures because they contain some additional information about company size. For this information we used other, more convenient indicators (as Total Assets or number of employees).

Bonus depends on ROE0203 (the growth of ROE between previous and current year (2002 and 2003)). This looks to have reasonable basis: more than on the absolute value, Bonus depends on the ROE growth. If the firm constantly reports good results, these would not represent manager's effort or abilities, as they could be underlined

by standard industry-specific high margins. Hence, the ROE growth seems to be better measure of performance.

There is a paradox, as the same does not apply for share market gains in the two last years. More than the change between 2002 and 2003 in market return, the compensation is dependent on their absolute values in 2002 and 2003. This could be caused by different perception of stock market results and accounting results. High market return in the previous year influences board to push up the bonus policy for next year. This would generally cause amount of the bonus to rise. The empirics show that the same is not valid for accounting results in the previous year. Concluding, performance compensation policy is slightly different for market return and accounting return.

For Bonus, the best company size-reflecting variable is TA03 (Total Assets in 2003). It confirms, that Bonus compensation is also positively dependent on the company size. Again, the two approaches can be applied.

BOARDSIZE (number of members of the board of directors) positively influences Salary. This again confirms our hypothesis, that smaller strength of board connected to the large number of directors prevents board to monitor effectively CEO and his/her activities to increase his/her compensation.

BOARDCOMP (average board member compensation) positively influences Bonus. We again, as in the case for Salary, state that this can be explained by benchmarking and interconnection between board and CEO. We do not find any performance-based reason for which Bonus should be influenced by BOARDCOMP. Furthermore, the fact, that this variable has significant influence on both, Salary and Bonus, indicates that the impact on overall executive compensation is significant.

CEOELSEP (percentage of directors that are active CEOs in another firm) positively influences executive compensation. This confirms hypothesis, that CEOs are aware of influence of the level of particular CEO compensation on the peer companies executive compensations. CEO approves high compensation to another CEO because this in turn influences his compensation, as it is usually based upon median pay.

Relative importance of regressors

We do the same analysis as we have done for Salary. The groups are different:

Performance indicators: ROE0203, RETURN03, RETURN03

Other factors: BOARCOMP, BOARDSIZE, CEOELSEP

Company size: TA03

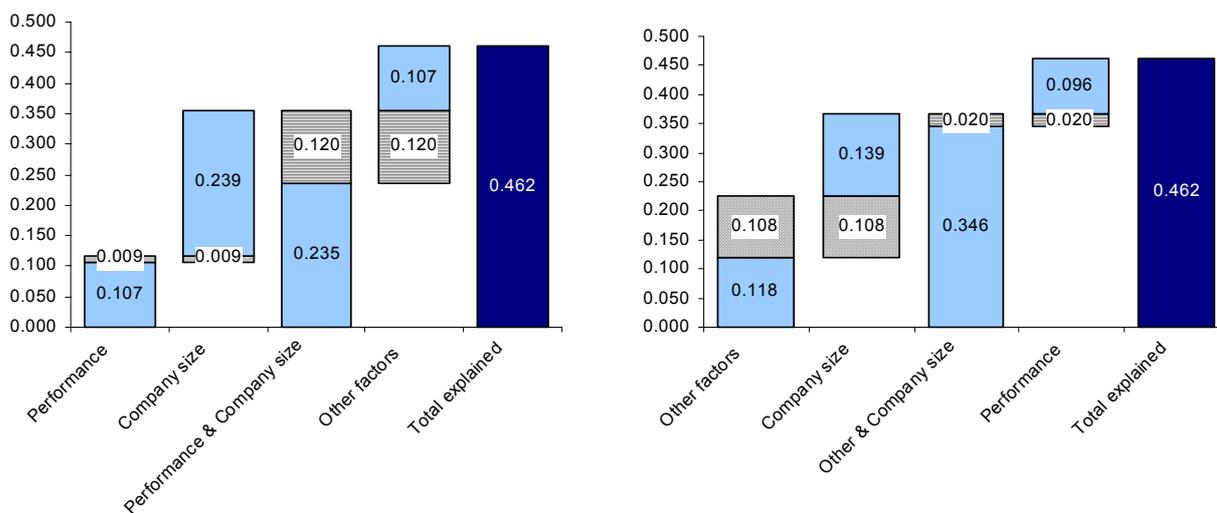
We use variant A and B in the same way as for Salary. In variant A, company size is regarded as desirable factor and in variant B, company is regarded as an adverse factor.

Table 9: R-squared for individual group of regressors - Bonus

Regressors	R2	Fraction [a]	Joint effect	R2	Fraction [a]	Joint effect
All	0.462					
Performance	0.116	0.1072	0.009	0.355	0.235	0.120
Company size	0.248	0.239				
Other factors				0.227	0.1069	
Other factors	0.227	0.118	0.108	0.366	0.346	0.020
Company size	0.248	0.139				
Performance				0.116	0.096	
All without company size	0.311	0.214	0.096			
Company size	0.248	0.151				

Figure 7 contains the same analysis as was done in the case of Salary. Variant A (company size is a positive factor) on the left hand side, variant B (company size is a adverse factor) on the right hand side.

Figure 7: Decomposition of variance explanation - Bonus



From the figure above, we can draw further conclusions.

If company size is a positive factor, than the group of positive factors (Company size + performance indicators) explain 23.5% (resp. 35.5%) of variation in Bonus. The impact of Other factors would be 10.7 % (resp. 22.7%).

In the opposite case, performance indicators explain 9.6% (resp 11.6%) of variation in Bonus. Adverse factors explain 34.6% (resp. 36.6%)

We consider that the explanation by performance variables does not amount to a sufficient value, it is around 9-11%. The variation explained by company size is again large. Significant value of variation in Bonus is again explained by variables that we assume not to be shareholders' cost minimizing - at least 10.7% (resp. 22.7%).

These results are conditioned in the same way as was in the results for Salary. The Other factors (adverse factors) explain a large portion of Bonus (at least 10.7%) under condition there is not another unidentified good factor that explains Bonus and is correlated with our group of adverse factors.

Nevertheless, we assume that breaking this condition for Bonus is less likely. We suppose Bonus is determined by performance indicators that are certainly not correlated to our group of adverse factors. For these reasons, we do not suspect existence of further good factors correlated with board compensation, board size or percentage of CEOs in board of directors – our adverse factors – and hence, we assume our conclusion about large impact of adverse factors on Bonus is valid.

6.3 Value of Options Granted

First, we have estimated regression, where variable Value of Options Granted is the dependent variable. We explain VOG by several variables, see below.

Table 10: Regression estimation output – dependent variable Value of Options Grants

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	716517.5	251103.9	2.853471	0.0046
ROAG	2312821.	806301.8	2.868431	0.0044
EMPLOY	15.53018	5.992491	2.591608	0.0101
SEPCHAIR	-484620.1	183291.2	-2.643990	0.0087
BOARDCOMP	5.475287	1.154337	4.743229	0.0000
LARGEOWNER	-1915806.	973430.6	-1.968097	0.0500
R-squared	0.293226			

VOG (Value of Options Granted) is explained by ROAG (Difference between two most recent ROA growths). This confirms hypothesis that CEO is granted options when there is an outstanding performance, which can be recognized by difference of

the two latest ROA growths. VOG is not significantly dependent on other market or accounting return indicators.

The indicator of company size (EMPLOY) plays again an important role in explanation of variation in VOG. The explanation of this impact is again twofold.

In this case, the coefficient for SEPCHAIR cannot be presented as retainer for “CEO is chairman” case like it was done for Salary. We doubt that “CEO is chairman” would be rewarded through Options Grants. Furthermore, the reward for this would be excessively large compared to usual retainer the chairman of the board is paid in case “CEO is not chairman”, that is \$ 104,402 on average in our sample. Hence, we prove hypothesis that the fact that there is a separate chairman of the board is a significant factor when the options are granted. Separate chairman cut option awards and minimizes CEO rent, maximizes company value. We regard this as a clear evidence of excessive compensation caused by insufficient supervision of CEO.

BOARDCOMP (average board member compensation) positively influences VOG. We again confirm, as in the case for Bonus and Salary, that there exists some relation between board compensation and executive compensation.

The significance of LARGEOWNER (percentage ownership of all owners that hold more than 5% stake) is at the edge of 5 % p-value. However, this is intuitively a significant factor of executive compensation setting. Large owner might have important influence on supervision of CEO and his/her activities which would otherwise lead to excessive executive compensation. Large owner can efficiently manage board to reach the lowest cost of CEO and the best performance.

We do not confirm importance of large institutional owners. We confirm that there is a large volatility in VOG and we are not able to explain more than 30% of dependent variable.

Relative importance of regressors

Here we bring results on the relative importance of regressors that we use for explanation of Value of Options Grants.

We divide the factors into three groups: performance factor is ROAG, company size is reflected by EMPLOY and Other factors are SEPCHAIR, BOARDCOMP and LARGEOWNER.

Table 11: R-square for individual group of regressors – Value of Options Granted

Regressors	R2	Fraction [a]	Joint effect	R2	Fraction [a]	Joint effect
All	0.293					
Performance	0.103	0.102	0.001	0.183	0.159	0.024
Company size	0.080	0.080				
Other factors				0.134	0.110	
Other factors	0.134	0.117	0.017	0.197	0.190	0.007
Company size	0.080	0.063				
Performance				0.103	0.096	
All without company size	0.231	0.213	0.018			
Company size	0.080	0.063				

Figure 8 contains the same analysis as was done in the case of Salary and Bonus.

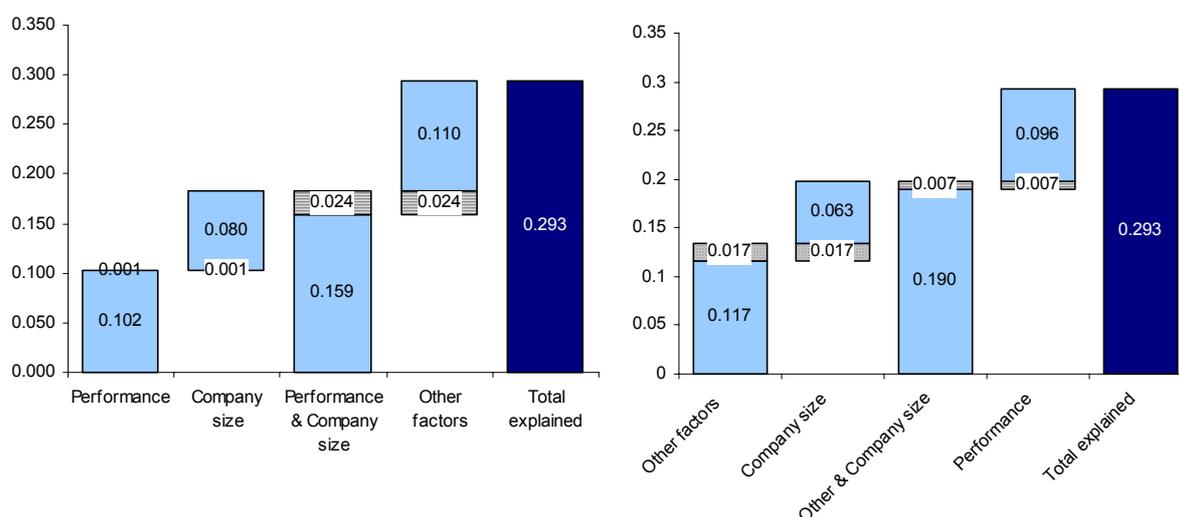
Figure 8: Decomposition of variance explanation

Table 11 and Figure 8 suggest several conclusions about explanation of variation in dependent variable Value of Option Grants.

If size is regarded as positive factor, performance indicators explain 10.2% (resp. 10.3%) and jointly with company size explain 15.9% (resp. 18.3%) and Other factors explain 11% (resp. 13.4%)

In the alternative B, where company size is regarded as adverse factor, adverse factors explain 19% (resp. 19.7%) and performance explains 9.6% (resp. 10.3%)

Concluding from the above: Company size is again an important explaining variable of Value of Options Grants variation. The explanation by performance variables is neither large in the case of option grants. The lowest possible marginal effect of adverse factors in our model is 11%, which is, in our opinion, high level.

The discussion about possible impact of other unidentified positive factors that might be correlated with our group of adverse factors, and that would change our conclusions about the lowest possible effect of other-factors, is different than in the case of Bonus and Salary.

The justification for granting stock options in an ideal case is twofold. First, these are awarded for outstanding performance and second, they are awarded to ensure CEO is incited for further company value increase.

In the second case, there are different explanations, how much and in what cases the CEO should be awarded further equity compensation to align his interests with those of shareholders. For this reason, the result that at least 11% of variance in VOG is explained by adverse factors is vulnerable to existence of factors that are good for setting of options grants but at the same time correlated to our adverse factors and not identified by us.

There is one important determinant of VOG that we are not able to prove empirically. Its effect will be known after the new regulations are implemented – at the moment, there is strong regulatory distortion that favors VOG in comparison to other performance-based compensation. If all companies are forced to expense options, the amount awarded in options will decrease. As a consequence, we would expect that the possibility to explain VOG by variables introduced by us would increase.

6.4 Total Direct Compensation

We will close our empirical survey by regression where the dependent variable is Total Direct Compensation, composed of Salary, Bonus, Other Compensation and Value of Options Granted. As we have already noted, we cannot estimate a system of equations, as these would not satisfy basic assumptions. We estimate the regression for the Total Direct Compensation so that we can discuss the overall impact of individual regressors that will differ from contribution of regressors to individual components of executive compensation (Salary, Bonus, VOG).

Table 12: Regression estimation output – dependent variable Total Direct Compensation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1667461.	218736.3	7.623157	0.0000
ROAG	2539380.	662507.4	3.832984	0.0002
RETURN02	844534.7	316940.5	2.664647	0.0082
EMPLOY	30.23331	6.858395	4.408220	0.0000
SEPCHAIR	-675768.0	225677.8	-2.994394	0.0030
BOARDCOMP	6.153181	1.247512	4.932362	0.0000
R-squared	0.353452			

In the following text, we will discuss impact of the above-listed variables on Total Direct Compensation.

Total Direct Compensation is explained by two significant performance indicators: ROAG (through Options Grants) and RETURN02 (through Bonus).

Company size (EMPLOY) is again significant. Company size is an important determinant of executive compensation.

Separated chairmanship (SEPCHAIR) exercises deeper influence on setting of executive pay. But in this coefficient is also included the fee the CEO is awarded for being chairman. Average chairman retainer (when he/she is not CEO) is \$ 104.402.

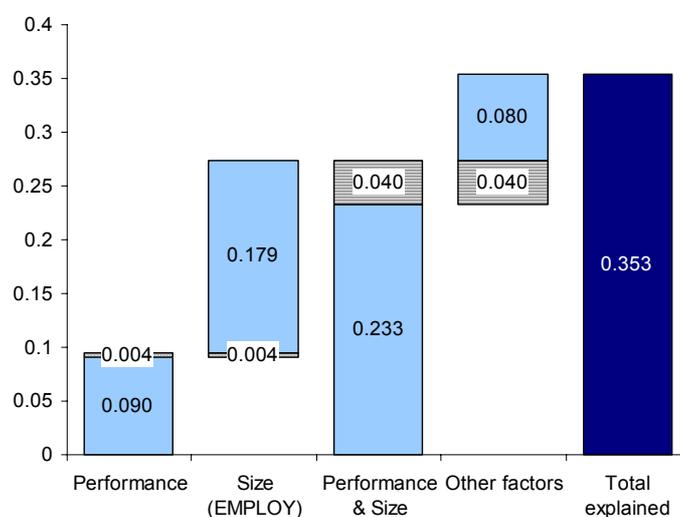
BOARDCOMP also significantly influences TDC. There are two reasons for it, benchmarking of executive compensation to board compensation and possible acting in concordance of CEO and board members.

Relative importance of regressors

We again split explanatory variables into groups. Performance includes ROAG, RETURN02, Other factors include SEPCHAIR and BOARDCOMP and Company size includes EMPLOY.

Table 13: R-square for individual group of regressors – Total Direct Compensation (alternative A and alternative B)

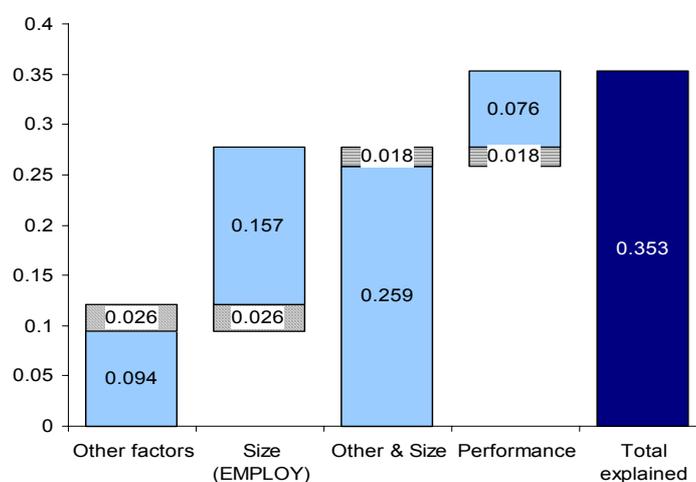
Regressors	R2	Fraction [a]	Joint effect	R2	[a]	effect
All	0.353					
Performance	0.094	0.090	0.004	0.273	0.233	0.040
Company size	0.183	0.179				
Other factors				0.121	0.080	
Other factors	0.121	0.094	0.026	0.278	0.259	0.018
Company size	0.183	0.157				
Performance				0.094	0.076	
All without company size	0.198	0.170	0.028			
Company size	0.183	0.155				

*Alternative A – size is a positive factor when setting executive pay***Figure 9: Decomposition of variance explanation – alternative A**

In the first case, we again assume that company size is a factor that should determine the level of executive compensation. That complexity of a business influences the characteristics of CEOs' work and makes it more complicated and more risky and that CEO should be rewarded for this.

In this case we decompose R-squared as it is in the Figure 9. Performance and Company size net contribution is 23.3% (resp. 27.3%), the net contribution of other factors is 8% (resp. 12%) to total R-square of 35.3%. The effect of Performance & Company size is of 27.3 %, divided into net effects of performance (9%) and company size (17.9%) and their joint effect of 0.4% (this reflects almost zero correlation between size and performance).

Even in this case, the influence of Other factors (8%) is rather high and reflects some scope to decrease CEO pay by removing effects of adverse factors. We would also expect the performance sensitivity of total direct compensation to be higher than 9%.

Alternative B – company size a adverse factor of executive compensation**Figure 10: Decomposition of variance explanation – alternative B**

In the second case, we assume that company size is not a desirable factor of executive compensation. Complexity of management or the risk connected with management of larger firms should not significantly influence executive compensation. All these firms are relatively large. We do not think the managers' work would significantly differ among the large firms. The risk connected to larger firms would be off-set by insurance of executive officers' responsibilities.

The results for this case would be slightly different. Now, the performance contribution is 7.6% (resp. 9.4%), 1.8% of variation in TDC is explained jointly by Performance and Other factors & Company size. Other factors & Company Size explain 25.9% (resp. 27.8%) of variation in Total Direct compensation. The effect of Company size remains large.

This solution would confirm our hypothesis that other factors that do not minimize shareholders' cost are present in the process of setting executive compensation. These would amount to 25.9% (resp. 27.8%) of explanation of Total Direct Compensation.

Conclusion for the both cases above

If we do analysis of importance of regressors, we should take into consideration, that we are not able to quantify other goals for CEO than pure market or accounting performance. There are other not quantifiable goals as long term research and development, marketing goals, mergers and acquisitions etc. These would change the structure of explanation of executive compensation. But we believe that there

would not be correlation of these with Other factors (adverse factors) and literature confirms these are usually not incorporated into the CEOs' contract (Day, Mang, Richter and Roberts, 2002).

And the results are again conditioned by non-existence of unidentified good factors that might be correlated to our group of adverse factors.

7) CONCLUSION

In the study, we have tried to find evidence on excessiveness of executive compensation. We have confirmed the excessiveness of executive compensation under certain conditions.

The literature on executive compensation suggests factors that have impact on setting of executive compensation. We have classified them into two groups: positive and adverse factors. The first group includes factors that provide executives with adequate compensation – it means, compensation is adequate for certain level of company value. The second group includes factors that, rather than goal of value maximization, follow personal interests of CEO and of board. In an ideal case, the second group of indicators should not determine executive compensation.

It remains an open issue whether company size is a positive or an adverse factor. There are influences of management complexity as “good” influence but larger company size might also serve as camouflage for CEO to achieve higher executive compensation. The effect of those is, however, hard to separate.

The executive compensation is also influenced by regulatory provisions. Section 162(m) of Internal Revenue Code caps executive compensation tax deductibility at \$ 1 million with exception of substantially performance-based compensation. We suggest that this provision has an important role in the popularity of stock options in late nineties. Sarbanes-Oxley Act provides better enforcement of correctness and completeness of financial reports and it requires CEOs to ensure this by posing serious penalties when breaching it.

Our empirical model that summarizes hypotheses about Salary, Bonus, Value of Option Grants, and about Total Direct Compensation reflects theoretical underpinnings. When we use the model to estimate impact of positive and adverse factors on the executive pay, we find that adverse factors are significant in explaining executive compensation.

We suggested that the impact of company size is partly positive and partly adverse and that we cannot exactly split these impacts between these two groups (adverse and positive), but we can still set the range of impact of adverse factors. The lower limit of impact of adverse factors would be that given by impact of adverse factors in case where company size is regarded as positive factor. The upper limit of impact of adverse factors would be that given by impact of adverse factors in case where

company size is regarded as adverse factor. Once we defined the range we can quote conclusions.

Explanation (net effect) by adverse factors lies in the range of 10 - 18% for explanation of Salary, 10.7% - 34.6% for explanation of Bonus, 11% - 19% for explanation of Value of Options Granted and 8% - 25.9% for explanation of Total direct Compensation. We conclude that the impact of adverse factors usually is above 10% which is a large impact and shareholders would save substantial value filtering the effect of such factors. Taking into consideration the average executive compensation of \$2.7 millions for our sample, it would be above 270 thousand on average per company.

Regarding performance/executive compensation relation, we find poor connection of these two. We could prove that performance indicators explain about 10-11% of Bonus, 10% of Value of Options Granted and 8-9% of Total Executive Compensation. Concluding on this, performance indicators/executive compensation relation is very low.

Summing up, there is space for rationalizing of executive pay of large US publicly-traded companies. Our study shows the lower limit of possible savings an average company could gain when introducing policies that would filter out factors that are clearly unrelated to company value.

8) REFERENCES

Working papers:

- Abowd, John M. and David S. Kaplan.** 1999. "*Executive Compensation: Six Questions That Need Answering.*" NBER working paper 7124.
- Anderson, Ronald C. and John M. Bizjak.** April 2000. "*An Empirical Examination of the Role and the Compensation Committee in Structuring Executive Pay*" Working paper, American University and Portland State University.
- Baker, P. George and Brian J. Hall.** December 1998. "*CEO Incentives and Firm Size.*" NBER working paper 6868
- Bebchuk, Lucian Arye and Jesse M. Fried.** July 2003. "*Executive Compensation as an Agency Problem.*" NBER working paper 9813
- Bebchuk, Lucian Arye and Jesse M. Fried.** December 2002. "*Executive Compensation as an Agency Problem.*" Working paper – working draft.
- Bebchuk, Lucian Arye, Jesse M. Fried and David I. Walker.** July 2002. "*Managerial Power and Rent Extraction in the Design of Executive Compensation.*" NBER working paper 9068.
- Berry, Tammy K., John M. Bizjak, Michael L. Lemmon and Lalitha Naveen.** November 2000. "*CEO Turnover and Firm Diversification.*" Working paper, Texas A&M University, Portland State University, University of Utah and Arizona State University.
- Bertrand, Marianne and Sendhil Mullainathan.** March 2000. "Do CEOs set their own pay? The ones without principals do" NBER working paper 7604.
- Bertrand, Marianne and Sendhil Mullainathan.** December 1998. "Executive compensation and incentives: The impact of takeover legislation" NBER working paper 6830.
- Bizjak, John M., Michael L. Lemmon and Lalitha Naveen.** March 2000. "Does the Use of Peer Groups Contribute to higher Pay and less Efficient Compensation?" Working paper, Portland State University, University of Utah, Arizona State University.

- Blonigen, Bruce A. and Rossitza B. Wooster.** February 2003. "CEO Turnover and foreign market participation" NBER working paper 9527.
- Bolton Patrick, José Scheinkman and Wei Xiong.** 2003. "Short-Termist Behavior in Speculative Markets." NBER working paper 9722.
- Borcard, Daniel.** 2002. "Partial r2, contribution and fraction [a]." Université de Montréal, Département de sciences biologiques.
- Bushman, M. Robert and Abbie J. Smith.** 2003. "Transparency, Financial Accounting Information, and Corporate Governance." FRBNY Economic Policy Review April 2003
- Core, John E., Wayne R. Guay, and David F. Larcker** 2003. "Executive Equity Compensation and Incentives: A Survey." FRBNY Economic Policy Review - April 2003
- Cyert, M. Richard.** 1997. "The Executive Compensation controversy." Lecture at Carnegie Mellon University, Latrobe.
<http://faceweb.stvincent.edu/Academics/cepe/Articles/cyert.htm>
- Day, Jonathan D. , Paul Y. Mang, Ansgar Richter, John Roberts.** 2002. "Has pay for performance had its day?" The McKinsey Quarterly, 2002 Number 4, Getting governance right. Pp. 46-55
- Evans, John.** Forthcoming. "An Examination of Economic value Added and Executive Compensation." Curtin University of Technology, Perth
- Frederic W. Cook and Co., Inc.** "Executive Compensation Year in Review (2003)". March 2004.
- Garen, John E.** 1994. "Executive Compensation and Principal-Agent Theory." The Journal of Political Economy, volume 102, Issue 6 (Dec., 1994), 1175-1199.
- Hall J. Brian and Thomas A. Knox.** 2002. "Managing Option Fragility." NBER working paper 9059.
- Hall, J. Brian and Jeffrey B. Liebman.** 2000. "The Taxation of Executive Compensation." NBER working paper 7596.
- Hall, J. Brian and Kevin J. Murphy.** 2003. "The Trouble with Stock Options." NBER working paper 9784.
- Hermalin, E. Benjamin and Michael S. Weisbach.** March 2001. "Boards of Directors as an Endogenously Determined Institution: A Survey of The Economic Literature." NBER working paper 8161.

- Holderness, G. Clifford.** 2003. "A Survey of Blockholders and corporate Control." FRBNY Economic Policy Review, April 2003 pp. 51-64.
- Holmstrom, Bengt and Steven N. Kaplan.** 2003. "The State of U.S. Corporate Governance: What's Right and What's wrong? NBER working paper 9613.
- Johnson, Simon, Rafael La Porta, Florencio Lopez-de-Silanes and Andrei Shleifer.** February 2000. "Tunnelling." NBER working paper 7523.
- Joskow, L. Paul and Nancy L. Rose.** 1994. "CEO Pay and Firm Performance: Dynamics, Asymmetries, and Alternative Performance Measures." NBER working paper 4976.
- Kane, J. Edward.** 2003. "Continuing Dangers of Disinformation in Corporate Accounting Reports." NBER working paper 9634.
- Meyersson Erik and Olof Svensson.** 2003. "Executive Compensation and Managerial Self-Dealing." Bachelor's Thesis in Economics Department of Economics Stockholm University.
- Milliron Jennifer.** 2000. "Board of Director Incentive Alignment and the Design of Executive Contracts." University of Chicago.
- Rajan, G. Raghuram and Luigi Zingales.** 2000. "The Governance of the New Enterprise." NBER working paper 7958
- Rose, Nancy L. and Catherine Wolfram.** August 2000 "Regulating Executive Pay: Using the Tax Code to Influence CEO Compensation" NBER working paper 7842.
- The In-House Counsel Compensation Report.** Corporate Legal Times, March 2004.
- Vranceanu Radu.** 2003. "Manager Unethical Behavior During the New Economy Bubble." ESSEC, Research Center. DR 03026.
- Zingales, Luigi.** 1997. "Corporate Governance." NBER working paper 6309.

Internet sites:

www.ecomponline.com

www.cbs.marketwatch.com

www.thecorporatelibrary.com

www.yahoo.finance.com

www.fwcook.com

www.aflcio.org

www.nber.org

ideas.uqam.org

netec.mcc.ac.uk

www.sec.org

Other source:

Reuters database

9) APPENDIX

9.1 Used synonyms

CEO; chief executive officer; manager

BD; board of directors; board

executive pay; executive compensation; compensation

golden goodbyes; golden parachutes

COB; chairman of the board

LTIP; long term incentive payouts

SEC; Securities Exchange Commission

9.2 List of all used variables

Variable (abbreviation)	Specification or note	Source of data
Executive Compensation Data		
Salary	Base salary	ecomponline.com
Bonus	Cash bonus	ecomponline.com
Other Compensation (OC)	Long Term Incentive Payouts (plans over one year), perquisites and other cash and non cash compensation,	ecomponline.com
Value of Options Granted (VOG)	The aggregated value of all the fiscal year end individual Options Grants valued on the date of grant.	ecomponline.com
Total Direct Compensation (TDC)	The sum of Salary, Bonus, Other Compensation and Value of Options Granted	ecomponline.com
Board characteristics and CEO characteristics		
Board Size (BOARDSIZE)	Number of members of board of directors. Larger number expresses lower strength of the board.	ecomponline.com
COB Compensation (COBC)	Compensation of the Chairman of the board. It is equal to zero when COB is the same person as CEO.	ecomponline.com
Board member compensation (BOARDCOMP)	Average board member compensation	ecomponline.com

Independence of compensation committee	Percentage of outside independent directors in compensation committee of the board	ecomponline.com
Compensation committee relative size (COMCOMP)	Size of compensation committee / board size	ecomponline.com
Employee directors (EMPLDIRP)	Number of employee directors/ board size	ecomponline.com
Independence of the board (INDEP)	Independent directors/ board size	ecomponline.com
CEO ownership	CEO ownership of shares of the company	ecomponline.com
Separate chairman (SEPCHAIR)	Dummy for companies where COB is not the same person as CEO	ecomponline.com
Directors over 70 directors	Number of over 70 directors / board size	ecomponline.com
Large owner (LARGEOWNER)	Percentage ownership of all large owners with > 5% stake	ecomponline.com
Institutional owner	Percentage ownership by institutional owners	finance.yahoo.com
CEO ownership relative to large owner	CEO ownership/ institutional shareholders stake	Calculation
Directors active CEOs (CEOELSEP)	Active CEO directors / board size	ecomponline.com
CEO age	CEO age	ecomponline.com
CEO tenure	CEO tenure with the company	ecomponline.com
Financial Data and Company Characteristics		
Number of employees (EMPLOY)	Measure of company size - number of employees of the company	ecomponline.com
Total Assets (TA)	Total Assets for 2001-2003	yahoo.finance.com
Equity (EQ)	Equity for 2001-2003	yahoo.finance.com
Liabilities (LIAB)	Liabilities	
Total Revenues (Revenues)	Total Revenues for 2001-2003	yahoo.finance.com
Operating Income (operate)	Operating income excluding Total Other Income/expenses for 2001-2003	yahoo.finance.com
Net Income (Profit)	Net Income after tax for 2001-2003	yahoo.finance.com
Share price (SP)	At the end of fiscal years 2001-2003	cbs.marketwatch.com
Return	Return per share for fiscal year	Calculation
ROA	Profit / Total Assets	Calculation
ROE	Profit / Equity	Calculation
Operating income per equity	Operating income / Equity	Calculation
Operating Income per Total Assets	Operating income / Total Assets	Calculation

9.3 Regression Estimations

Salary

Table 14: Regression estimation output – dependent variable SALARY

Dependent Variable: SALARY
Method: Least Squares
Sample: 1 285

White Heteroskedasticity-Consistent Standard Errors & Covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	126425.3	110301.2	1.146182	0.2527
EMPLOY	2.250169	0.449700	5.003713	0.0000
LIAB02	0.012959	0.003650	3.550162	0.0005
FEMALEP	490194.7	113114.5	4.333615	0.0000
COBC	0.579475	0.217531	2.663875	0.0082
CEOAGE	3511.548	1755.462	2.000355	0.0464
BOARDCOMP	0.217686	0.095163	2.287508	0.0229
SEPCHAIR	-89640.79	30128.60	-2.975272	0.0032
BOARDSIZE	19105.51	6440.074	2.966660	0.0033
R-squared	0.496812	Mean dependent var		621706.2
Adjusted R-squared	0.482227	S.D. dependent var		253298.4
S.E. of regression	182264.5	Akaike info criterion		27.09538
Sum squared resid	9.17E+12	Schwarz criterion		27.21072
Log likelihood	-3852.091	F-statistic		34.06285
Durbin-Watson stat	1.727669	Prob(F-statistic)		0.000000

First, before using White heteroskedasticity-consistent standard errors and covariance tool estimation we tested the model for heteroskedasticity with White test:

Table 15: White heteroskedasticity residual test

F-statistic	2.06782	Probability	0.013785
Obs*R-squared	27.59874	Probability	0.016076

Then we used regression estimate (the one presented above) with White Heteroskedasticity-Consistent Standard Errors & Covariance tool.

We also tested the residuals for normal distribution with positive results:

Table 16: Jarque-Bera test of normality of residuals

Jarque-Bera	2.565467
Probability	0.277278

We reject hypothesis of zero coefficients at 5 % level of significance for all coefficients.

Bonus

Table 17: Regression estimation output – dependent variable BONUS

Dependent Variable: BONUS

Method: Least Squares

Sample: 1 285

White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-214029	102892.7	-2.08011	0.0384
ROE0203	51344.97	13447.34	3.818224	0.0002
RETURN02	260882.5	51921.31	5.024575	0.0000
RETURN03	324900.3	46694.06	6.958065	0.0000
TA03	0.023776	0.003782	6.287267	0.0000
BOARDSIZE	56883.07	11764.24	4.835253	0.0000
BOARDCOMP	0.875187	0.218734	4.001151	0.0001
CEOELSEP	244106	39988.76	6.104365	0.0000
R-squared	0.46194	Mean dependent var		495732
Adjusted R-squared	0.448343	S.D. dependent var		513028.4
S.E. of regression	381044.7	Akaike info criterion		28.56689
Sum squared resid	4.02E+13	Schwarz criterion		28.66942
Log likelihood	-4062.78	F-statistic		33.97326
Durbin-Watson stat	1.916638	Prob(F-statistic)		0

First, before using White heteroskedasticity-consistent standard errors and covariance tool estimation we tested the model for heteroskedasticity with White test:

Table 18: White heteroskedasticity residual test

F-statistic	3.71865606953	Probability	0.000010
Obs*R-squared	46.0702450643	Probability	0.000027

For the regression presented above we used the White Heteroskedasticity-Consistent Standard Errors & Covariance tool.

Value of Option Grants

Table 19: Regression estimation output – dependent variable Value of Options Grants

Dependent Variable: VOG

Method: Least Squares

Sample: 1 285

White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	716517.5	251103.9	2.853471	0.0046

ROAG	2312821.	806301.8	2.868431	0.0044
EMPLOY	15.53018	5.992491	2.591608	0.0101
SEPCHAIR	-484620.1	183291.2	-2.643990	0.0087
BOARDCOMP	5.475287	1.154337	4.743229	0.0000
LARGEOWNER	-1915806.	973430.6	-1.968097	0.0500
R-squared	0.293226	Mean dependent var		1358799.
Adjusted R-squared	0.280560	S.D. dependent var		2067042.
S.E. of regression	1753261.	Akaike info criterion		31.61268
Sum squared resid	8.58E+14	Schwarz criterion		31.68958
Log likelihood	-4498.807	F-statistic		23.15029
Durbin-Watson stat	1.902894	Prob(F-statistic)		0.000000

First, before using White heteroskedasticity-consistent standard errors and covariance tool estimation we tested the model for heteroskedasticity with White test:

Table 20: White heteroskedasticity residual test

F-statistic	2.79924474425	Probability	0.003700
Obs*R-squared	23.9181390667	Probability	0.004433

For the regression presented above we used the White Heteroskedasticity-Consistent Standard Errors & Covariance tool.

Total Direct Compensation

Table 21: Regression estimation output – dependent variable Total Direct Compensation

Dependent Variable: TDC

Method: Least Squares

Sample: 1 285

White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1667461.	218736.3	7.623157	0.0000
ROAG	2539380.	662507.4	3.832984	0.0002
RETURN02	844534.7	316940.5	2.664647	0.0082
EMPLOY	30.23331	6.858395	4.408220	0.0000
SEPCHAIR	-675768.0	225677.8	-2.994394	0.0030
BOARDCOMP	6.153181	1.247512	4.932362	0.0000
R-squared	0.353452	Mean dependent var		2704069.
Adjusted R-squared	0.341865	S.D. dependent var		2555569.
S.E. of regression	2073218.	Akaike info criterion		31.94793
Sum squared resid	1.20E+15	Schwarz criterion		32.02482
Log likelihood	-4546.580	F-statistic		30.50454
Durbin-Watson stat	1.915983	Prob(F-statistic)		0.000000

First, before using White heteroskedasticity-consistent standard errors and covariance tool estimation, we tested the model for heteroskedasticity with White test::

Table 22: White heteroskedasticity residual test

F-statistic	2.799506	Probability	0.003697
Obs*R-squared	23.92019	Probability	0.004429

For the regression presented above we used the White Heteroskedasticity-Consistent Standard Errors & Covariance tool.