



universität
wien

MASTERARBEIT

Titel der Masterarbeit

„The relationship between performance,
CEO compensation and corporate governance“

Verfasser

Manuel Gunacker, Bakk. rer. soc. oec.

angestrebter akademischer Grad

Master of Science (MSc)

Wien, 2012

Studienkennzahl lt. Studienblatt:
Studienrichtung lt. Studienblatt:
Betreuerin / Betreuer:

A 066 915
Masterstudium Betriebswirtschaft
Univ.-Prof. Dr. Gyöngyi Lóranth

Table of contents

Figures	VI
Tables	VI
Abbreviations	VII
1 Introduction.....	1
2 Literature review	2
2.1 Defining the model	2
2.1.1 The ideal solution	3
2.1.2 Optimal solution.....	5
2.2 Mechanisms to reduce agency cost	8
2.2.1 Non-financial alignment mechanisms.....	8
2.2.1.1 Monitoring / Bonding.....	9
2.2.1.2 Threat of dismissal	12
2.2.2 Financial alignment mechanisms	13
2.2.2.1 Managerial equity ownership	15
2.2.2.2 Incentive contracts.....	21
2.2.3 Influential players.....	30
2.2.3.1 Board of directors	30
2.2.3.2 Institutional investors	35
3 Methodology	39
3.1 Why to focus solely on the CEO.....	39
3.2 Performance measures.....	40
3.2.1 Stock return	40
3.2.2 ROA.....	40
3.2.3 Tobin's q	41

3.2.4	Timing	42
3.2.5	Relative performance	42
3.3	Compensation variables	43
3.4	Control variables.....	44
3.4.1	Managerial ownership	44
3.4.2	Number of directors in the board	45
3.4.3	Board independence	46
3.4.4	Concentration of institutional shareholdings	46
3.4.5	Size.....	47
3.4.6	Industry	48
3.4.7	E-Index.....	48
3.4.8	CEO age	49
3.4.9	Interlock.....	50
3.5	Regression Functions and Expected Correlations	51
3.5.1	Performance perspective	51
3.5.2	Compensation perspective.....	51
3.5.3	Expected Correlations	52
4	Data	52
4.1	Sample description	52
4.2	Descriptive statistics	53
4.2.1	Descriptive statistics, 1993-2009	54
4.2.2	Descriptive statistics, 1993-2005	56
4.2.3	Descriptive statistics, 2006-2009	58
4.3	Correlation coefficients	60
5	Regression results	64
5.1	1993 - 2009	65

5.1.1	Performance perspective	65
5.1.2	Compensation perspective.....	67
5.2	1993-2005.....	69
5.2.1	Performance perspective	69
5.2.2	Compensation perspective.....	72
5.3	2006-2009.....	74
5.3.1	Performance perspective	74
5.3.2	Compensation perspective.....	76
5.4	Analyzing the components of compensation.....	78
5.4.1	Exclude salary from TDC.....	78
5.4.1.1	1993-2005	79
5.4.1.2	2006 - 2009	83
5.4.2	Excluding bonus from TDC	86
5.4.2.1	1993 - 2005	86
5.4.2.2	2006 - 2009	91
5.4.3	Excluding options from TDC	94
5.4.3.1	1993 - 2005	95
5.4.3.2	2006 - 2009	100
6	Conclusion	104
7	Limitations & Extensions	109
7.1	Board characteristics	109
7.2	Market for corporate control	110
7.3	The role of debt	111
7.4	Miscellaneous extensions.....	112
7.5	Final note	113
8	References.....	114

9	Appendix - unreported tables	118
	Abstract	146
	Curriculum Vitae.....	148

Figures

Figure 1: The ideal solution (without outside funding).....	4
Figure 2: The optimal solution (with outside funding)	6
Figure 3: The optimal solution with monitoring / bonding.....	10
Figure 4: The relationship between performance and managerial ownership	19
Figure 5: Composition of the average CEO compensation in different countries	22
Figure 6: Composition of the average CEO compensation in Europe and the U.S.	23

Tables

Table 1: Regional differences in average CEO compensation.....	22
Table 2 & 3: Expected empirical relationships	52
Table 4: Number of observations per year	53
Table 5: Descriptive statistics of the whole sample	54
Table 6: Descriptive statistics of the 1993 - 2005 subsample.....	56
Table 7: Descriptive statistics of the 2006 - 2009 subsample.....	58
Table 8: Pairwise correlations	61
Table 9: Regression results: Performance perspective 1993 - 2009	65
Table 10: Regression results: Compensation perspective 1993 - 2009	67
Table 11: Regression results: Performance perspective 1993 - 2005.....	70
Table 12: Regression results: Compensation perspective 1993 - 2005	72
Table 13: Regression results: Performance perspective 2006 - 2009.....	74
Table 14: Regression results: Compensation perspective 2006 - 2009	76
Table 15: Regression results: Performance perspective 1993 - 2005, salary excluded.....	79
Table 16: Regression results: Compensation perspective 1993 - 2005, salary excluded	81
Table 17: Regression results: Performance perspective 2006 - 2009, salary excluded.....	83
Table 18: Regression results: Compensation perspective 2006 - 2009, salary excluded	84
Table 19: Regression results: Performance perspective 1993 - 2005, bonus excluded	86
Table 20: Regression results: Compensation perspective 1993 - 2005, bonus excluded.....	89
Table 21: Regression results: Performance perspective 2006 - 2009, bonus excluded	91
Table 22: Regression results: Compensation perspective 2006 - 2009, bonus excluded.....	93
Table 23: Regression results: Performance perspective 1993 - 2005, options excluded.....	95
Table 24: Regression results: Compensation perspective 1993 - 2005, options excluded	97
Table 25: Regression results: Performance perspective 2006 - 2009, options excluded.....	100
Table 26: Regression results: Compensation perspective 2006 - 2009, options excluded ...	102
Table 27 & 28: Comparison of expected and actually observed empirical relationships.....	106
Table 29: Regression results: Performance perspective 1993 - 2009, alt. specification	118
Table 30: Regression results: Compensation perspective 1993 - 2009, alt. specification.....	119
Table 31: Regression results: Performance perspective 1993 - 2005, alt. specification	120
Table 32: Regression results: Compensation perspective 1993 - 2005, alt. specification.....	122
Table 33: Regression results: Performance perspective 2006 - 2009, alt. specification	123
Table 34: Regression results: Compensation perspective 2006 - 2009, alt. specification.....	124
Table 35: Regression results: Performance perspective 1993 - 2005, salary excluded, alt. specification	125
Table 36: Regression results: Compensation perspective 1993 - 2005, salary excluded, alt. specification	127

Table 37: Regression results: Performance perspective 2006 - 2009, salary excluded, alt. specification	128
Table 38: Regression results: Compensation perspective 2006 - 2009, salary excluded, alt. specification	129
Table 39: Regression results: Performance perspective 1993 - 2005, bonus excluded, alt. specification	130
Table 40: Regression results: Compensation perspective 1993 - 2005, bonus excluded, alt. specification	132
Table 41: Regression results: Performance perspective 2006 - 2009, bonus excluded, alt. specification	133
Table 42: Regression results: Compensation perspective 2006 - 2009, bonus excluded, alt. specification	134
Table 43: Regression results: Performance perspective 1993 - 2005, options excluded, alt. specification	135
Table 44: Regression results: Compensation perspective 1993 - 2005, options excluded, alt. specification	137
Table 45: Regression results: Performance perspective 2006 - 2009, options excluded, alt. specification	138
Table 46: Regression results: Compensation perspective 2006 - 2009, options excluded, alt. specification	139
Table 47: Regression results: Performance perspective 1993 - 2005, options only.....	140
Table 48: Regression results: Compensation perspective 1993 - 2005, options only	142
Table 49: Regression results: Performance perspective 2006 - 2009, options only.....	143
Table 50: Regression results: Compensation perspective 2006 - 2009, options only	144

Abbreviations

alt.	... alternative
ASE	... American Stock Exchange
BLK	... Black Scholes
BV	... Book Value
CalPERS	... California Public Employee's Retirement System
CEO	... Chief Executive Officer
inst.	... institutional
IRRC	... Investor Responsibility Research Center
MV	... Market Value
no.	... number
NPV	...Net Present Value
NYSE	... New York Stock Exchange
q	... Tobin's q
r_E	... return on equity (dividends reinvested)
rel	... relative
R&D	... Research and Development
SEC	... Securities and Exchange Commision
SIC	... Standard Industry Classification
TDC	... Total Direct Compensation

UK ... United Kingdom
U.S. ... United States
US GAAP ... United States Generally Accepted Accounting Principles

1 Introduction

In recent years, in the light of the various crises, compensation of corporate top management received considerably more interest than usual. Not only the politics, the public and the media questioned the appropriateness of existing compensation arrangements, but also the shareholders of the firms. Oftentimes, the perception of nowadays compensation schemes is that CEOs are rewarded arbitrarily and that their pay is not connected to their performance. Searching for the existence of this link is one of the two goals of this work. To get a more detailed insight of the relationship, this paper also analyses the effectiveness of certain components of compensation.

The second aim is to validate which instruments of corporate governance are effective in aligning the interests of the CEO with those of the firm's shareholders. Since compensation is supposed to be one of these instruments, the second goal of my thesis is closely related to the first one. In financial literature the possibly deviating interests between the CEO and the shareholders is known as the principal agent conflict, or the problem of the separation of ownership and control. In theory, and oftentimes in reality too, managers possibly have different preferences than shareholders. In particular, they are prone to engage in self-serving activities such as inefficient spending, empire building, extraction of perks etc., whereas the primary desire of the shareholders is that the value of their stake gets maximized. In order to prevent managers from departing too far from maximizing the value to shareholders, incentive and monitoring systems have been implemented.

The fact that there are still numerous papers published that address the problems arising from the separation of ownership and control, illustrates that there is still no consensus about what instruments good corporate governance should involve and which play a less important role or could be omitted altogether. My thesis contributes to the literature in that it provides the reader with a broad overview of the different mechanisms developed to align shareholders' and CEO's interests, together with empirical evidence which of those are indeed positively related to firm performance. Due to its recent popularity my thesis focuses especially on the effectiveness of CEO compensation, both in total and of certain components.

The majority of the analysis is conducted in two subsamples (1993-2005 and 2006-2009), since the SEC changed the disclosure requirements concerning compensation in 2005, making an analysis over the whole range of years less representative. The estimates resulting from the analysis are not designed to make any claims concerning causality, however. Rather, evaluating the cause of the relationships is left to future research.

The remainder of this paper is organized as follows: Next, section 2 familiarizes the reader with the theoretical background and what prior empirical evidence suggested. Afterwards, sections 3 and 4 describe the used methodology, expected relationships, and provide a detailed description of the data. Section 5 presents the results of the empirical analysis, followed by the conclusion in section 6. In the end, section 7 gives some final remarks and outlines possible extensions for future research. The appendix provides the regression results of a selective set of alternative specifications.

2 Literature review

Ever since there were people manipulating goods and assets owned by another, the separation of ownership and control caused problems to those affected. Theoretically, there is no difference between a farmer cultivating the land owned by a nobleman in the medieval era, or a manager running a multi-million dollar company with a vast number of shareholders. Both relationships can be seen as principal-agent relationships with similar inherent problems. As soon as the individual in charge of control does not have to bear the whole cost of his actions (because his actions are not perfectly observable), an agency problem arises. Since those problems are omnipresent, there is extensive literature addressing this issue. One of the most influential papers addressing the problems arising from the so called principal-agent relationship is by Jensen and Meckling in 1976¹. In this section I will start by reviewing this basic paper. Afterwards, I will illustrate what has happened in related research so far by focusing on a set of selective papers.

2.1 Defining the model

An agency relationship is defined as "...a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf

¹ cf. Jensen, Meckling, 1976, "Theory of the firm: Managerial Behavior, Agency costs and ownership structure"

which involves delegating some decision making authority to the agent”². The major problem within this relationship is the decision making authority. In theory (and often also in reality) individuals are value maximizers. That is, every individual strives towards maximizing his personal utility in terms of pecuniary as well as non-pecuniary wealth.

2.1.1 The ideal solution

If an individual has to bear the whole cost of his consumption of non-pecuniary income (e.g. is the owner-manager of a firm), he³ will choose to extract an amount of non-pecuniary wealth such that his personal utility is maximized. The graph below depicts this equilibrium in the case of an owner-manager⁴:

² cf. Jensen, Meckling, 1976, “Theory of the firm: Managerial Behavior, Agency costs and ownership structure”, p. 308

³ I am referring to the CEO and managers as to be male just as a matter of convenience and not because I want to make any references about gender roles in the corporate environment. Henceforth, the terms "he" and "she" are used interchangeably.

⁴ Although agency problems can be found in many different interpersonal relationships (communities, universities, sports teams, etc.), this paper focuses solely on the relationship between a firm's equity-shareholders and its management

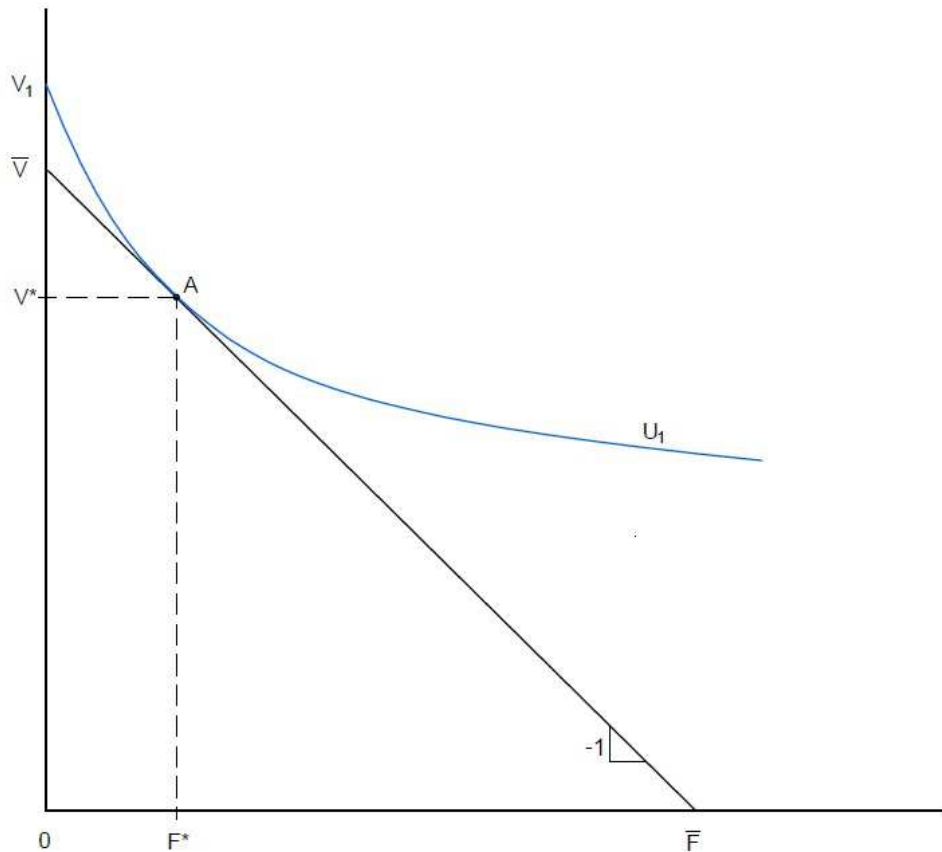


Figure 1 “The ideal solution (without outside funding)”

Derived from Jensen, Meckling, 1976, “Theory of the firm: Managerial Behavior, Agency cost and ownership structure”

V ... denotes firm value

F ... denotes the value of non-pecuniary wealth the agent will extract

U ... indifference curves

A ... the “ideal” solution: the equilibrium in which V and F are balanced such that it gives the owner-manager the highest feasible utility

In this graph $\bar{V}$ denotes the value of the firm if the manager chooses not to consume any perquisites, and $\bar{F}$ denotes the highest possible level of perquisite⁵ consumption (at this point the firm's only purpose would be to generate non-pecuniary wealth for its owner). Therefore the line $\bar{V}\bar{F}$ represents the locus of all possible combinations. Its slope is equal to -1 since the cost of every dollar increase in non-pecuniary benefits reduces the firm value by the equivalent dollar, which is “...analogous to a budget constraint”⁶.

⁵ The extraction of non-pecuniary wealth is not limited to the consumption of perquisites; it also involves activities such as shirking, inefficient spending or other “non-value-maximizing objectives such as sales growth, empire building, and employee welfare” (cf. Morck, Shleifer, Vishny, 1988, “Management ownership and market valuation”, p. 293); for the sake of readability I am referring to perquisites as synonym for the extraction of non-pecuniary wealth in every possible form

⁶ cf. Jensen, Meckling, 1976, “Theory of the firm: Managerial Behavior, Agency costs and ownership structure”, p. 315

At the point $\bar{V}$, a manager, eager to maximize his personal welfare, values an incremental increase in perquisites higher than an incremental loss in firm value, and therefore will move down the line towards point A, where the (personal) marginal cost in firm value is equal to the (personal) marginal benefit of perquisites. Therefore, point A resembles the ideal solution if the firm is owned by a single owner-manager. It should be recognized, that the slope of his utility function (U_1) at this point is equal to the slope of $\bar{V}\bar{F}$ (i.e. -1).

Summing that up, in the ideal solution firm value is equal to V^* and the level of fringe benefits is equal to F^* .

2.1.2 Optimal solution

In case the owner-manager wants to sell some fraction $(1-\alpha)$ of his ownership and remain as manager, a naïve buyer may be willing to pay $(1-\alpha)V^*$, the value of the acquired fraction of the current firm value V^* . However, if his actions are not perfectly observable, the manager will not have to bear the whole \$ cost of consuming perquisites anymore, but rather a dollar value equal to his fraction of ownership (α). Therefore, the slope of his budget constraint changes to $-\alpha$ (as depicted in fig. 2 – see below). This line has to pass point A, “... since he [the manager] can if he wishes have the same wealth and level of non-pecuniary consumption he consumed as full owner”⁷. Again he will maximize his personal wealth, ending up at point B (where the highest feasible utility function is tangent to his budget constraint), consuming non-pecuniary benefits of F^0 . The total costs of his consumption, however, remains unchanged, bringing firm value down to V^0 . This decrease in firm value affects the wealth of all owners depending on the fraction they are holding. Hence, in the new equilibrium the new owner would incur a fraction of the costs of consumption equal to $(1-\alpha)F^0$, and the rest would have to be borne by the manager.

⁷ cf. Jensen, Meckling, 1976, “Theory of the firm: Managerial Behavior, Agency costs and ownership structure”, p. 317

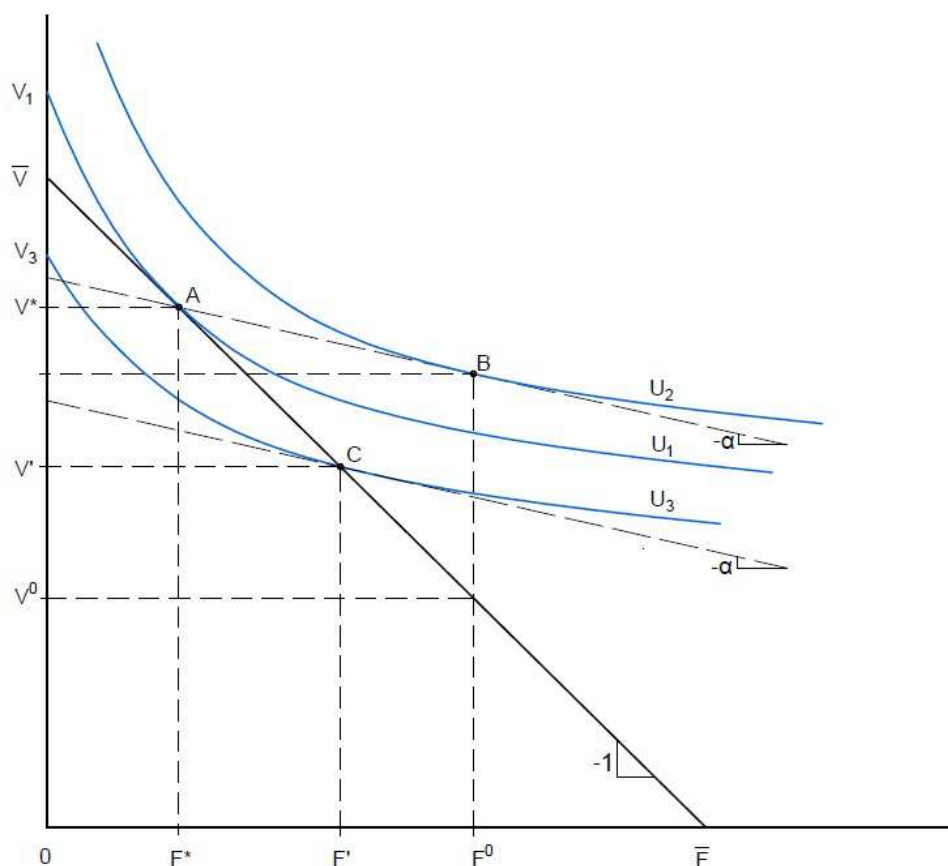


Figure 2 “The optimal solution (with outside funding)”

From Jensen, Meckling, 1976, “Theory of the firm: Managerial Behavior, Agency cost and ownership structure”, p.316

V ... denotes firm value

F ... denotes the value of non-pecuniary wealth the agent will extract

U ... indifference curves

α ... the fractional ownership the agent retains after resorting to outside funds

A ... the “ideal” solution

B ... equilibrium with naïve investors

C ... the “optimal” solution if investors anticipate the agent’s change in behavior

Most investors are not that naïve however, so they will only be willing to pay an amount that is equal to the expected value of the firm, given the higher level of perquisites consumed by the manager. Through anticipating the agent’s behavior, investors force the manager towards a new equilibrium of pecuniary and non-pecuniary wealth which is at point C. At this point the managers utility function is again tangent to his budget constraint, at a point where it intersects the firm’s budget constraint. That the transaction has to occur at exactly this point can easily be explained. Consider the case that the tangency occurs left to C, where the owner-manager will receive payments that are lower than the claim is actually worth. On the opposite, if the tangency occurs at a point to the right of C, the owner-

manager will receive inappropriate high payments, leaving the new owners worse off. Since both participants in this transaction are assumed to be rational wealth maximizers, a transaction can only take place at point C.

In this new equilibrium firm value is equal to V' and the manager's consumption of non-pecuniary wealth is F' . If there is no monitoring and/or bonding allowed (see further down), the whole decrease in firm value $V^* - V'$ (and therefore in wealth) has to be borne solely by the manager⁸. Firm value is decreasing by the same magnitude as the extraction of non-pecuniary wealth is increasing. The manager's welfare however (pecuniary + non-pecuniary wealth) is not decreasing by an amount equal to $V^* - V'$. Rather it is decreasing by the distance between the intersects of the vertical axis and the utility functions U_1 and U_3 , which is equal to $V_1 - V_3$. The magnitude of $V_1 - V_3$ is smaller than $V^* - V'$, since part of the firm value decrease the manager incurs is compensated by the higher level of perquisite consumption (it is important to realize that this increase cannot compensate the manager thoroughly, since at this point he would value pecuniary wealth more than non-pecuniary wealth). In the absence of monitoring and bonding activities, Jensen and Meckling define the manager's total wealth reduction ($V_1 - V_3$) as "net agency cost"⁹. Obviously a manager "...would sell such a claim only if the increment in welfare he achieves by using the cash amounting to $(1-\alpha)V'$ for other things was worth more to him than this amount of wealth [$V_1 - V_3$]"¹⁰.

Due to the selling of equity to investors, the manager is forced to increase his consumption of perquisites, since, if he chooses not to do so, he will get less for the claim than it is actually worth. The lower the fraction (α) the manager retains, the flatter gets the slope of his budget constraint, and, since investors will anticipate the behavior of appropriating "...larger amounts of the corporate resources in the form of perquisites"¹¹, the more expensive it will be to him to sell shares (in terms of incurred agency cost). Following this logic, the manager will keep on selling equity to investors as long as his increase in personal welfare

⁸ for the proof cf. Jensen, Meckling, 1976, "Theory of the firm: Managerial Behavior, Agency costs and ownership structure", p. 318,319

⁹ cf. Jensen, Meckling, 1976, "Theory of the firm: Managerial Behavior, Agency costs and ownership structure", p. 319

¹⁰ cf. Jensen, Meckling, 1976, "Theory of the firm: Managerial Behavior, Agency costs and ownership structure", p. 319

¹¹ cf. Jensen, Meckling, 1976, "Theory of the firm: Managerial Behavior, Agency costs and ownership structure", p. 313

(no matter if measured in perquisites or in other benefits he can obtain by using the payments received by investors) will outweigh the incurred (agency) cost. Moreover, in this model, agency cost can be seen as a measure of deviation of interest between principal and agent. As a result, a lower fraction α can be interpreted as a lower likelihood that the manager will act in shareholder's best interest. Following this model, the obvious conclusion that could be drawn is, that the higher a manager's ownership in a firm, the more likely he will act in shareholders' best interest¹². Some empirical studies, however, do not support this notion without reproach¹³ which is why other theories about management ownership have been developed (e.g. entrenchment theory¹⁴ - see further down).

2.2 Mechanisms to reduce agency cost

Obviously, as far as I presented it, the model by Jensen and Meckling would not be applicable to reality. If owner-managers sell equity only as long as their incremental increase in personal wealth outweighs the agency cost they incur, we would not see multi-million dollar corporations, traded publicly, with management holding only a tiny fraction of the shares. To ensure that shareholders' invested capital is not exposed to the free disposition of the management, control instruments have been implemented.

Literature suggests a wide variety of instruments designed to minimize agency cost and boost performance. Although those instruments are heavily interrelated, they can roughly be divided in two categories, financial and non-financial alignment mechanisms. I will start by reviewing the latter one.

2.2.1 Non-financial alignment mechanisms

Non-financial mechanisms to reduce agency cost are designed to decrease the divergence of interests without actively tying a manager's pecuniary wealth to shareholders' wealth. In this paper, I want to focus on the most prominent of those measures, monitoring / bonding and the threat of dismissal, the first of which Jensen and Meckling explicitly analyzed in their paper.

¹² cf. Jensen, Murphy, 1990, "CEO incentives – It's not how much you pay, but how"

¹³ cf. e.g. Morck, Shleifer, Vishny, 1988, "Management ownership and Market Valuation"; Janakirman, Radhakrishnan, Tsang, 2010, "Institutional Investors, Managerial Ownership, and Executive Compensation"

¹⁴ cf. e.g. Morck, Shleifer, Vishny, 1988, "Management ownership and Market Valuation"; Janakirman, Radhakrishnan, Tsang, 2010, "Institutional Investors, Managerial Ownership, and Executive Compensation"

2.2.1.1 Monitoring / Bonding

If a manager wants to raise funds but has no desire to increase his consumption of non-pecuniary wealth to corresponding levels, he could issue “guarantees” not to consume such high levels in order to encourage investors to pay a higher amount for their share. This activity is called “bonding”. If the principal is interested in curbing the manager’s perquisites consumption he will engage in “monitoring”. In doing so, the principal will closely observe the agent's actions, and threaten him with certain consequences if he is seriously departing from the behavior the principal is hoping for.

No matter which of those two mechanisms is prevalent (a mixture would also be possible), the costs, as well as the benefits, of aligning interests will be incurred by the former owner-manager¹⁵. As a value maximizing individual, a manager will sign such a contract only as long as the benefits outweigh the costs. Using the model presented above, this relationship can be depicted as follows.

¹⁵ cf. Jensen, Meckling, 1976, “Theory of the firm: Managerial Behavior, Agency costs and ownership structure”, p. 324, 325

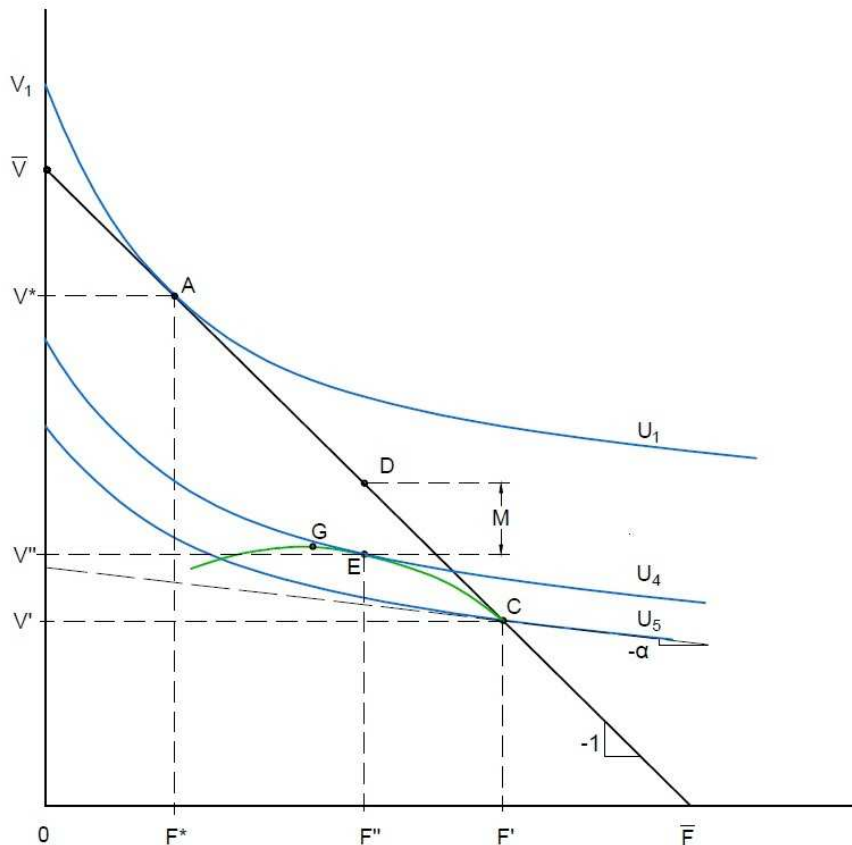


Figure 3 “The optimal solution with monitoring / bonding”

From Jensen, Meckling, 1976, “Theory of the firm: Managerial Behavior, Agency cost and ownership structure”, p.324

V ... firm value

F ... value of non-pecuniary wealth the agent will extract

U ... indifference curves

α ... the fractional ownership the agent retains after resorting to outside funds

A ... the “ideal” solution

C ... the “optimal” solution if investors anticipate the agent’s change in behavior

E ... optimal solution to the agent

G ... optimal solution to the principal (not feasible since agent is worse off)

M ... monitoring cost = D-E

D ... equilibrium of firm value and perquisite consumption F'' if monitoring costs are equal to zero

Other than in section 2.1.2 above, monitoring is possible now. Let us assume that investors, through anticipating his behavior, forced a manager to point C, yielding a firm value equal to V' and a perquisite consumption level of F' . Assume furthermore, that monitoring does reduce perquisite consumption F , and that the monitoring costs (M) are increasing with the magnitude of the desired reduction.

If it would be possible to force the manager to a certain level of F at zero cost, investors would force him towards point A (the ideal solution where the agency cost is equal to zero). A level of perquisite consumption lower than F^* however, would not be possible since the

manager would not sign such a contract (his personal welfare would decrease if he moves up the line beyond point A).

In fact, monitoring is seldom available at zero cost, and therefore if monitoring forces the manager to extract a lower level of non-pecuniary wealth, the value of the firm would not increase by the same magnitude as F decreases. Rather, the firm would move along the green expansion path shown in Figure 3. Since monitoring costs are increasing at higher levels, the expansion path is a concave function, reaching its maximum at point G. A rational manager however, striving to maximize his personal welfare, will not commit himself to a contract which does not give him the highest feasible utility. From the manager's perspective, the optimal solution is denoted by point E (the point where the expansion path is tangent to the highest indifference curve - in this case U_4). At this point, firm value equals V'' and perquisite consumption is at F'' . The monitoring cost at point E is given by $M=D-E$. It is important to realize that point D does not denote the ideal solution, but rather an optimal one. As mentioned above, if $M=0$ for all levels of F , the ideal solution would be at point A.

The monitoring model presented in Figure 3 is also valid for bonding activities since "[...] it makes no difference who actually makes the monitoring expenditures - the owner bears the full amount of costs [...]"¹⁶ and gets all the benefits. Monitoring / bonding costs will be different for every company, depending on the individual value a manager assigns to the perquisites available, the composition of the board (cf. section 2.2.3.1), manager's entrenchment (cf. section 2.2.2.1), how incentive contracts are shaped (cf. section 2.2.2.2), how observable manager's actions are, etc.. Which form is dominant in a firm depends on who can limit the perquisite consumption at a lower cost. Is the manager able to issue a compelling contract to limit his extraction of F , bonding will be the prevalent activity. If the manager is not able to do so (or only at a higher cost), investors will engage in monitoring.

Links to other sections

In case investors want to engage in monitoring, they often delegate this task to the board of directors (at least investors with only a small stake oftentimes have to rely on the board, since they do not have the incentive and the means to conduct this task themselves). The

¹⁶ cf. Jensen, Meckling, 1976, "Theory of the firm: Managerial Behavior, Agency costs and ownership structure", p.325

question at hand is how the board should be composed. How many directors should be on the board? How many outside directors should be included? Different implications of those questions are presented in section 2.2.3.1. A group that is considered highly capable of monitoring management are large (institutional) investors, presented in section 2.2.3.2 .

Furthermore, monitoring is closely related to the next section.

2.2.1.2 Threat of dismissal

Although I have no intention to test for this instrument separately (for example by examining the relationship between management turnover and performance, or by running an event analysis), I want to present its implications (in short) for the sake of completeness.

This instrument, which is also designed to mitigate the agency problem, is obviously extremely closely related to monitoring (if not a consequence of it). If the agent's actions are monitored with high scrutiny and he does not act in the principal's interest (i.e. deliver poor performance), he is threatened with dismissal. Since a large portion of a managers' wealth is typically tied to the firm he works for, especially in terms of his invested human capital (i.e. training, prospects on the job market, etc.), the threat of dismissal should constrain manager's behavior, lessen agency cost and is supposed to boost performance in turn.

Although this argumentation is consistent with previous studies¹⁷, there is a considerable controversy about its virtue. Part of the research confirms that "[...] poor stock return increases the probability of a CEO's losing his job"¹⁸ and that "[...] boards react relatively quickly to poor performance in their decisions to replace the CEO"¹⁹. Other empirical findings, however, suggest that "[...] dismissals are not an important source of managerial incentives since the increases in dismissal probability due to poor performance and the penalties associated with dismissal are both small"²⁰. Researchers supporting that notion attribute the lack of empirical evidence to the fact that "[...] employment contracts, severance agreements, or golden parachute arrangements [...] further reduce or eliminate

¹⁷ cf. e.g. Weisbach, 1988, "Outside Directors and CEO Turnover"; Bhagat, Bolton, 2008, "Corporate governance and firm performance"; Yermack, 1996, "Higher market valuation of companies with a small board of directors"

¹⁸ cf. Weisbach, 1988, "Outside Directors and CEO Turnover", p.440

¹⁹ cf. Weisbach, 1988, "Outside Directors and CEO Turnover", p.443

²⁰ cf. Jensen, Murphy, 1990, "Performance Pay and Top-Management Incentives", p.227

the pecuniary punishment for failure [...]”²¹. Furthermore, they suggest that the board does not always act in shareholders’ best interest either since its members are oftentimes reluctant to lay off managers after periods of poor performance due to psychological and social factors such as collegiality²².

Links to other sections

Usually researchers tested for the threat of dismissal using CEO or management turnover as a proxy. Since the studies that did find a significant relationship revealed that the turnover probability is especially sensitive to the size of the board²³, the number of outside directors on the board²⁴ (cf. section 2.2.3.1 further down), and the concentration of institutional shareholders²⁵ (cf. section 2.2.3.2 further down), I expect those numbers to incorporate the threat of dismissal, which is why I will not test for this mechanism by using a separate variable. Furthermore, in case the manager is entrenched (cf. section 2.2.2.1 below), the threat of dismissal becomes even less powerful, due to the lower probability of a lay off²⁶.

2.2.2 Financial alignment mechanisms

Financial alignment mechanisms are designed to mitigate the agency problem by actively connecting the agent's and the principal's wealth. Although these measures can be split in two major groups (managerial equity ownership and incentive compensation plans), I want to continue with the overall effect first, since an interesting study from 2010²⁷ examined the aggregated effect. Later on, I'm going to present the two groups separately.

When agency theory came up in the 70s, the academic community was positive that they discovered a key driver to a further understanding of manager behavior. In these days, financial alignment seemed to be a powerful tool to reduce agency cost, forcing the manager

²¹ cf. Jensen, Murphy, 1990, “Performance Pay and Top-Management Incentives”, p242

²² cf. Bebchuck, Fried, 2006, “Pay without Performance: An overview of the issues”

²³ cf. Yermack, 1996, “Higher market valuation of companies with a small board of directors”

²⁴ cf. e.g. Weisbach, 1988, “Outside Directors and CEO Turnover”

²⁵ cf. Hartzell, Starks, 2003, “Institutional Investors and Executive Compensation”

²⁶ cf. Janakirman, Radhakrishnan, Tsang, 2010, “Institutional Investors, Managerial Ownership, and Executive Compensation”

²⁷ cf. e.g. Nyberg, Fulmer, Gerhart, Carpenter, 2010, “Agency theory revisited: CEO Return and Shareholder interest alignment”

to act in shareholders' best interest. After years of empirical research however, "enthusiasm is clearly waning"²⁸.

Even early studies found that the change in manager's wealth (measured in absolute dollar value) that is associated with a change in shareholder wealth is almost negligible small²⁹. But contrary to recent studies, the general conclusion in these early days was not that financial alignment mechanisms have been implemented ineffectively, but rather that management should receive even more stock and option grants in order to increase their share, which was supposed to align interests³⁰.

Recent researchers on the other hand, criticize that "[...] upon discovering practices that appear inconsistent with the cost-efficient provision of incentives, financial economists have often labored to come up with clever explanations for how such practices might be consistent with arm's length contracting after all. Practices for which no explanation has been found have been considered 'anomalies' or 'puzzles' that will ultimately either be explained within the paradigm or disappear"³¹.

Although the tenor of recent papers is that financial alignment instruments do not work well the way they have been implemented, Nyberg, Fulmer, Gerhart and Carpenter³² argued that it is too early to dismiss the effectiveness of financial alignment altogether. They argue that preceding studies failed to measure CEOs' wealth change appropriately and that CEOs, since they typically have a large portion of their personal wealth invested in the firm, should be considered as shareholders rather than employees. This is why they introduced CEO return (the percentage change of the CEO's wealth within one year - analogous to stock return) as a proxy of financial alignment. By using this variable they found "[...] a positive, statistically significant, and economically meaningful relationship between CEO return and shareholder return [which] stands in sharp contrast to the conventional wisdom in the management

²⁸ cf. Nyberg, Fulmer, Gerhart, Carpenter, 2010, "Agency theory revisited: CEO Return and Shareholder interest alignment", p.1029

²⁹ cf. Jensen, Murphy, 1990, "Performance Pay and Top-Management Incentives" found that CEO's wealth changes by roughly \$3 for every \$1,000 change in shareholder wealth

³⁰ cf. Jensen, Murphy, 1990, "CEO incentives – It's not how much you pay, but how"

³¹ cf. Bebchuck, Fried, 2006, "Pay without Performance: An overview of the issues", p. 8,9

³² cf. Nyberg, Fulmer, Gerhart, Carpenter, 2010, "Agency theory revisited: CEO Return and Shareholder interest alignment"

literature that such financial alignment either does not exist or is so small in magnitude as to be irrelevant"³³.

Since the concept of CEO return involves his stake in the firm, one can expect the correlation to be higher in firms with high managerial (CEO) ownership (which happens in part mechanically through his ownership in the firm). Nevertheless it would be interesting to see if managerial ownership or the various components of incentive compensation have a larger impact when CEO return is used as compensation proxy. This is why I want to run two separate regressions. One in which managerial ownership is included in the computation of the CEO return, and one where managerial ownership is omitted altogether. This approach will illustrate the impact of ownership on the performance / CEO return relationship.

Alternatively, I will capture the degree of financial alignment by using conventional measures too, which are presented in the following.

Hypothesis

Hypothesis_{1A}: CEO return is positively related to performance.

Hypothesis_{1B}: High (low) performance coincides with high (low) CEO return

2.2.2.1 Managerial equity ownership

With their model, Jensen and Meckling implicitly stated that the most profitable firms should be those with high managerial ownership (convergence-of-interest hypothesis³⁴). Theoretically, their arguments would suggest that an owner-manager invests almost his whole wealth in his company before he resorts to outside funds³⁵. Empirically, this "[...] is not consistent with what we generally observe"³⁶. A major reason why owner-managers do not wait to search for outside financing until they are running out of (cost-efficient) wealth could be diversification. Since agents tend to be risk averse they could be reluctant to put all

³³ cf. Nyberg, Fulmer, Gerhart, Carpenter, 2010, "Agency theory revisited: CEO Return and Shareholder interest alignment", p. 1041

³⁴ cf. Morck, Shleifer, Vishny, 1988, "Management ownership and market valuation"

³⁵ As previously explained he will resort to outside funding only to the extent that the proceeds from the purchase outweigh the incurred agency cost.

³⁶ cf. Jensen, Meckling, 1976, "Theory of the firm: Managerial Behavior, Agency costs and ownership structure", p. 349

their eggs into one basket. As long as the additionally incurred agency cost (of accumulating more outside funding) is lower than the value of risk reduction, the agent will continue raising funds.

On the other side, if a manager is willing to keep a high stake in the firm, although this will leave him poorly diversified, and thereby reduce agency cost, the effect on shareholders will not necessarily be a positive one. In such a situation, the manager may want to decrease his risk via investing in less risky projects (which probably would be less profitable). The shareholders, able to hedge their risk via diversification on the market, would be better off if the firm's resources would be invested in the riskier, more profitable project. So there should be considerable shareholder interest that the manager is well diversified, as long as the incurred agency cost (to be borne by the manager) is lower than the difference between the risky and the less risky project.

That managerial ownership connects CEO's wealth with shareholders' wealth and therefore in general provides incentives to act in shareholders' interest, is almost undoubted³⁷. Some studies found that the incentive effect of managerial equity ownership is even higher than the effect of highly pay-for-performance sensitive compensation packages³⁸, which are presented in the next section.

Following the agency theory, it does not come as a surprise that the incentive effect of managerial ownership is supposed to be more prevalent in small firms, because (i) the manager in such companies is often the founder and (ii) if not, he is more likely to have enough wealth to acquire a significant share of the firm and still remain sufficiently diversified (which is difficult for managers of multimillion dollar corporations³⁹). It is worth noting that, although managers of large companies typically have a smaller share, they usually "[...] tend to have a larger dollar investment in their firms' shares"⁴⁰. However, since the model builds on the manager's personal cost of consuming perquisites, the agent's

³⁷ From the reviewed literature concerning managerial ownership only the 2005 paper by Sundaramurthy, Rhoades, and Rechner, "A Meta-analysis of the effects of executive and institutional ownership on firm performance" did neither find a significant positive nor a significant negative relationship

³⁸ cf. Jensen, Murphy, 1990, "Performance Pay and Top-Management Incentives"; Nyberg, Fulmer, Gerhart, Carpenter, 2010, "Agency theory revisited: CEO Return and Shareholder interest alignment"

³⁹ cf. Jensen, Murphy, 1990, "CEO incentives – It's not how much you pay, but how"

⁴⁰ cf. Jensen, Murphy, 1990, "Performance Pay and Top-Management Incentives", p.237

extraction of non-pecuniary wealth will be the lower, the higher his fractional ownership position in the firm (which is represented by the steeper slope of α).

Although this argumentation is supported by part of the literature⁴¹, there is considerable empirical evidence that is not consistent with the proposition that managerial ownership is a good thing per se.

Researchers rising demur against this view argue that, even given the case that the manager has enough wealth to finance his firm and still remain diversified, high managerial ownership cannot automatically be taken as an indicator of high performance. These authors⁴² are concerned that managers are likely to become "entrenched" with increasing ownership fraction. That is, if their stake is relatively high they could get powerful enough to exert considerable pressure on the board (cf. section 2.2.3.1), resist hostile takeovers⁴³ (refers to the market of corporate control, which I do not intend to test for in my analysis), have a say on the shape of their own compensation plans (see section 2.2.2.2 further down), or seriously contradict instruments imposed by institutional shareholders (cf. section 2.2.3.2). In other words, "[...] large managerial ownership insulates from other forces that reduce agency costs [...]"⁴⁴. Management's ability to exert pressure on the board or resist amendments desired by large shareholders could lead to poor performance, a low pay-for-performance sensitivity and high compensation levels.

One should recognize however, that the "negative" effect of managerial ownership on other control mechanisms could also be due to a lower demand for other instruments to align interests⁴⁵. High stock ownership by the management could already reduce a large part of agency costs, making additional efforts obsolete.

⁴¹ cf. e.g. Jensen, Murphy, 1990, "Performance Pay and Top-Management Incentives"; Byrd, Parrino, Pritsch, 1998, "Stockholder-Manager Conflicts and Firm Value; Damodaran, John, Liu, 2005, "What motivates managers? Evidence from organizational form changes"

⁴² cf. e.g. Stulz, 1988, "Managerial Control of voting rights"; Morck, Shleifer, Vishny, 1988, "Management ownership and market valuation"; Janakiraman, Radhakrishnan, Tsang, 2010, "Institutional Investors, Managerial Ownership, and Executive Compensation"

⁴³ cf. Stulz, 1988, "Managerial Control of voting rights"

⁴⁴ cf. Hermalin, Weisbach, 1991, "The Effects of Board Composition and Direct Incentives on Firm Performance"

⁴⁵ cf. Hermalin, Weisbach, 1991, "The Effects of Board Composition and Direct Incentives on Firm Performance"

Moreover, it is worth noting that entrenchment not only arises through high managerial ownership (and therefore voting power⁴⁶), also a manager's characteristics such as "[...] tenure with the firm, status as a founder, or even personality [...]"⁴⁷ can lead to such a situation. Moreover, if the CEO also serves as chairman of the board, he can easily get entrenched⁴⁸.

Concerning managerial ownership, the effects on performance predicted by the convergence-of-interest hypothesis and the entrenchment theory point in opposite directions. Under the convergence-of-interest hypothesis performance increases with manager's stake and it decreases under entrenchment theory⁴⁹. That is why some authors⁵⁰ proclaim a somewhat N-shaped relationship.

⁴⁶ Managers can increase their voting power not only through ownership in the firm. For a detailed overview of the ways managers could use to increase their voting power, see Stulz, 1988, "Managerial Control of voting rights".

⁴⁷ cf. Morck, Shleifer, Vishny, 1988, "Management ownership and market valuation", p. 294

⁴⁸ cf. e.g. Chiang, Lin, 2011, "Examining Board Composition and Firm Performance"; Yermack, 1996, "Higher market valuation of companies with a small board of directors"

⁴⁹ At this point I want note that some authors use the term "managerial power theory" instead of "entrenchment theory". There is no difference between those terms as long as one is aware of the fact that entrenchment can also arise through factors other than ownership.

⁵⁰ cf. Morck, Shleifer, Vishny, 1988, "Management ownership and market valuation"; Janakirman, Radhakrishnan, Tsang, 2010, "Institutional Investors, Managerial Ownership, and Executive Compensation"

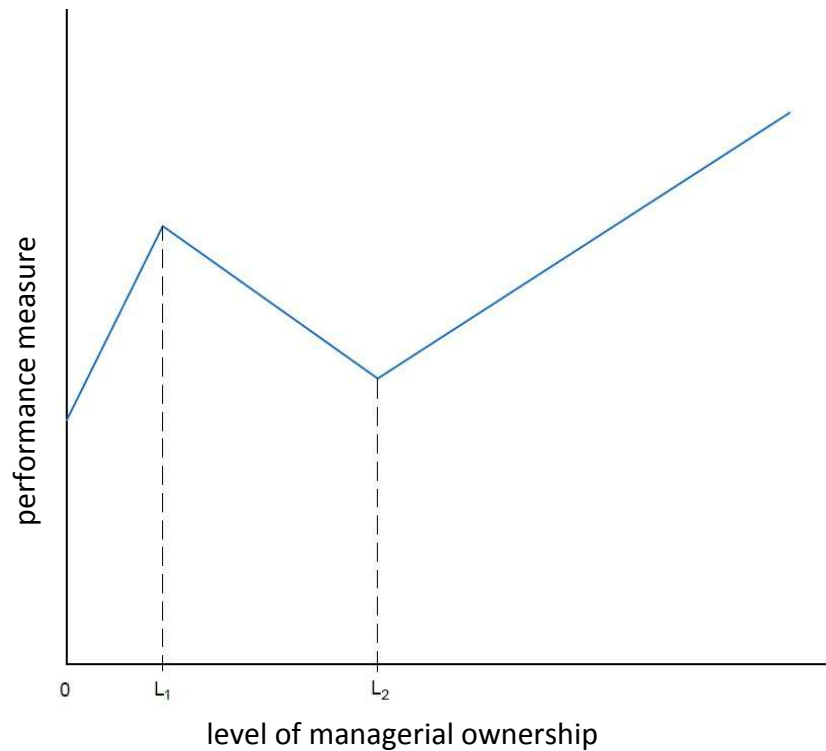


Figure 4 “The relationship between performance and managerial ownership”

Derived from Morck, Shleifer, Vishny, 1988, “Management ownership and market valuation”, p. 301

Note: From 0 to L_1 increasing ownership has a positive effect on performance. From L_1 to L_2 , ownership probably still has a positive effect on performance due to convergence-of-interest effect. This effect however, is outweighed by the entrenchment effect of increased ownership. For ownership portions $> L_2$ an agent’s influence due to entrenchment is not significantly higher than for levels just below L_2 . Therefore, the convergence-of-interest effect (which operates over the whole range of ownership) results in a positive relationship between ownership and performance again.

They argue that for increases at low levels of managerial ownership (from 0 to L_1) the convergence-of-interest effect does boost performance and that the entrenchment at this level is negligible⁵¹. At a medium level (L_1 to L_2)⁵² the manager's increased ownership position already leads to substantial entrenchment. Although the interests of the principals and the agent are still converging, a manager at this level already has significant influence on many instruments designed to discipline him. This influence, which is caused by his entrenchment, outweighs the positive effect of increased ownership, resulting in a decrease of interest alignment. At high levels ($> L_2$) the convergence-of-interest effect dominates

⁵¹ cf. Hermalin, Weisbach, 1991, "The Effects of Board Composition and Direct Incentives on Firm Performance"

⁵² Although researchers did find similar N-shaped relationships, the values for L_1 and L_2 differ with respect to the managers in consideration: In their 1988 paper "Management ownership and market valuation", Morck, Shleifer, and Vishny considered the whole board of directors and fixed L_1 at 5% and L_2 at 25%. In contrast, considering only top-five executives in their 2010 paper "Institutional Investors, Managerial Ownership, and Executive Compensation", Janakiraman, Radhakrishnan, and Tsang pinned the levels down at 1% and 5% respectively.

again, since “[...] managements with even more [...] ownership might not be significantly more entrenched [...]”⁵³.

Nowadays, many firms require their managers to hold a substantial share of the company. However, they oftentimes allow them to do so via holding options instead of shares⁵⁴. Since options do not have the same risk distribution as a firm's stock (options don't have a downside risk) they do not induce the same alignment of interest. Hence, it is reasonable to use a managerial ownership variable that does not include unexercised options.

Links to other sections

The interrelation of this section with others can - for the most part - be attributed to the entrenchment effect. If a manager is entrenched he could potentially resist board decisions (cf. section 2.2.3.1 - especially with respect to the nomination of outside directors), or oppose corporate governance changes imposed by institutional shareholders (cf. section 2.2.3.2). Moreover, “[...] increased shareholdings of the CEO reduce the probability that he resigns [...]”⁵⁵. In other words, high managerial ownership reduces the effectiveness of the threat of dismissal.

With his influence on the board, an entrenched CEO could also have an impact on the implementation of new compensation plans, thereby potentially produce “[...] considerable distortions and costs to investors and the economy”⁵⁶.

Furthermore, one should be aware of the fact that managerial ownership is often a product of compensation schemes with a heavy reliance on options. If the manager is performing well he will exercise his options, resulting in holding a larger portion of the firm⁵⁷. If this portion is sufficiently large, the agent could get powerful enough to influence his own compensation.

⁵³ cf. Morck, Shleifer, Vishny, 1988, “Management ownership and market valuation”, p. 302

⁵⁴ cf. Lavelle, L., 2002, “How to halt the options express”

⁵⁵ cf. Weisbach, 1988, “Outside directors and CEO Turnover”, p. 450

⁵⁶ cf. Bebchuk, Fried, 2006, “Pay without Performance: An Overview of the issues”, p. 5, 6

⁵⁷ cf. Bhagat, Bolton, 2008, “Corporate governance and firm performance”

Hypothesis

Hypothesis_{2A}: At low and high (intermediate) levels, managerial ownership has a positive (negative) relationship to performance.

Hypothesis_{2B}: With increasing managerial ownership, the level of compensation will rise and the performance sensitivity will decline, either because there is a lower need or because the manager is powerful enough to resist an elaborate implementation. Concerning compensation there is no piecewise linear relationship but only a linear one.

2.2.2.2 Incentive contracts

Another way to constrain a manager's behavior (i.e. limiting his extraction of non-pecuniary wealth) is the use of highly pay-for-performance sensitive compensation contracts. Those contracts are designed to provide an incentive for the manager to deliver the best possible performance, via connecting his compensation to firm performance. Figure 3 presented in section 2.2.1.1 is also applicable to incentive contracts (e.g. as part of a bonding contract). The higher the pay-for-performance sensitivity, the higher is the cost M (because if their income is conditional on performance, managers want to get compensated for the excessive risk they are exposed to).

These contracts typically comprise of a mixture of base salary, bonus, option grants, stock grants, long term performance plans and additional perks, and are usually "[...] prepared by the remuneration committee in partnership with a human resource consulting firm"⁵⁸. Moreover, deferred payments, pension plans, etc. play a role in providing incentives. Although the data I intend to analyze covers only firms traded on North American stock exchanges (such as the New York Stock Exchange [NYSE], the American Stock Exchange [ASE], the NASDAQ, etc.), it is noteworthy that the components of managerial pay are used differently in different cultures, economies etc.⁵⁹, which is illustrated in the following.

⁵⁸ cf. Dossi, Patelli, Zoni, 2010, "The Missing Link between Corporate Performance Measurement Systems and Chief Executive Officer Incentive Plans", p. 551

⁵⁹ cf. Byrd, Parrino, Pritsch, 1998, "Stockholder-Manager Conflicts and Firm Value"

TABLE 1
Regional differences in average CEO compensation

	France	Germany	United Kingdom	United States
Base Salary [€000s]	700	800	950	700
Annual Bonus as % of Base Salary	120%	160%	110%	140%
Total cash compensation [€000s]	1.540	2.080	1.995	1.680
Long-Term Incentives as % of Base Salary	115%	60%	130%	370%
Total direct compensation [€000s]	2.345	2.560	3.230	4.270

Source: HayGroup in Dossi, Patelli, Zoni, 2010, "The Missing Link between Corporate Performance Measurement Systems and Chief Executive Officer Incentive Plans", p. 539

Note: The sample was composed of the largest US and European companies (€3-10 billion in total revenues)

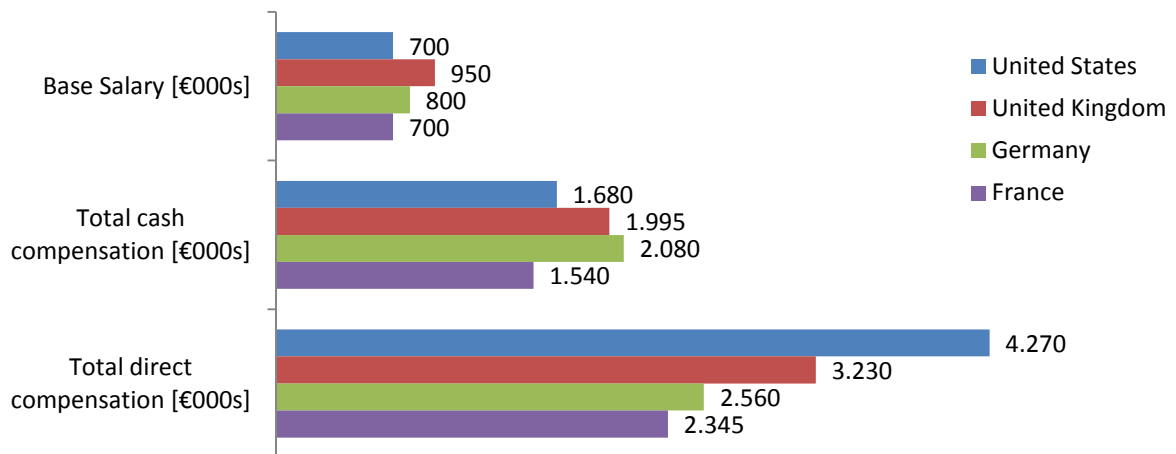
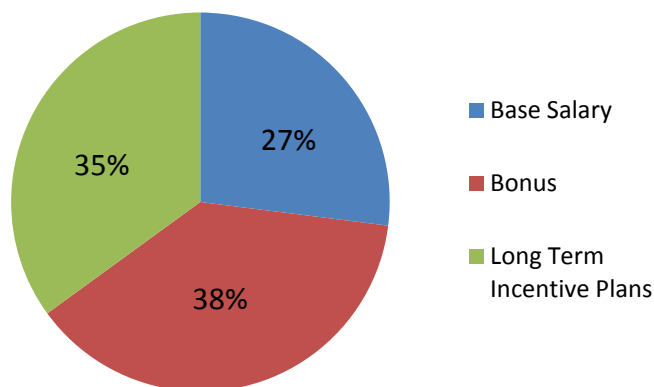


Figure 5 "Composition of the average CEO compensation in different countries"

From HayGroup in Dossi, Patelli, Zoni, 2010, "The Missing Link between Corporate Performance Measurement Systems and Chief Executive Officer Incentive Plans", p. 539

Although neither the table nor the figure explicitly includes stock options, stock grants and deferred compensation, it becomes evident that CEO compensation practices differ substantially with respect to the country. Despite the fact that they pay about the same average base salary, in terms of total direct compensation (TDC) continental Europe seems to pay less to their CEOs. As can be referred from the table, this difference can, for the most part, be attributed to a lower reliance on long term incentive plans. If the UK is also included in the European Segment, the difference becomes even more obvious.

European Segment



U.S. Segment

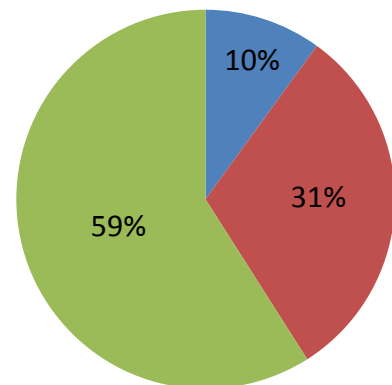


Figure 6 “Composition of the average CEO compensation in Europe and the U.S.”

From HayGroup in Dossi, Patelli, Zoni, 2010, “The Missing Link between Corporate Performance Measurement Systems and Chief Executive Officer Incentive Plans”, p. 539

As mentioned above, this analysis does not explicitly display equity-based compensation, which is a crucial component of nowadays top management compensation, but as an illustration of the differences it serves its purpose. In the following, I want to present how equity-based compensation evolved over the last two decades.

Due to financial economists’, and henceforth politics’ and societies’, enthusiasm in the 1990s over the effectiveness of highly performance sensitive compensation schemes to align interests, one would expect an increased usage of those contracts in the last decades, especially with corporations boasting themselves of using highly sensitive executive compensation. And in fact, a study in 2005 showed that the equity-based compensation substantially increased between 1993 and 2003, even after controlling for industry, size and performance effects⁶⁰. This increase can mostly be attributed to the excessive use of option grants in the 1990s, where firms exploited the advantage that options did not have to be included in the income statement as long as they have not been exercised, which is good for cash poor start-ups but was also used by long-established, solvent companies⁶¹.

Interestingly, executives’ cash compensation also increased according to this study, which shows that equity based compensation was not used as a substitute to cash. A potential

⁶⁰ cf. Bebchuk, Grinstein, 2005, “The Growth of Executive Pay”

⁶¹ cf. Lavelle, 2002, “How to halt the options express”

explanation for this instance is that managers want to get compensated for the additional amount of personal welfare they put at risk in accepting highly equity based compensation.

Most studies addressing pay-for-performance sensitivity found that compensation in small firms tends to be far more sensitive to performance than in large firms⁶². Authors argue that pay-for-performance sensitivity tends to be lower in large firms due to the fact that they usually have a low volatility and small growth opportunities⁶³. This suggests that in cases where management is easier to monitor, the need for expensive incentive contracts is lower⁶⁴. Small, highly volatile firms with high growth opportunities on the other hand, tend to use more incentive generating compensation since it is difficult to monitor manager's actions sufficiently⁶⁵.

Those highly performance sensitive CEO compensation plans are more expensive, because "[...] these contracts typically incorporate risk premiums to compensate for [the] risk shifting"⁶⁶. Part of this premium could for example be a higher base salary⁶⁷.

In recent years, after the various crises, media as well as the public and politics started to pay close attention to top management compensation. In many cases, contemporary compensation plans were perceived as unfair and not justifiable with respect to delivered performance. As a prominent example just remember when Stephen Hester, CEO of the Royal Bank of Scotland (RBS), bowed to the political pressure in January 2012 and "[...] decided he would not accept the 3.6m shares that the bank's board had decided to award him [...]"⁶⁸. Some protagonists in the recent public uproar claimed that flawed compensation schemes were limited to a few companies, or that they are outcomes of unintended mistakes made by the board, and henceforth should be corrected fast.

⁶² cf. e.g. Jensen, Murphy, 1990, "Performance Pay and Top-Management Incentives"; Hartzell, Starks, 2003, "Institutional Investors and Executive Compensation";

⁶³ cf. Hartzell, Starks, 2003, "Institutional Investors and Executive Compensation"

⁶⁴ cf. Fahlenbrach, 2009, "Shareholder rights, Boards, and CEO compensation"

⁶⁵ cf. Byrd, Parrino, Pritsch, 1998, "Stockholder-Manager Conflicts and Firm Value"

⁶⁶ cf. Nyberg, Fulmer, Gerhart, Carpenter, 2010, "Agency theory revisited: CEO Return and Shareholder interest alignment", p.1035

⁶⁷ cf. Fahlenbrach, 2009, "Shareholder rights, Boards, and CEO compensation", p.84

⁶⁸ <http://www.guardian.co.uk/business/2012/jan/29/rbs-stephen-hester-waives-bonus> (last access on Jan. 31st, 2012)

Previews empirical evidence rather supports public perceptions than rejecting them, finding that "[...] 'bad apples' [...] have been widespread, persistent, and systematic [...]"⁶⁹, and furthermore identifying "[...] structural defects in the underlying governance structures that enable executives to exert considerable influence over their boards"⁷⁰. Those defects in turn enable managers to influence their compensation significantly.

Some investors may feel that a firm's direct expenditures in managements' compensation are negligible small and economically not significant (left alone the costs incurred through providing flawed incentives). Empirical results, however, revealed that the aggregate compensation paid to top-five executives in the US economy between 1993 and 2003 was about \$350 billion. Presented as a percentage of total earnings (net income) the economic relevance of executive compensation becomes even more evident. From 1993 to 2003, overall compensation of the top-five executives equaled roughly 7 percent of the aggregate earnings. Since the magnitude was smaller in the first years of this period (around 5% from 1993 to 1997, and over 8% from 1999 till 2003), the findings suggest a "[...] growing economic significance of executive pay"⁷¹.

Although executive compensation is apparently expensive, pay-for-performance sensitivity is pretty low according to some researchers. A study by Jensen and Murphy in 1990⁷² analyzing the relationship between change in shareholder wealth and CEO wealth, revealed that CEO's cash compensation changed only about 3 cents per \$ 1000 change in shareholder wealth (including stock options CEO's wealth change was equal to about 30 cents). According to them, this weak relationship is primarily an outcome of compensation constraints imposed by politics and the public⁷³. These constraints prevent firms from paying their managers a sufficient amount in order to reduce the agency problem. In a recent article Dillon⁷⁴, confirming that view, argued that the increased public scrutiny of recent years potentially cause firms problems in finding new talent for vacant management jobs, which in turn would

⁶⁹ cf. Bebchuk, Fried, 2006, "Pay without Performance: An overview over the Issues", p.6

⁷⁰ cf. Bebchuk, Fried, 2006, "Pay without Performance: An overview over the Issues", p.6

⁷¹ cf. Bebchuk, Grinstein, 2005, "The Growth of Executive Pay", p.295; which is also consistent with the findings of Fahlenbrach, 2009, "Shareholder rights, Boards, and CEO compensation"

⁷² cf. Jensen, Murphy, 1990, "Performance Pay and Top-Management Incentives"

⁷³ In their 2008 paper, "Information asymmetry, contract design and process of negotiation: The stock options awarding case", Bruslerie and Deffains-Crapsky also argued in favor of this argumentation by defining a model in which any interference by politics or society in the option granting process will "[...] induce a social cost of mis-optimization [p.90]".

⁷⁴ cf. Dillon, 2009, "The coming battle over executive pay"

have a negative impact on firm performance in the long run. In fact, she argues that firms feel that "[...] the challenge of setting executive pay sufficient to attract, motivate, and retain top talent just got harder [...]"⁷⁵. Hence, it would be necessary to ensure that top managers earn at least the same as they would get anywhere else⁷⁶. Such practices however, could lead to inefficient arrangements, because committees could seek to reward similar as peer groups rather than connecting the compensation sufficiently to performance.

This is why others⁷⁷ argue that the composition and implementation of management compensation is to blame for the apparently weak connection between performance and executive pay. They identify potential problems within the components, which are briefly discussed in the following:

Base salary: Although the base salary could, theoretically, be awarded in a performance contingent way too (by cutting and raising it depending on performance), "empirical evidence suggests [...] that U.S. firms do not use salary mechanisms effectively"⁷⁸. This is why the base salary is typically the fixed income a manager gets within one year, independent of his performance. Due to this independence, the pay-for-performance sensitivity will be lower in firms where base salary accounts for a high portion of total compensation. Most managers, however, will require a certain amount of base salary in order to compensate the risk they are taking in accepting a high portion of their annual pay to be conditional on performance.

Due to the fact that base salary is decreasing sensitivity, it would be useful to run an additional regression without it, in order to test whether or not the other components of compensation are sufficiently connected to performance and how big the negative impact of base salary on performance sensitivity is.

Bonus: This is the part of the compensation that should be directly conditional on performance. Part of it is usually dependent on stock market performance, part on accounting numbers and yet another part depends on subjective factors such as employee satisfaction. The problem is, that "although bonuses represent 50 percent of CEO salary,

⁷⁵ cf. Dillon, 2009, "The coming battle over executive pay", p.97

⁷⁶ cf. Jensen, Murphy, 1990, "CEO incentives – It's not how much you pay, but how"

⁷⁷ cf. Bebchuk, Fried, 2006, "Pay without Performance: An overview over the Issues"

⁷⁸ cf. Byrd, Parrino, Pritsch, 1998, "Stockholder-Manager Conflicts and Firm Value", p.19

such bonuses are awarded in ways that are not highly sensitive to performance as measured by changes in market value of equity, accounting earnings, or sales”⁷⁹. Henceforth, those bonuses could either be conditional on unobservable, yet important, performance measures, or they are based on insufficient measures benefitting the manager rather than the shareholders. The oftentimes weak connection between desired behavior and reward system has already been addressed in the 70s⁸⁰. If, for example, managers receive bonuses conditional on the value of M&As, they will engage in such activities no matter if they create economically meaningful (and therefore for shareholders beneficial) growth or not. The same applies for bonus systems which reward only short-term performance. Although the principals may hope for long-term profitability, these systems make it “[...] personally rational for officials to sacrifice long term growth [...] (by selling off equipment and property, or by stifling research and development) [...]”⁸¹.

Another potential problem of bonuses is that they are often based on year-to-year performance and thereby “[...] do not seem to be designed to reward managers for their own performance”⁸². As long as managers' compensation is not based on relative performance measures, it is possible that they get rewarded for market or industry movements that were not caused by their personal performance. This is why I want to run my regressions using relative performance as well.

Options: Firms regularly grant options to their executives which they can execute after their expiration. The use of options was particularly popular in young, fast growing firms in the 1990s since, unlike bonus payments, they did not need to be expensed in the income statement before they had been exercised, which made them less of a burden to liquidity⁸³. Although this changed in June 2005, when the FAS 123(R) of the US GAAP became effective and required firms to expense options at the intrinsic value or with a fair value approach, options are still a frequently used component of executive compensation.

The problem is that, if a large portion of manager's wealth is based on options, he could have an incentive to engage in riskier projects than the shareholders would prefer, since the

⁷⁹ cf. Jensen, Murphy, 1990, “Performance Pay and Top-Management Incentives”, p.262

⁸⁰ cf. Kerr, 1975, “On the Folly of rewarding A, while hoping for B”

⁸¹ cf. Kerr, 1975, “On the Folly of rewarding A, while hoping for B”, p.775

⁸² cf. Bebchuk, Fried, 2006, “Pay without Performance: An overview over the Issues”, p.16

⁸³ cf. Lavelle, 2002, “How to halt the options express”; Still, dilution made them costly to shareholders anyway.

manager would not have to bear any downside risk⁸⁴. In the worst case, he will not execute the option, but in the best case an extremely risky project could provide the agent with a very valuable option.

Another potential problem is, that conventional options can get "in the money" through market or industry movements, henceforth having nothing to do with the agent's performance. This will provide managers with an incentive to exercise during short-term spikes or to postpone earnings to a point in time where they can benefit the most. In the worst case, firms would unwillingly "[...] provide perverse incentives to manipulate earnings"⁸⁵. One way to mitigate these potential problems would be the use of indexed options (which are tied to an underlying index to avoid rewarding market movements), or premium-priced options (options where the exercise price is higher than the stock price at the grant date)⁸⁶.

Stock grants: Stock grants have similar potential problems as options. They too, permit gains from market or industry movements, but unlike options they expose managers to the downside risk as well. On the other hand, increased ownership could provide incentives to act in shareholders' best interest (as presented above).

Pension plans: These are the payments managers receive during their retirement. Since they are oftentimes not reported as salient as other compensation components, they usually receive less attention. In most cases they are not even appropriately included in common research databases. Since these payments are usually not conditional on performance, studies which do not capture this component usually observe a higher pay-for-performance sensitivity than actually present.

Deferred compensation: Firms sometimes choose to postpone compensation payments to a later point in time, in order to gain tax advantages for the managers or the company. The incentive effect of those payments is almost unknown, since "[...] information provided about deferred compensation arrangements does not allow the most diligent outsider to

⁸⁴ cf. Nyberg, Fulmer, Gerhart, Carpenter, 2010, "Agency theory revisited: CEO Return and Shareholder interest alignment"

⁸⁵ cf. Bebchuk, Fried, 2006, "Pay without Performance: An overview over the Issues", p.18

⁸⁶ cf. Lavelle, 2002, "How to halt the options express"

estimate with any precision the value conferred on executives through these arrangements"⁸⁷

Severance agreements, golden parachutes etc.: As mentioned in section 2.2.1.2 those arrangements potentially weaken the threat of dismissal as an instrument to limit managers behavior. Additionally, those payments could have a negative effect on the incentive effect of performance sensitive compensation plans. In other words, "while firms spend large amounts on producing a payoff gap between performing well and performing poorly, the money spent on soft-landing arrangements works in the opposite direction, narrowing the payoff gap between good and poor performance"⁸⁸.

Summed up, criticism is not about the functionality of performance sensitive pay, but rather focuses on its implementation. To test the implications of the various components of executive pay, I want to run separate regressions in which I will omit certain components in order to observe how correlation coefficients are changing.

Links to other sections

This section is strongly related to the sections 2.2.3.1 (presented next) and 2.2.3.2 since the board of directors and institutional investors are usually the stakeholders capable of pushing through highly performance sensitive compensation schemes.

As mentioned above, the capability (and the willingness) of directors and institutional investors to impose highly performance sensitive plans on the management is probably decreasing with managerial ownership (entrenchment). For this reason, and because managers often build up stakes through receiving stock grants and executing options, incentive compensation is also heavily interrelated with managerial ownership (presented in section 2.2.2.1).

⁸⁷ cf. Bebchuk, Fried, 2006, "Pay without Performance: An overview over the Issues", p.15

⁸⁸ cf. Bebchuk, Fried, 2006, "Pay without Performance: An overview over the Issues", p.21

Hypothesis

Hypothesis_{3A}: Independent of its measurement, managerial compensation is positively related to performance.

Hypothesis_{3B}: High (low) performance will lead to a high (low) level of compensation

2.2.3 Influential players

But who is better equipped to monitor a manager or to introduce a sophisticated compensation plan? An inside director or an outside director? How about an institutional investor? There is extensive literature available addressing this issue. In the following, this section will provide the reader with an overview of the different theories.

2.2.3.1 Board of directors

To have a board of directors in place is mandatory for every publicly traded corporation. The purpose of the board is, among other things, to monitor the management (section 2.2.1.1), to approve major decisions, to decide about management compensation plans (section 2.2.2.2), or even to force a manager's resignation (section 2.2.1.2). In essence, it serves to reduce agency cost. Without it, shareholders' wealth would be far more exposed to management's free disposal. The question is how the board should look like, especially with respect to the number of seats and the number of outside directors in place.

The argument behind a large board is, that there are more specialists in the board, which, in the aggregate, are more likely to act in shareholders' best interest. Following this argument, a high number of board members should have a positive effect on firm performance and a negative one on the level of compensation⁸⁹. On the opposite, the coordination efforts within a large board will certainly be higher than in a board with a low number of directors. The cost of this coordination may even offset the benefits of a large board. Additionally, directors do not serve on the board for free, which makes a large board even more expensive. These costs are the reasons why some researchers⁹⁰ argue that the higher effectiveness of a small board could serve as an indicator of high firm performance. They

⁸⁹ Additionally there should be a positive effect on the performance sensitivity of compensation

⁹⁰ cf. Chiang, Lin, 2011, "Examining Board Composition and Firm Performance", Yermack, 1996, "Higher market valuation of companies with a small board of directors"

argue that "[...] even if boards' capacities for monitoring increase with board size, the benefits are outweighed by such costs as slower decision-making, less-candid discussions of managerial performance, and biases against risk-taking"⁹¹. Concerning compensation, their findings suggest that pay-for-performance sensitivity is lower⁹² and "[...] CEO compensation is higher when the board is large [...]"⁹³, even after controlling for size, industry and performance effects.

Concerning the origin of directors, one could argue that internal directors are more beneficial to a firm, since they can better evaluate the decision making quality of the CEO and his performance (which in turn should have effects on the structure of compensation plans). Even if an insider could have more insight on how well a CEO performs, he is probably also more prone to benefit a colleague (i.e. the CEO or another member of the top management team), rather than the owners of the corporation. Even if they do not intentionally benefit the management team, there is an increased likelihood that they get manipulated by it. In the end, since the management is oftentimes involved in electing prospective directors, they may feel obliged to dance with the one that brought them. A particularly critical task of the board of directors is setting up a compensation committee that decides about the firm's compensation schemes. Since inside directors benefit from these arrangements themselves, their decisions about compensation may seriously depart from stockholders' best interest⁹⁴.

For these reasons, some authors⁹⁵, along with large and influential entities such as the SEC or institutional shareholders like the California Public Employee's Retirement System (CalPERS)⁹⁶, believe that a firm is better off with a high portion of outside directors on the board. This should have a positive effect on performance (either through stringent monitoring or the implementation of more sensitive compensation contracts). The prevailing belief that an independent board is beneficial to shareholders and society, is also reflected in

⁹¹ cf. Yermack, 1996, "Higher market valuation of companies with a small board of directors", p.186

⁹² cf. Yermack, 1996, "Higher market valuation of companies with a small board of directors"

⁹³ cf. Bebchuk, Fried, 2006, "Pay without Performance: An overview over the Issues", p.13

⁹⁴ cf. Byrd, Parrino, Pritsch, 1998, "Stockholder-Manager Conflicts and Firm Value"

⁹⁵ cf. e.g. Chiang, Lin, 2011, "Examining Board Composition and Firm Performance"; Weisbach, 1988, "Outside directors and CEO Turnover"; Bebchuk, Fried, 2006, "Pay without Performance: An overview of the issues", Gupta, Fields, 2009, "Board independence and Corporate Governance: Evidence from Director Resignations"

⁹⁶ cf. Gupta, Fields, 2009, "Board independence and Corporate Governance: Evidence from Director Resignations"

the listing requirements of the NYSE and the NASDAQ which place high emphasize on a substantial number of outside directors.

The positive effect of an independent board is however not uniformly approved. In an empirical study in 2008 Bhagat and Bolton⁹⁷, although examining a positive correlation between board independence and CEO turnover, did not find a significant positive relationship between a high number of outside directors and firm performance. In 1996 Yermack⁹⁸ did not find such a relationship either.

Even if there is a positive relationship between outside directors and performance it would be premature to draw the conclusion, that a board comprising only of outsiders would be the best solution. Such a board will lack essential knowledge about the firm, which could provide managers with a better opportunity to sneak out wealth, with the board not even recognizing it. Moreover, in the case of a resignation (no matter if forced or not) the board of directors has to decide about a successor. In these situations insiders may be better equipped than outsiders to evaluate candidates⁹⁹, due to their superior knowledge of the firm and its needs.

In essence, there is probably an optimal mix of insiders and outsiders, depending on the firm. Firm characteristics, such as size, ownership structure, industry, etc. may determine the optimal composition of the board.

As mentioned above, the effectiveness of the board of directors is not uniformly approved, since the directors are "[...] themselves agents, whose interests are not necessarily aligned with the shareholders"¹⁰⁰. Those who do not agree with the effectiveness of the board to safeguard shareholders' interests¹⁰¹ argue that the board does not interact with management at "arm's length"¹⁰². Even concerning outside directors, researchers do not

⁹⁷ cf. Bhagat, Bolton, 2008, "Corporate governance and firm performance"

⁹⁸ cf. Yermack, 1996, "Higher market valuation of companies with a small board of directors"

⁹⁹ cf. Weisbach, 1988, "Outside directors and CEO Turnover"

¹⁰⁰ cf. Hermalin, Weisbach, 1991, "The Effects of Board Composition and Direct Incentives on Firm Performance", p. 103

¹⁰¹ cf. e.g. Bebchuck, Fried, 2006, "Pay without Performance: An overview of the issues", Hermalin, Weisbach, 1991, "The Effects of Board Composition and Direct Incentives on Firm Performance"

¹⁰² Under the arm's length paradigm the board acts uninfluenced by the management and seeks to act in shareholders' best interest

unambiguously agree about their positive effect on firm performance¹⁰³. Two factors that could nonetheless force outside members of the board towards acting in shareholders' best interest are¹⁰⁴

1. their personal liability - especially outside directors have to meet certain obligations
2. reputation - during the election process, shareholders will not vote for directors with a reputation of acting more in the managements interest. "On the other hand, [since they get nominated by the management] directors could seek to establish a reputation of not rocking-the-boat, which might make them more attractive to other firms [...]"¹⁰⁵.

This argumentation sounds all but convincing, and unfortunately so does part of the empirical evidence. The researchers¹⁰⁶ that did not find a significant correlation between the composition of the board and performance, attribute the lack of evidence to "[...] top management's control of the board-selection process"¹⁰⁷.

According to part of the literature¹⁰⁸ the influence (and especially the independence – measured by the number of outside directors) of the board is declining with managerial ownership (section 2.2.2.1). Concerning the inclusion of outside directors this observation could be due to the agent's entrenchment, since he will probably not nominate directors that potentially cause him problems¹⁰⁹. Another explanation could be that, if managers hold a substantial share in the firm their interests get aligned with shareholders' through managerial ownership, making the hiring of a high number outside directors unnecessary.

This relationship between managerial ownership and the independence of the board is important to recognize, since, if one examines a positive relationship between outside

¹⁰³ cf. Bhagat, Bolton, 2008, "Corporate governance and firm performance"; Yermack, 1996, "Higher market valuation of companies with a small board of directors"

¹⁰⁴ cf. Hermalin, Weisbach, 1991, "The Effects of Board Composition and Direct Incentives on Firm Performance", p. 103

¹⁰⁵ cf. Hermalin, Weisbach, 1991, "The Effects of Board Composition and Direct Incentives on Firm Performance", p. 103

¹⁰⁶ cf. Bhagat, Bolton, 2008, "Corporate governance and firm performance"; Yermack, 1996, "Higher market valuation of companies with a small board of directors"

¹⁰⁷ cf. Hermalin, Weisbach, 1991, "The Effects of Board Composition and Direct Incentives on Firm Performance", p. 111

¹⁰⁸ cf. e.g. Weisbach, 1988, "Outside Directors and CEO Turnover"; Hermalin, Weisbach, 1991, "The Effects of Board Composition and Direct Incentives on Firm Performance"

¹⁰⁹ cf. Gupta, Fields, 2009, "Board independence and Corporate Governance: Evidence from Director Resignations"

directors and performance without controlling for managerial ownership, the observed correlation could be spurious due to the hypothesized effect of managerial ownership on outside directors (high managerial ownership substitutes for an independent board). Therefore, it would be useful to examine the relationship for different levels of managerial ownership.

It is worth noting that the situation described above can also arise from factors other than high managerial ownership. "Social and psychological factors - collegiality, team spirit, a natural desire to avoid conflict within the board, friendship and loyalty, and cognitive dissonance¹¹⁰ - exert additional pressure [...] "¹¹¹ on directors, possibly pushing them towards benefitting management rather than shareholders. Moreover, CEOs still have considerable influence on directors' welfare (either pecuniary or in the form of granted perquisites). Board members' natural interest in their own welfare, may in turn lead to situations in which inefficient investments or compensation arrangements are approved that are not optimal to the shareholders is actually beneficial to directors.

Another reason why directors possibly do not always act in shareholders' best interest, which was briefly mentioned above, is that they want to get reelected. To get on the list of candidates often requires intervention of the incumbent management. Having a reputation of being a petty-minded pedant who frequently resists inefficient compensation arrangements could substantially decrease the likelihood of getting nominated for the board of another company.

This is why, although I do expect to find a significant positive correlation between the board variables and the performance / compensation variables, I do not expect the coefficient to be high.

Furthermore, the relationship should have changed after 2005 since, "after the wave of accounting frauds and corporate governance scandals that occurred in several countries between 2000 and 2005 (e.g., Enron in the United States, Parmalat in Italy, and Royal Ahold in the Netherlands), legislators placed great emphasis on the need for independence within

¹¹⁰ Cognitive dissonance is a psychological phenomenon under which (inside) board members, which are executives or former executives of the firm, tend to support pay arrangements from which they benefit / have benefitted too.

¹¹¹ cf. Bebchuck, Fried, 2006, "Pay without Performance: An overview of the issues", p. 9

boards of directors and, especially, within the remuneration committees”¹¹². Along with some authors, arguing that “recent reforms, [...] may weaken some of these factors [reasons why the boards’ interest could deviate from shareholders’ interest] but will not eliminate them”¹¹³, I would expect to find substantial differences in the correlation coefficients before and after 2005.

Hypothesis

Hypothesis_{4A}: The number of directors on the board is negatively correlated with performance.

Hypothesis_{4B}: Board size is negatively related to the level of compensation

Hypothesis_{5A}: The number of outside directors is positively related to performance.

Hypothesis_{5B}: Board independence has a negative impact on the level of compensation.

2.2.3.2 Institutional investors

The presence of large (institutional) shareholders could also be efficient in reducing the agency problem, due to their power in shareholder meetings. Since these firms invest huge sums in the firm, it is in their best interest to ensure that management is working towards improving stock returns, and unlike the average small investor, they have the means and the incentive to voice their concerns and apply pressure on management in a more direct and effective manner. This thought is especially consistent with early research¹¹⁴, stating that “one of the groups who seem to play large role in these activities [monitoring] is composed of the security analysts employed by institutional investors, brokers and investment advisory services [...]”¹¹⁵.

Basically, institutional investors (similarly to the board of directors) can basically use three different instruments to reduce agency cost. They can (i) monitor the agent's behavior with

¹¹² cf. Dossi, Patelli, Zoni, 2010, “The Missing Link between Corporate Performance Measurement Systems and Chief Executive Officer Incentive Plans”, p. 551

¹¹³ cf. Bebchuck, Fried, 2006, “Pay without Performance: An overview of the issues”, p. 12

¹¹⁴ cf. e.g. Shleifer, Vishny, 1986, “Large shareholders and corporate control”

¹¹⁵ cf. Jensen, Meckling, 1976, “Theory of the firm: Managerial Behavior, Agency costs and ownership structure”, p. 354

high scrutiny and thereby expose him to a certain (ii) threat of dismissal (cf. sections 2.2.1.1 and 2.2.1.2), or they use their voting power to establish (iii) highly performance sensitive compensation plans.

In case they engage in issuing contracts designed to provide managers with incentives to act in the shareholders' best interest, pay-for-performance sensitivity is supposed to be higher and the level of compensation should be lower, which is empirically supported by part of the literature¹¹⁶. This effect, however, seems to be stronger in companies with low managerial ownership¹¹⁷, henceforth supporting the entrenchment theory (presented previously). In firms with high managerial ownership (i.e. substantial entrenchment of management), executives could use their voting power to resist attempts to establish compensation schemes that put a higher fraction of their wealth at risk.

Although there is a little controversy about the question whether or not institutional ownership (and especially the concentration of this ownership) has a positive effect on performance¹¹⁸, the primary discussion is about which channels they use to achieve this enhancement. The question is whether they improve performance implicitly (clienteles effect - described next) or explicitly (e.g. by enforcing new compensation plans).

Some argue that institutional investors actively choose firms with low agency cost. Under this clienteles effect, institutional investors would not actually cause agency cost to decrease, but rather just favorably invest in firms with sophisticated measures in place to retain a low level of interest divergence (meaning instruments such as monitoring, highly performance sensitive compensation plans for top executives, etc.). Concerning compensation arrangements, the proponents of this view found that institutional investors, although favoring companies with high pay-for-performance sensitivity, are quite indifferent to the level of top management compensation¹¹⁹.

¹¹⁶ cf. e.g. Hartzell, Starks, 2003, "Institutional Investors and Executive Compensation"; Janakiraman, Radhakrishnan, Tsang, 2010, "Institutional Investors, Managerial Ownership, and Executive Compensation"

¹¹⁷ cf. Janakiraman, Radhakrishnan, Tsang, 2010, "Institutional Investors, Managerial Ownership, and Executive Compensation"

¹¹⁸ From the reviewed literature concerning institutional ownership only the 2005 paper by Sundaramurthy, Rhoades, and Rechner, "A Meta-analysis of the effects of executive and institutional ownership on firm performance" did neither find a significant positive nor a significant negative relationship

¹¹⁹ cf. Zheng, 2010, "Heterogeneous institutional investors and CEO compensation"; Maxey, Ten Wolde, 1998, "CEO Pay may be crucial as Funds shop"

Others argue that institutional investors are outstandingly well equipped to monitor management or to establish incentive compensation plans. Researchers following that argumentation, think that "[...] institutional investor monitoring, on average, tends to be used in concert with incentive compensation in mitigating the agency problems between shareholders and managers"¹²⁰.

Although there are some indications that institutional investors actively choose companies that provide the desired instruments to reduce agency cost (including appropriate compensation plans¹²¹), others did not observe this behavior. Rather they argue that theory about the clientele effect suggests that institutional ownership will increase with higher levels of managerial ownership (section 2.2.2.1), because the agency cost will be lower in such firms. Their empirical results however, revealing that institutional shareholdings are declining with managerial ownership¹²², contradict this notion.

In testing the implications of institutional ownership on firm performance, researchers are well advised to focus not only on the presence of institutional shareholders but on concentration as well.

Consider a firm with 40% institutional ownership. At the first glance, one could argue that the management of this firm is most likely monitored intensively or that it probably established highly performance sensitive compensation plans. However, if no single institutional shareholder holds a substantial stake in the firm, they will not engage as fiercely in actions to limit manager's non-value maximizing behavior. This argumentation is supported by a major paper of Shleifer and Vishny, as their "[...] analysis indicates that large [institutional] shareholders raise expected profits and the more so the greater their percentage of ownership"¹²³. They argue that, since he would have to share the benefits of disciplining the management with the remaining shareholders, an investor will only engage in doing so, if and only if the benefits accumulated in his own shares will outweigh the costs of disciplining the agents. Hence, the large shareholder's incentive to discipline the agents increases with his stake, because with his ownership position the fraction of the benefits

¹²⁰ cf. Hartzell, Starks, 2003, "Institutional Investors and Executive Compensation", p.2372

¹²¹ cf. Maxey, ten Wolde, 1998, "CEO Pay may be crucial as Funds shop"

¹²² cf. Janakiraman, Radhakrishnan, Tsang, 2010, "Institutional Investors, Managerial Ownership, and Executive Compensation"

¹²³ cf. Shleifer, Vishny, 1986, "Large shareholders and corporate control", p.465

attributable to him will increase too. Therefore, it is crucial to focus on the concentration of institutional shareholders too, rather than just on the overall stake they own.

Basically, literature suggests three different variables to measure the effects of institutional ownership:

1. the proportion of total shares that is held by institutional shareholders¹²⁴ - to capture the effects of the *presence* of institutional investors
2. top-five institutional shareholders as a percentage of total institutional shareholdings¹²⁵ - to capture the *concentration* of institutional investors
3. the proportion of total shares that is held by top-five institutional shareholdings¹²⁶ - to capture the *concentration* of institutional investors

Yet another concern is about how institutional shareholders have an impact on performance (e.g. on stock return). Some argue that their efforts are "...reflected in the higher capitalized value of the ownership claims to corporations and not in the period to period portfolio returns"¹²⁷. If this is the case there should be no significant relationship between institutional ownership and stock return. If performance is measured with Tobin's q, however, there should be an observable relationship, since q increases with the market value of the firm.

Hypothesis

Hypothesis_{6A}: High concentration of institutional shareholders is positively related to performance. The presence is also positively related, but less in magnitude.

Hypothesis_{6B}: Presence, and even more so concentration, of institutional investors has a negative relationship to the level of compensation.

¹²⁴ cf. Hartzell, Starks, 2003, "Institutional Investors and Executive Compensation"

¹²⁵ cf. Hartzell, Starks, 2003, "Institutional Investors and Executive Compensation"

¹²⁶ cf. Zheng, 2010, "Heterogenous institutional investors and CEO compensation"

¹²⁷ cf. Jensen, Meckling, 1976, "Theory of the firm: Managerial Behavior, Agency costs and ownership structure", p. 355, which is in line with Shleifer, Vishny, 1986, "Large shareholders and corporate control"

3 Methodology

This section starts by explaining why I chose to analyze the performance / compensation relationship for the CEO only. Afterwards it provides a summary of the used variables, followed by the regression equations and a summary of the expected correlation coefficients. Details about the used data will be presented in the next section.

3.1 Why to focus solely on the CEO

In search of solutions to the problems stemming from the separation of ownership and control, researchers oftentimes examined the relationship between top management compensation and various performance indicators, while controlling for numerous other variables. I am especially interested in the relationship between the chief executive officer and the shareholders of a firm, which is why the variables used in the analysis will only capture compensation and ownership data from the CEO. Nevertheless, the results should provide a sufficient indication for the rest of the top management team too, since a preceding study found that "[...] managerial ownership of the top-five executives increases monotonically with CEO ownership, suggesting that CEO ownership also can be a proxy for managerial ownership"¹²⁸.

Due to the previous observation that "[...] pay-for-performance sensitivity is stronger for the CEO than for the other top managers of the firm"¹²⁹ and the "[...] fact that the CEO in a firm usually receives the largest compensation incentives among the top executives"¹³⁰, I hope to get more meaningful results by focusing solely on the chief executive officer.

I identified the CEO of a company with a binomial variable provided by ExecuComp. For those firms for which this variable was not provided I assumed the CEO to be the highest ranked executive in terms of base salary and bonus. Years in which the CEO changed have been excluded from the sample to avoid bias.

¹²⁸ cf. Janakiraman, Radhakrishnan, Tsang, 2010, "Institutional Investors, Managerial Ownership, and Executive Compensation", p.680

¹²⁹ cf. Hartzell, Starks, 2003, "Institutional Investors and Executive Compensation", p.2365

¹³⁰ cf. Zheng, 2010, "Heterogeneous institutional investors and CEO compensation"

3.2 Performance measures

Previous researchers employed a hardly manageable variety of measures to capture firm performance. They did so, because the various variables come with certain advantages and disadvantages. In the following, this paper describes the performance indicators I decided to employ in order to balance the advantages and disadvantages.

3.2.1 Stock return

The first performance indicator that typically comes into one's mind is the stock return. In fact, some authors¹³¹ used it in their analysis, revealing that "the contemporaneous stock return has a significant impact on executive compensation"¹³². The major advantage of the stock return is that "[...] it is the fundamental scorecard for CEOs of public companies. And it's the same scorecard for everyone"¹³³. Moreover, especially young firms with low cash reserves oftentimes implement market-based compensation schemes in order to avoid liquidity problems¹³⁴.

Although stock return is the measure investors are usually most concerned about, which would make it the logical choice in selecting a performance measure, it has the major drawback that it is "[...] susceptible to investor anticipation. If investors anticipate the corporate governance effect on performance, [...] stock returns will not be significantly correlated with governance even if a significant correlation between performance and governance indeed exists"¹³⁵. Since accounting measures do not share this disadvantage, they are also frequently used to describe the performance / compensation relationship.

3.2.2 ROA

One of the accounting measures that is typically used in corporate governance related research is the Return on Assets (ROA)¹³⁶. In analyzing the relationship between CEO compensation and firm performance it seems reasonable to employ an accounting measure as well, since previous studies found "[...] support for the view that boards of directors look

¹³¹ cf. e.g. Balsam, Fernando, Tripathy, 2011, "The impact of firm strategy on performance measures used in executive compensation"; Fahlenbrach, 2009, "Shareholder rights, Boards, and CEO compensation"

¹³² cf. Fahlenbrach, 2009, "Shareholder rights, Boards, and CEO compensation", p.106

¹³³ cf. Hansen, Ibarra, Peyer, 2010, "The Best-Performing CEOs in the World", p.107

¹³⁴ cf. Byrd, Parrino, Pritsch, 1998, "Stockholder-Manager Conflicts and Firm Value"

¹³⁵ cf. Bhagat, Bolton, 2008, "Corporate governance and firm performance", p.264

¹³⁶ cf. e.g. Balsam, Fernando, Tripathy, 2011, "The impact of firm strategy on performance measures used in executive compensation"; Bhagat, Bolton, 2008, "Corporate governance and firm performance", Gupta, Fields, 2009, "Board independence and Corporate Governance: Evidence from Director Resignations"

at accounting numbers when evaluating a CEO's performance, possibly even more than at stock returns"¹³⁷. Moreover it seems that "high accounting returns lead companies to emphasize accounting performance [...], and downplay market returns."¹³⁸. Another explanation for the emphasis of accounting performance could be that market-based indicators are too noisy¹³⁹.

To use solely accounting numbers could also be insufficient due to two major disadvantages. First, the performance evaluation is only possible ex-post since they do not reflect effects of future cash flows (whereas e.g. stock return reflects future pay offs of recent investments too), and, second, they can get manipulated easier than market-based performance measures¹⁴⁰. For these reasons, I will run separate regressions using either stock market or accounting performance.

3.2.3 Tobin's q

Tobin's Q represents a mixture of accounting and stock market measures and has been frequently used by numerous researchers to proxy for corporate performance¹⁴¹. One of its major advantages is that, unlike stock returns, it reflects capitalized effects as well. If, for example, market participants anticipate the positive effect of, let's say, an independent board, stock return would not yield a significant relationship. Tobin's q, however, uses market and book values in concert, making it possible to capture these capitalized effects. Formally it is the ratio of the market value of a firm divided by its replacement or reproduction cost.

$$q = \frac{\text{market value of the firm}}{\text{replacement cost}}$$

Nevertheless researchers defined the exact inputs differently, especially with respect to the value of debt (as part of the market value) and the replacement cost of the firm. Since the

¹³⁷ cf. Weisbach, 1988, "Outside Directors and CEO Turnover", p. 447,448

¹³⁸ cf. Wade, Porac, Pollock, 1997, "Worth, words, and the justification of executive pay", p. 641

¹³⁹ cf. Byrd, Parrino, Pritsch, 1998, "Stockholder-Manager Conflicts and Firm Value"

¹⁴⁰ cf. Byrd, Parrino, Pritsch, 1998, "Stockholder-Manager Conflicts and Firm Value"

¹⁴¹ cf. Hartzell, Starks, 2003, "Institutional Investors and Executive Compensation"; Bhagat, Bolton, 2008, "Corporate governance and firm performance"; cf. Hermlin, Weisbach, 1991, "The Effects of Board Composition and Direct Incentives on Firm Performance"; Yermack, 1996, "Higher market valuation of companies with a small board of directors"; Morck, Shleifer, Vishny, 1988, "Management ownership and market valuation"

different definitions are closely related¹⁴², I decided to stick with the uncomplicated definition of Hartzell and Starks in 2003¹⁴³:

$$q = \frac{\text{market value of equity} + \text{book value of debt}}{\text{book value of total assets}}$$

Where the book value of debt is defined as the difference between the book value of total assets and the book value of equity. Applying this definition on the formula presented above results in the following equation:

$$q = \frac{MV \text{ of Equity} + BV \text{ of total assets} - BV \text{ of Equity}}{BV \text{ of total assets}}$$

3.2.4 Timing

Since part of a manager's compensation is supposed to be dependent on his long term performance, it would be useful to include the performance measure of the preceding year in the regression equation, too¹⁴⁴.

3.2.5 Relative performance

As criticized in section 2.2.2.2 (incentive compensation), firms may base CEO compensation on absolute measures, such as stock return, instead of using relative performance measures to evaluate a CEO's personal performance. In doing so, they would reward performance that the CEO did not actually cause. To answer the question if CEO compensation is sufficiently connected to performance, and therefore socially more acceptable, it seems appropriate to test for relative performance as well.

Moreover, using relative performance should be a sufficient approach to avoid data bias due to periods of overvaluation as have happened in the late 1990s or the early 2000s¹⁴⁵.

¹⁴² cf. Chung, Pruitt, 1994, "A simple approximation of Tobin's q"

¹⁴³ cf. Hartzell, Starks, 2003, "Institutional Investors and Executive Compensation", p. 2357 (footnote no. 8); Bhagat and Bolton used a similar definition in their 2008 paper "Corporate governance and firm performance". The only difference is that they additionally subtracted deferred taxes in the numerator. Since this position is typically quite small, I got similar values for q when I calculated it for the period they used.

¹⁴⁴ cf. Jensen, Murphy, 1990, "Performance Pay and Top-Management Incentives"

¹⁴⁵ cf. Dossi, Patelli, Zoni, 2010, "The Missing Link between Corporate Performance Measurement Systems and Chief Executive Officer Incentive Plans"

In case of the stock return I am going to capture relative performance via calculating the industry return and subtracting it from the individual firm's stock return. For the ROA and Tobin's q I subtracted the mean of the industry (using the 2 digit SIC code) in order to construct a relative performance measure¹⁴⁶.

3.3 Compensation variables

In management compensation related research, the variable that is frequently used to measure management compensation is called total direct compensation (TDC). Although ExecuComp offers total direct compensation as a ready-to-use variable, I decided to calculate TDC separately. I did so because this approach enables me to analyze the impact of different components of TDC separately. It would be interesting to see, for example, how the correlation coefficient of CEO compensation changes if the probably non-performance related base salary is omitted in the calculation of TDC.

In this work, as well as in the ExecuComp database, TDC is defined as the sum of base salary, bonus, stock grants, option grants¹⁴⁷, long term incentive payments, other compensation-like value received by the CEO (severance payments, debt forgiveness, etc.), and additional perks. However, during the years of the sample (1993-2009) the requirements concerning compensation-related information in the proxy statement changed, and with it, the calculation of TDC. In particular, when US GAAP's FAS 123(R) became effective in June 2005, firms were required to expense the value of granted compensation-like options using the intrinsic value or a fair value approach. For this reason it seemed necessary to analyze the data in two subsets, prior and after 2005.

Although the concept of CEO return seemed a rewarding alternative strategy when I reviewed the literature, it turned out as impossible to be employed in my analysis. To construct this measure sufficiently, one needs data on insider trading, which was not included in the databases I had access to. For this reason, I have to leave the empirical testing to further research.

¹⁴⁶ Analogous to Bhagat, Bolton, 2008, "Corporate governance and firm performance"; Gompers, Ishii, Metrick, 2003, "Corporate Governance and Equity Prices"; Bebchuk, Cohen, Ferrell, 2009, "What matters in corporate governance?"

¹⁴⁷ Following the majority of the reviewed literature, I used the aggregated Black-Scholes value of all options granted in the given fiscal year, which is provided by the ExecuComp database. In fact, not a single paper used a different method for time prior to 2005.

3.4 Control variables

As already explained in the literature review there is a wide variety of additional factors that could have an impact on the performance / compensation relationship. This work considers a selective set of the control variables that have been suggested by previous research, which are briefly summarized in the following. Control variables that have been suggested by the literature but have not been considered in this work, mostly because they were not available in the datasets I had access to, are outlined in section 7 (Limitations and Extensions).

3.4.1 Managerial ownership

One part of the literature suggests that the divergence of interests will be the lower, the higher the managerial ownership is, thereby proclaiming a linear positive relationship between managerial ownership and performance (convergence-of-interest hypothesis)¹⁴⁸.

Another part on the opposite, suggests that although the interests should converge with increasing ownership, a manager's power also rises with his stake¹⁴⁹. The more powerful a manager gets, the higher the possibility that he substantially departs from value-maximizing behavior or that he influences corporate governance in a self-serving way. This "entrenchment" effect will then superimpose the convergence-of-interest effect, resulting in a non-linear relationship between managerial ownership and performance. Managerial power can arise from different sources (status as a founder, personality, etc.), the most direct way, however, is to increase the voting rights under manager's control. Although this increase can be achieved via different ways¹⁵⁰, it is complicated to create sufficient variables, other than managerial ownership, to be employed in a regression analysis.

For this reason, and because it is the way that is best quantifiable, I decided to proxy for managerial power (and interest alignment) by employing a variable that computes a manager's ownership position as the percentage of total outstanding shares. This seems

¹⁴⁸ cf. e.g. Jensen, Murphy, 1990, "Performance Pay and Top-Management Incentives"; Byrd, Parrino, Pritsch, 1998, "Stockholder-Manager Conflicts and Firm Value; Damodaran, John, Liu, 2005, "What motivates managers? Evidence from organizational form changes"

¹⁴⁹ cf. e.g. Stulz, 1988, "Managerial Control of voting rights"; Morck, Shleifer, Vishny, 1988, "Management ownership and market valuation"; Janakiraman, Radhakrishnan, Tsang, 2010, "Institutional Investors, Managerial Ownership, and Executive Compensation"

¹⁵⁰ cf. Stulz, 1988, "Managerial Control of voting rights"

especially appropriate since, according to Jensen and Murphy in 1990, it is the only computation that “really matters”¹⁵¹ in estimating the impact of CEO’s ownership.

Concerning the measurement of the different levels of managerial ownership I decided to stick with the method first introduced by Morck, Shleifer, and Vishny¹⁵², which computes the magnitude of managerial ownership as follows¹⁵³:

Managerial ownership (0% - L_1)	= ownership ¹⁵⁴	... if ownership < L_1
	= L_1	... if ownership $\geq L_1$
Managerial ownership (L_1 - L_2)	= 0	... if ownership < L_1
	= ownership - L_1	... if $L_1 \leq$ ownership < L_2
	= L_2	... if ownership $\geq L_2$
Managerial ownership (L_2 - 100%)	= 0	... if ownership < L_2
	= ownership - L_2	... if ownership $> L_2$

L_1 and L_2 will be fixed at levels where the explanatory power of the model (as measured with R^2) is the highest.

In the performance perspective I expect to find the N-shaped relationship proposed, among others, by Morck, Shleifer, and Vishny in 1988¹⁵⁵. Concerning compensation, however, I expect to observe a linear relationship with CEO ownership, because there is no reason to believe that a CEO will *decrease* his compensation for any level of ownership.

3.4.2 Number of directors in the board

To test whether a large board with its highly specialized members can restrict managers’ actions in a more performance-effective manner, or a small and efficient one that does not spend many resources on forming an opposition, the number of directors was included in the regression function.

¹⁵¹ cf. Jensen, Murphy, 1990, “CEO incentives – It’s not how much you pay, but how”, p.7

¹⁵² cf. Morck, Shleifer, Vishny, 1988, “Management ownership and market valuation”

¹⁵³ Janakiraman, Radhakrishnan, Tsang in their 2010 paper, “Institutional Investors, Managerial Ownership, and Executive Compensation”, in contrast, used a binary variable for every interval (small, medium, and high managerial ownership), which was equal to one if the aggregated ownership of the top-five executives was between certain limits and zero otherwise.

¹⁵⁴ Again as percentage of total outstanding shares.

¹⁵⁵ cf. Morck, Shleifer, Vishny, 1988, “Management ownership and market valuation”

Unfortunately it is hard for European students to obtain first-hand data about the board of U.S. corporations¹⁵⁶, since, unlike many universities in the U.S., our libraries do not receive CD-ROMs of Compact Disclosure. Since I was not able to obtain access to an alternative source either (e.g. Corporate Library), I derived as much information as possible from the information given in the ExecuComp database.

Concerning board size I did so through counting the board members that received meeting fees for a given company in a given year. Unfortunately, ExecuComp provides this data only starting from 2006, which is why I was not able to analyze the impact of board size in the preceding years.

3.4.3 Board independence

In order to test its impact on performance and compensation, previous research¹⁵⁷ took the portion of outside directors on the board as a proxy for board independence. As with the other board-related data, I was not able to obtain the data from a primary source, but had to construct it. In case of board independence, I subtracted the number of managers that were identified as serving on the board in the ExecuComp database, from the total number of board members (identified as described above). Due to the fact that the number of outside directors henceforth depends on the total size of the board, it also covers only the years between 2006 and 2009.

3.4.4 Concentration of institutional shareholdings

As mentioned in section 2.2.3.2 of the literature review, there are three variables used to describe institutional ownership:

1. the proportion of total shares that is held by institutional shareholders¹⁵⁸ to capture the effects of their presence

$$instprc = \frac{\text{number of shares held by institutional investors}}{\text{total outstanding shares}}$$

¹⁵⁶ At least not in a sufficient size; there is still to possibility to collect the data by hand from the proxy statements

¹⁵⁷ cf. Chiang, Lin, 2011, "Examining Board Composition and Firm Performance"; Gupta, Fields, 2009, "Board independence and Corporate Governance: Evidence from Director Resignations"; Yermack, 1996, "Higher market valuation of companies with a small board of directors";

¹⁵⁸ cf. Hartzell, Starks, 2003, "Institutional Investors and Executive Compensation"; Gompers, Ishii, Metrick, 2003, "Corporate Governance and Equity Prices"

2. top-five institutional shareholders as a percentage of total institutional shareholdings¹⁵⁹ to capture the effects of their concentration

$$top5instprc = \frac{\text{number of shares held by top 5 institutional shareholders}}{\text{number of shares held by institutional investors}}$$

3. the proportion of total shares that is held by top-five institutional shareholdings¹⁶⁰, as an alternative measure to proxy for their concentration

$$top5totprc = \frac{\text{number of shares held by top 5 institutional shareholders}}{\text{total outstanding shares}}$$

The analysis of this paper will use the first one to proxy for the impact of the presence of institutional investors, together with either the second or the third measure to capture the effects of concentrated holdings. This approach should increase the power of the findings.

3.4.5 Size

It seems reasonable to control for firm size due to two reasons:

1. CEOs of large firms get paid more¹⁶¹, meaning that compensation could also be a function of size
2. it is possible that it is easier to generate high returns if one starts from a low base¹⁶²

Researchers did typically control for size effects by using either sales¹⁶³, assets¹⁶⁴ or market capitalization¹⁶⁵. Since this data is oftentimes skewed they frequently used a logarithmic function, which is why I chose to include log(assets) in my analysis.

¹⁵⁹ cf. Hartzell, Starks, 2003, "Institutional Investors and Executive Compensation"

¹⁶⁰ cf. Zheng, 2010, "Heterogenous institutional investors and CEO compensation"

¹⁶¹ cf. Fahlenbrach, 2009, "Shareholder rights, Boards, and CEO compensation"

¹⁶² cf. Hansen, Ibarra, Peyer, 2010, "The Best-Performing CEOs in the World"

¹⁶³ cf. Bebchuk, Grinstein, 2005, "The Growth of Executive Pay"

¹⁶⁴ cf. Bebchuk, Cohen, Ferrell, 2009, "What matters in corporate governance?"; Bhagat, Bolton, 2008, "Corporate governance and firm performance"; Gompers, Ishii, Metrick, 2003, "Corporate Governance and

3.4.6 Industry

Due to the fact that compensation levels can not only be expected to increase with firm size, but also to vary across industries¹⁶⁶, it is necessary to include an industry variable in the regression function too. Along with the majority of the reviewed literature, I used the 2-digit¹⁶⁷ Standard Industry Classification (SIC)-Code to control for the possibility that performance and compensation schemes vary substantially with respect to industry. Firms in low-growth industries for instance, will have a lower need for expensive performance-contingent compensation schemes because, compared to executives in high-growth industries, their CEOs typically choose among a smaller and easier assessable set of finance opportunities and are therefore easier to monitor.

In addition, controlling for the industry avoids bias due to different industry-specific performance levels. If performance is measured using Tobin's Q for example, firms in the IT-related industry typically have a high q due to their heavy reliance on intangible assets, whereas firms in the retail industry will have a lower value.

Along with Nyberg, Fulmer, Gerhart, and Carpenter in 2010¹⁶⁸, I used STATA's "areg" function to control for industry effects. In an alternative specification, which I did not report in this work, I ran part of the regressions with the "xi" function as well, and got identical results concerning the point estimates of the employed variables¹⁶⁹. The only term that was different from the "areg" results was the intercept. Since I was only interested in the point estimates of the employed corporate governance variables, I did not show the constant terms in my results.

3.4.7 E-Index

In their corporate charters and bylaws, firms can include provisions that limit shareholders' power or decrease the takeover probability. Both types theoretically increase agency cost

Equity Prices"; Gupta, Fields, 2009, "Board independence and Corporate Governance: Evidence from Director Resignations" Bebchuk, Cohen, Ferrell, 2009, "What matters in corporate governance?"

¹⁶⁵ cf. Zheng, 2010, "Heterogenous institutional investors and CEO compensation"

¹⁶⁶ cf. Bebchuk, Grinstein, 2005, "The Growth of Executive Pay"

¹⁶⁷ cf. e.g. Bebchuk, Cohen, Ferrel, 2009, "What matters in corporate governance?"; Wade, Porac, Pollock, 1997, "Worth, words, and the justification of executive pay"; Yermack, 1996, "Higher market valuation of companies with a small board of directors"; Zheng, 2010, "Heterogenous institutional investors and CEO compensation"

¹⁶⁸ cf. Nyberg, Fulmer, Gerhart, Carpenter, 2010, "Agency theory revisited: CEO Return and Shareholder interest alignment"

¹⁶⁹ With exemption of the point estimates of the different 2-digit SIC codes, which I never intended to report.

and thereby decrease firm value. In a widely recognized paper in 2003, Gompers, Ishii, and Metrick¹⁷⁰ created an index that equally weighted 24 provisions suggested by the Investor Responsibility Research Center (IRRC), which is a major consultant for institutional investors. They assigned a score to each firm in their sample, depending on the number of provisions in place. With these scores, they created a “democracy” and a “dictatorship” portfolio (democracy scored low, and dictatorship high respectively). The strategy of going long the democracy portfolio and shorting the dictatorship portfolio created significantly positive abnormal returns of more than 8% p.a., indicating that “[...] the long-run benefits of eliminating multiple provisions would be enormous”¹⁷¹. Moreover, firms with low scores had a higher firm value (as measured with Tobin’s q).

However, in a paper published in 2009 by Bebchuk, Cohen, and Ferrell¹⁷² argued that from the 24 provisions suggested by the IRRC, only 6 are actually significantly negatively related to performance, and that the remaining 18 provisions are more or less noise. The six provisions they employed are (i) staggered boards, (ii) supermajorities to change corporate bylaws, (iii) supermajorities to change the corporate charter, (iv) supermajorities to approve mergers, (v) golden parachutes, and (vi) the adoption of poison pills. They found not only that high scores in the index are negatively related to firm value, but that they are monotonically negatively related.

Thus, it can be expected that the index is negatively related to performance in this study too. Moreover, I would expect compensation levels to be higher in firms in which managers are better insulated from disciplining forces. Since U.S. firms’ scores between 1990 and 2006 can be downloaded from Prof. Bebchuk’s homepage¹⁷³, I included this data as a control variable in part of the regressions.

3.4.8 CEO age

Previous research¹⁷⁴ showed that principal agent conflicts aggravate if the agent approaches the age of retirement (i.e. the agency cost rises). Those managers have an incentive to sacrifice profitable long-term projects for the sake of short-term gains, because they will not

¹⁷⁰ cf. Gompers, Ishii, Metrick, 2003, “Corporate Governance and Equity Prices”

¹⁷¹ cf. Gompers, Ishii, Metrick, 2003, “Corporate Governance and Equity Prices”, p.145

¹⁷² cf. Bebchuk, Cohen, Ferrell, 2009, “What matters in corporate governance?”

¹⁷³ <http://www.law.harvard.edu/faculty/bebchuk/data.shtml> (last access on July 2nd, 2012)

¹⁷⁴ cf. Weisbach, 1988, “Outside Directors and CEO Turnover”; cf. Byrd, Parrino, Pritsch, 1998, “Stockholder-Manager Conflicts and Firm Value”

be able to receive the full benefits of a project that pays off after their retirement. Moreover, they do not need to be concerned about finding a new job later on and are therefore immune against the disciplining effect of job market reputation.

So, in order to capture the potential negative effect of near-retirement-age on performance, I will include a dummy variable in the regression that is equal to one if the CEO is older than 63¹⁷⁵.

Furthermore it is worth noting that these problems should be especially observable in the regressions using market-based performance measures, since accounting proxies are oriented backwards and henceforth will not reflect any inefficiencies in the future.

3.4.9 Interlock

Interlock is a binary variable concerning compensation, which is offered by the ExecuComp database. It indicates whether or not an officer is able to influence his own compensation.

In particular, “ ‘TRUE’ indicates that the named officer is involved in a relationship requiring disclosure in the ‘Compensation Committee Interlocks and Insider Participation’ section of the proxy. This generally involves one of the following situations:

1. The officer serves on the board committee that makes his compensation decisions
2. The officer serves on the board (and possibly compensation committee) of another company that has an executive officer serving on the compensation committee of the indicated officer's company
3. The officer serves on the compensation committee of another company that has an executive officer serving on the board (and possibly compensation committee) of the indicated officer's company”¹⁷⁶

This disclosure requirement is yet another indication of the great importance the SEC assigns to the independence of the board. Due to the obvious connection to compensation, I included interlock in the regression equation.

¹⁷⁵ cf. Weisbach, 1988, "Outside Directors and CEO Turnover"

¹⁷⁶ <http://wrds-web.wharton.upenn.edu/wrds/support/Data/001Manuals%20and%20Overviews/001Compustat/007Execucomp/005ExecuComp%20Data%20Definitions.cfm#H> (last access: July 10th, 2012)

3.5 Regression Functions and Expected Correlations

In the following the regression functions are presented. There are two versions to be employed in the analysis, one in that performance is the dependent variable, and one where the level of compensation is the dependent variable. Afterwards tables 2 and 3 summarize the expected relationships for the performance and the compensation perspective respectively.

3.5.1 Performance perspective

performance measure_{i,t}

$$\begin{aligned} &= \alpha + \beta_1 * CEO\ compensation_{i,t} + \beta_2 * managerial\ own.\ (0\% - L_1)_{i,t} \\ &+ \beta_3 * managerial\ own.\ (L_1 - L_2)_{i,t} + \beta_4 \\ &* managerial\ own.\ (L_2 - 100\%)_{i,t} + \beta_5 * board\ size_{i,t} + \beta_6 \\ &* board\ independence_{i,t} + \beta_7 * presence\ of\ inst.\ investors_{i,t} + \beta_8 \\ &* concentration\ of\ inst.\ holdings_{i,t} + \beta_{10} * CEO\ near\ retirement_{i,t} + \beta_{11} \\ &* E\ index_{i,t} + \beta_{12} * firm\ size_{i,t} + \beta_{13} * industry_i + \varepsilon_{i,t} \end{aligned}$$

3.5.2 Compensation perspective

CEO compensation_{i,t}

$$\begin{aligned} &= \alpha + \beta_1 * performance_{i,t} + \beta_2 * performance_{i,t-1} + \beta_3 \\ &* managerial\ ownership_{i,t} + \beta_4 * board\ size_{i,t} + \beta_5 \\ &* board\ independence_{i,t} + \beta_6 * presence\ of\ inst.\ investors_{i,t} + \beta_7 \\ &* concentration\ of\ inst.\ holdings_{i,t} + \beta_8 * CEO\ near\ retirement_{i,t} + \beta_9 \\ &* E\ index_{i,t} + \beta_{10} * firm\ size_{i,t} + \beta_{11} * interlock_{i,t} + \beta_{12} * industry_i \\ &+ \varepsilon_{i,t} \end{aligned}$$

3.5.3 Expected Correlations

TABLE 2 & 3
Expected empirical relationships

<i>Performance perspective</i>		<i>Compensation perspective</i>	
	Performance measure		Level of compensation _t
Compensation _t	+	(rel.) stock return _t	+
Managerial ownership (0%-L ₁) _t	+	(rel.) stock return _{t-1}	+
Managerial ownership (L ₁ -L ₂) _t	-	(rel.) ROA _t	+
Managerial ownership (L ₂ -100%) _t	+	(rel.) ROA _{t-1}	+
Board size _t	-	(rel.) Tobin's q _t	+
Board independence _t	+	(rel.) Tobin's q _{t-1}	+
Presence of inst. investors _t	+	Managerial ownership _t	+
Concentration of inst. holdings _t	+	Board size _t	+
CEO near retirement _t	-	Board independence _t	-
E-index _t	-	Presence of inst. investors _t	-
		Concentration of inst. holdings _t	-
		E-index _t	+
		Firm size _t	+
		Interlock _t (TRUE)	+

Note: These tables show the expected prefix of the relationships between the dependent variable (performance, level of compensation) and the explaining measures. Concerning the performance perspective, the relationship will be tested for one year stock return, ROA, and Tobin's q, both with absolute and in relative computations.

4 Data

This section starts with explaining where the data was obtained from and which years are covered by the analysis. Afterwards, it provides the reader with some descriptive statistics, followed by the correlations between the employed variables.

4.1 Sample description

The data on performance and compensation was obtained from the ExecuComp database within Standard & Poors Compustat. Data concerning institutional shareholdings has been downloaded from the corresponding section within the Thomson Financial database (formerly CDA Spectrum). The combination of these sets yields a sample of 3,080 unique

firms traded on North American Stock Exchanges (NYSE, ASE, NASDAQ, etc.) between 1992 and 2009. After deleting years in which the CEO changed¹⁷⁷, observations that were lacking necessary data, and all data from 1992 (due to the low number of observations), the sample consisted of 23,167 firm year observations, with 3010 unique firms (as identified by the ticker symbol). Table 4 shows the number of observations per year. As it illustrates, the number of observations ranges from 976 in 2008 to 1624 in 1999. This high number of observations should provide the analysis with sufficient explanatory power.

TABLE 4
Number of observations per year

Fiscal Year	Number of observations	Percent	Cum.
1993	1,107	4.78	4.78
1994	1,454	6.28	11.05
1995	1,492	6.44	17.49
1996	1,515	6.54	24.03
1997	1,524	6.58	30.61
1998	1,589	6.86	37.47
1999	1,624	7.01	44.48
2000	1,600	6.91	51.39
2001	1,460	6.30	57.69
2002	1,409	6.08	63.77
2003	1,423	6.14	69.91
2004	1,358	5.86	75.78
2005	1,263	5.45	81.23
2006	1,064	4.59	85.82
2007	1,095	4.73	90.55
2008	976	4.21	94.76
2009	1,214	5.24	100.00
Total	23,167	100.00	

Note: This table depicts the number of firm year observations per year between 1993 and 2009. Observations where the CEO changed, that were lacking necessary data and all observations of 1992 (due to the low number of observations) were deleted.

4.2 Descriptive statistics

As mentioned above, the SEC changed the requirements concerning the disclosure of compensation data in 2005, making the data less comparable over the whole range of years, which is why the data has been analyzed in two subsamples (1993 – 2005 and 2006 – 2009). On top of that, the financial crisis that started in 2007 potentially caused considerable distortions in the data, making a separate analysis of the two subsamples even worthier.

¹⁷⁷ cf. Fahlenbrach, 2009, "Shareholder rights, Boards, and CEO compensation"

Still, it seems rewarding to have look on the overall data first. To make the items that are denoted in \$ comparable over the years, I included inflation adjusted¹⁷⁸ positions too.

4.2.1 Descriptive statistics, 1993-2009

TABLE 5
Descriptive statistics of the whole sample

	mean	median	min	max	Standard Deviation	N
Total direct compensation [in \$1,000]	4,647.28	2,151.80	0	655,448	10,674.38	23,167
Total direct compensation (inflation adjusted) [in \$1,000]	5,390.18	2,577.49	0	830,815.4	12,736.11	23,167
Salary [in \$1,000]	650.65	593.96	0	8,100	373.29	23,167
Salary (inflation adjusted) [in \$1,000]	763.16	700.65	0	8,100	418.96	23,167
Bonus [in \$1,000]	652.19	256.82	0	102,015.2	1,742.56	23,167
Bonus (inflation adjusted) [in \$1,000]	774.26	319.21	0	134,400.3	2,032.15	23,167
ROA [in %]	4.27	4.01	-29.95	61.32	7.54	23,167
1 year stock return (dividends reinvested) [in %]	18.73	10.56	-99.13	997.56	63.64	23,167
Tobin's q	1.93	1.44	.37	78.56	1.72	23,150
Percentage of total shares held by the CEO	2.71	.31	0	76.11	6.66	23,162
Number of directors	8.99	9	1	32	2.98	4,253
Number of outside directors	7.42	7	0	30	3.11	4,253
Percentage of total outstanding shares held by institutions	66.74	70.14	0	100	22.39	16,853
Book value of assets [in \$m]	14,181.41	1,733.42	6.859	2,223,299	73,352.17	23,167
Book value of assets(inflation adjusted) [in \$m]	16,046.24	2,057.98	7.16	2,223,299	77,973.14	23,167
E-index	2.48	3	0	6	1.31	5,048
CEO age	55.79	56	29	93	7.58	22,149

Note: This table shows descriptive statistics of a selective set of variables to be employed in the regression analysis. The inflation adjusted values are denoted in 2009 constant \$. Inflation values have been downloaded from <http://www.usinflationcalculator.com/inflation/historical-inflation-rates/> (last access on July 13th, 2012).

¹⁷⁸ the inflation values were obtained from <http://www.usinflationcalculator.com/inflation/historical-inflation-rates/> (last access on July 13th, 2012)

Between 1993 and 2009 the average CEO earned about \$ 5.4 million in total direct compensation (2009 constant \$). The data on TDC seems to be skewed however, since the median CEO earned only \$ 2.6 million. Unlike base salary, where the mean and the median are both near \$ 0.7 million, the bonus is skewed too, with the mean (median) CEO earning \$ 0.8 (0.32) million. Although they apparently account for a large portion of total compensation (salary plus bonus adds up to just about 25% of average TDC), components other than base salary and bonus are not included in this table since their computation substantially changed in 2005, which makes descriptive statistics of the concerned components over the whole range of years less valuable. Instead, they are reported in tables 6 and 7. The mean ROA from 1993-2009 was 4.3% and the mean one year stock return with reinvested dividends was about 18.7%. The average (median) Tobin's q was equal to 1.9 (1.4).

In line with previous research¹⁷⁹, the average CEO holds about 2.7% of the firms outstanding equity, whereas the median CEO holds only 0.3%. Since data on the board was only available from 2006 to 2009, the corresponding descriptive statistics are summarized further down. Notably, more than half of the average and median firm's equity is in the hand of institutional investors (66,7% / 70,1%).

It is not surprising that the mean and the median book value of assets are substantially different from each other. In order to sufficiently capture firm size in the regression analysis, I used a logarithmic function of the book value of total assets. The average and median scores of the E-Index are close to the ones reported by Bebchuk, Cohen, and Ferrell¹⁸⁰, i.e. the average and median firm has about three provisions in place that decrease shareholder rights and takeover probability.

The values concerning CEOs' age are similar to the ones reported by Bhagat and Bolton¹⁸¹, reaching its minimum at 29 (e.g. Michael S. Dell of Dell Inc. in 1993), and its maximum at 93 (Walter J. Zable of Cubic Corp. in 2009).

Next, table 6 describes the data from 1993 till 2005.

¹⁷⁹ cf. Bhagat, Bolton, 2008, "Corporate governance and firm performance"; Jensen, Murphy, 1990, "Performance Pay and Top-Management Incentives"

¹⁸⁰ cf. Bebchuk, Cohen, Ferrell, 2009, "What matters in corporate governance?"

¹⁸¹ cf. Bhagat, Bolton, 2008, "Corporate governance and firm performance"

4.2.2 Descriptive statistics, 1993-2005

TABLE 6
Descriptive statistics of the 1993 - 2005 subsample

	mean	median	min	max	Standard Deviation	N
Total direct compensation [in \$1,000]	4,439.15	2,002.96	0	655,448	11,276.86	18,818
Total direct compensation (inflation adjusted) [in \$1,000]	5,357.90	2,470.95	0	830,815.4	13,669.71	18,818
Salary [in \$1,000]	618.79	560	0	5,806.65	346.21	18,818
Salary (inflation adjusted) [in \$1,000]	758.06	692.03	0	6,138.57	412.44	18,818
Bonus [in \$1,000]	730.99	350	0	102,015.2	1,670.76	18,818
Bonus (inflation adjusted) [in \$1,000]	881.52	437.55	0	134,400.3	2,033.10	18,818
Restricted stock grants [in \$1,000]	468.73	0	-4.53	650,812.1	5,144.37	18,818
Restricted stock grants (inflation adjusted) [in \$1,000]	552.43	0	-5.62	824,939.1	6,436.2	18,818
Option Awards (BLK value) [in \$1,000]	2,204.58	504.17	0	600,347.3	8,941.80	18,818
Option Awards (BLK value) (inflation adjusted) [in \$1,000]	2,664.45	625.21	0	720,107.7	10,776.75	18,818
ROA [in %]	4.37	4.07	-29.95	61.324	7.38	18,818
1 year stock return (dividend reinvested) [in %]	20.15	11.76	-99.13	997.56	63.09	18,818
Tobin's q	1.98	1.46	.40	78.56	1.83	18,804
Percentage of total shares held by the CEO	2.77	.31	0	76.11	6.63	18,813
Percentage of total outstanding shares held by institutions	63.76	66.53	0	100	22.53	12,876
Book value of assets [in \$m]	11,647.49	1,509.21	6.86	1,494,037	53,730.05	18,818
Book value of assets (inflation adjusted) [in \$m]	13,973.51	1,855.51	8.23	1,622,278	61,738.01	18,818
E-index	2.46	3	0	6	1.31	4,358
CEO age	55.84	56	29	91	7.61	17,889

Note: This table shows descriptive statistics of a selective set of variables to be employed in the regression analysis. The inflation adjusted values are denoted in 2009 constant \$. Inflation values have been downloaded from <http://www.usinflationcalculator.com/inflation/historical-inflation-rates/> (last access on July 13th, 2012).

The numbers on total direct compensation and base salary remain more or less unchanged, but the level of the bonus payments is slightly higher. Most important to realize however, is the great reliance on option awards during this sample period. With a mean of \$ 2.7 million (denoted in 2009 constant dollar) it accounts for half of the average CEO compensation (for the median CEO, options account for about 25% of total direct compensation). That the mean and the median deviate so much from each other can, for the most part, be attributed to some enormous stock grants, such as the controversial option grant Steve Jobs received in 2000, which was worth more than half a billion U.S. dollar.

Restricted stock grants on the other hand, are only of subordinate importance. Similar to the previously presented table, the average (median) CEO holds about 2.7% (0.3%) of the total outstanding shares. Concerning institutional ownership, the values for 1993-2005 are a little bit lower, but still well above 50%. The performance variables, the E-index, and the CEO age remain roughly the same. The book value of assets is slightly below the one presented before, and skewed too.

Table 7 below shows descriptive statistics for the years 2006-2009.

4.2.3 Descriptive statistics, 2006-2009

TABLE 7
Descriptive statistics of the 2006 - 2009 subsample

	mean	median	min	max	Standard Deviation	N
Total direct compensation [in \$1,000]	5,547.88	3,241.55	0	134,457.9	7,465.59	4,349
Total direct compensation (inflation adjusted) [in \$1,000]	5,529.84	3,233.52	0	137,736.2	7,451.96	4,349
Salary [in \$1,000]	788.5	750	0	8,100	447.57	4,349
Salary (inflation adjusted) [in \$1,000]	785.26	747.36	0	8,100	445.33	4,349
Bonus [in \$1,000]	311.24	0	0	76,951	1,988.66	4,349
Bonus (inflation adjusted) [in \$1,000]	310.16	0	0	73,872.96	1,961.79	4,349
Stock grants (fair value) [in \$1,000]	1,729.71	370.32	0	70,505.57	3,505.13	4,349
Option Awards (fair value) [in \$1,000]	1,367.82	164.64	0	78,421	3,433.36	4,349
Non-Equity Compensation [in \$1,000]	1,062.09	430	-299.624	20,461.47	1,855.24	4,349
Percentage of total shares held by the CEO	2.47	.29	0	65.2	6.77	4,349
ROA [in %]	3.83	3.73	-29.92	50.34	8.17	4,349
1 year stock return (dividend reinvested) [in %]	12.59	5.85	-98.99	840	65.63	4,349
Tobin's q	1.73	1.36	.37	15.51	1.11	4,346
Number of directors	8.99	9	1	32	2.98	4,252
Number of outside directors	7.42	7	0	30	3.11	4,252
Percentage of total outstanding shares held by institutions	76.39	80.67	0	100	18.92	3,977
Book value of assets [in \$m]	25,145.61	3,320.81	7.156	2,223,299	127	4,349
Book value of assets (inflation adjusted) [in \$m]	25,014.91	3,304.44	7.156	2,223,299	125,691.9	4,349
E-index	2.61	3	0	6	1.29	690
CEO age	55.58	55	29	93	7.43	4,260

Note: This table shows descriptive statistics of a selective set of variables to be employed in the regression analysis. The inflation adjusted values are denoted in 2009 constant \$. Inflation values have been downloaded from <http://www.usinflationcalculator.com/inflation/historical-inflation-rates/> (last access on July 13th, 2012).

As with the 1993-2005 subsample, this subsample, too, presents similar numbers concerning total direct compensation and base salary. Interestingly, bonus payments seem to be less important between 2006 and 2009, with the mean being less than half of the one observed in the previous table. That the median is equal to zero is caused by the remarkable circumstance, that only about 20% of all firm year observations in this subsample reported bonus payments greater than zero. This seems to be consistent with the findings by Wade, Porac, and Pollock in 1997¹⁸², who argued that not rewarding a bonus is a powerful signal to the market that the board is independent.

As in the previous subsample, compensation relies heavily on components other than salary and bonus. In this subsample equity based compensation (i.e. stock and option grants) accounts for about 55% of the average total compensation. Notable, option awards seem to be of lower importance during this period. Furthermore, about one fifth of the average TDC falls under non-equity compensation, a position not reported prior to 2005¹⁸³. The mean and median performance variables are considerably lower than between 1993 and 2005, which is probably caused by the financial crisis of 2008 and 2009 (the values are considerably lower during this two years than in the two years preceding them).

As previously mentioned I had no access to primary resources concerning the board of directors, which is why these numbers are only included in the 2006-2009 subsample. Descriptive statistics on board size and the number of outside directors indicate a high emphasis on the independence of the board, with the average and mean board having only about two inside directors. Concerning institutional ownership, the data indicates an increase over the years, reaching a mean (median) of 76% (81%) of total outstanding equity.

Moreover, it is worth noting that the value of total assets substantially increased over time, even after controlling for inflation. The average and median CEO age, as well as the E-index, remain about the same (the E-index was only available for 2006, which is why it has only 690 observations).

¹⁸² cf. Wade, Porac, Pollock, 1997, "Worth, words, and the justification of executive pay"

¹⁸³ These numbers are not separately reported in an inflation adjusted form, because they are fairly close to the unadjusted ones.

4.3 Correlation coefficients

Table 8 provides the reader with the pairwise correlations between a selective set of variables. In particular, it shows the correlations between three compensation variables, all employed performance variables (though not the lagged terms) and all included control variables, though not in every specification.

TABLE 8
Pairwise correlations

	TDC	salary	bonus	r _E	rel. r _E	ROA	rel. ROA	q	rel. q	ceo_own	bsize	boardind	instprc	top5inst	top5tot	Size	eindex	interlock
salary	0.30***	1.00																
bonus	0.35***	0.27***	1.00															
r _E	0.06***	-0.06***	0.04***	1.00														
rel. r _E	0.05***	-0.04***	0.01**	0.96***	1.00													
ROA	0.04***	0.01**	0.03***	0.13***	0.11***	1.00												
rel. ROA	0.04***	0.03***	0.02***	0.11***	0.12***	0.93***	1.00											
q	0.15***	-0.09***	-0.02***	0.38***	0.33***	0.35***	0.29***	1.00										
rel. q	0.13***	-0.05***	-0.01	0.33***	0.36***	0.30***	0.32***	0.91***	1.00									
ceo_own	-0.06***	-0.13***	-0.04***	0.04***	0.04***	0.10***	0.07***	0.08***	0.05***	1.00								
bsize	0.27***	0.35***	0.02	-0.06***	-0.03**	-0.07***	-0.01	-0.19***	-0.09***	-0.26***	1.00							
boardind	0.11***	0.17***	-0.05***	-0.02	-0.01	-0.08***	-0.05***	-0.11***	-0.07***	-0.32***	0.55***	1.00						
instprc	0.03***	0.13***	-0.00	-0.01	-0.00	0.08***	0.07***	-0.01	-0.03***	-0.15***	-0.09***	0.05***	1.00					
top5inst	-0.11***	-0.21***	-0.09***	-0.07***	-0.06***	-0.21***	-0.20***	-0.11***	-0.10***	0.10***	-0.15***	-0.05***	-0.41***	1.00				
top5tot	-0.07***	-0.04***	-0.09***	-0.08***	-0.06***	-0.08***	-0.08***	-0.09***	-0.10***	-0.04***	-0.17***	0.01	0.66***	0.28***	1.00			
size	0.31***	0.59***	0.29***	-0.07***	-0.06***	-0.08***	0.01	-0.17***	-0.05***	-0.20***	0.61***	0.28***	0.04***	-0.28***	-0.16***	1.00		
eindex	-0.06***	0.00	-0.06***	-0.05***	-0.02	-0.07***	-0.05***	-0.16***	-0.12***	-0.17***	0.11***	0.15***	0.07***	-0.05***	-0.00	-0.01	1.00	
interlock	-0.03***	-0.09***	-0.02***	0.01	0.01	0.04***	0.03***	0.02***	0.02***	0.14***	-	-	-0.12***	0.03***	-0.07***	-0.07***	-0.04***	1.00
agedummy	-0.01	0.02***	0.02***	-0.03***	-0.03***	0.00	-0.00	-0.03***	-0.03***	0.15***	-0.10***	-0.17***	-0.05***	0.04***	-0.01*	-0.03***	-0.05***	0.05***

* p < 0.10, ** p < 0.05, *** p < 0.01

Note: TDC ... total direct compensation; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); CEO_own ... CEO ownership; bsize ... board size; boardind ... board independence; instprc ... percentage of total shares held by institutions; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; top5tot ... shares held by top 5 institutional shareholders as a percentage of total outstanding shares; size ... log of total assets; eindex ... E-index; agedummy ... dummy variable equal to 1 if the CEO is older than 63

Apparently almost all variables are correlated with each other, most of them even on the 0.01 significance level. This is a major reason why none of these indicators can be seen as conclusive, since they do not take into account any other variables than the two concerned. If, for example, size is positively correlated with TDC and board size, and board size positively with TDC, it is easily possible that size jointly increases TDC as well as the size of the board, making the relationship between board size and TDC spurious. Nevertheless the correlation coefficients can be taken as first indicators of the relationships between the variables.

TDC is significantly positively correlated with all employed performance measures, most notably with Tobin's q. This relationship does not seem to be caused by salary, since this component is negatively correlated with stock return and q, and only moderately positively with operating performance. Concerning stock return and ROA, bonus payments seem to contribute to the positive relationship with TDC.

Strikingly, stock ownership by the CEO is negatively correlated to total direct compensation as well as to salary, and positively correlated to all performance proxies. Concerning the compensation, the correlation coefficients have a prefix opposite to that expected. A possible explanation could be that high-ownership CEOs' wealth primary increases through stock ownership, making high compensation levels obsolete. The positive relationship with performance on the other hand, is supported by part of the literature¹⁸⁴. As mentioned above it is important to realize, however, that these results are not conclusive yet, since they neither account for additional control variables nor for alternative specifications (i.e. different levels of ownership).

The relationship between CEO ownership and (i) the firm size, (ii) the E-Index, and (iii) his age is not surprising, because (i) it is difficult for managers of big firms to acquire a substantial fraction of the firm, (ii) if the CEO holds a sufficient share to insulate himself from external regulation, the need for additional amendments should be lower, and (iii) a manager's wealth probably rises with his age, which makes it easier to acquire a meaningful stake.

¹⁸⁴ cf. e.g. Jensen, Murphy, 1990, "Performance Pay and Top-Management Incentives"; Byrd, Parrino, Pritsch, 1998, "Stockholder-Manager Conflicts and Firm Value"; Damodaran, John, Liu, 2005, "What motivates managers? Evidence from organizational form changes"

Under the hypothesis that influential CEOs favor insider dominated boards, the negative correlation with the number of outside directors was expected. The negative correlations with the number of board members and the presence of institutional shareholders is surprising, though. Since previous findings suggest that a board is getting less effective with increasing size¹⁸⁵, one would expect the correlation coefficient between CEO ownership and board size to be positive. Additionally, if CEO ownership has a positive effect on performance (as suggested by the correlations), the expected consequence would be that more institutional investors acquire shares, due to the potentially lower agency cost. Concerning the concentration this is one of the few points where the correlation coefficients of the two specifications point in opposite directions.

Consistent with previous research¹⁸⁶, the pairwise correlations suggest that compensation tends to be higher in firms with a large board. Surprisingly, a high portion of outside directors seems to facilitate high levels of TDC and salary too. Concerning the relationship between firm performance and board size the correlation coefficients again support earlier empirical findings. The negative relationship between performance proxies and the board independence was unexpected though.

According to table 8 the concentration of institutional shareholders is mildly negatively correlated with all employed performance variables, no matter how concentration is measured. This would suggest that, contrary to the expectations, concentrated holdings by institutions do not enhance performance but have a moderately negative effect on it. The negative correlation with TDC and salary is in line with the expectations on the other hand. Interestingly the mere presence of institutional shareholders is lacking a significant relationship to stock return and q, though it seems to have a positive effect on accounting performance. Their negative relationship with board size and the positive one with board independence would be supportive to the notion that institutional investors favorably invest in firms with elaborate corporate governance. This would also be consistent with what

¹⁸⁵ cf. Yermack, 1996, "Higher market valuation of companies with a small board of directors"

¹⁸⁶ cf. Yermack, 1996, "Higher market valuation of companies with a small board of directors"

others observed, since Gupta and Fields in 2009¹⁸⁷ found that institutional investors, such as CalPERS, recently place high emphasis on board independence.

Along with the expectations, size is highly positive correlated with compensation and also with board size and independence. Concerning the compensation, this correlation is consistent with preceding literature, which claimed that CEOs of large companies get paid more¹⁸⁸. The large size and complexity possibly makes it necessary to employ a high number of directors in order to ensure sufficient monitoring. Due to authorities' emphasis on board independence, large firms may hire a high number of outside directors.

Consistent with the proclamations by Bebchuk, Cohen, and Ferrell in 2006¹⁸⁹, the E-index is negatively related to performance. The negative correlation with compensation, that seems to be caused by bonus payments, comes as a surprise though. A CEO near retirement, although insignificant correlated with TDC, is highly positive correlated with salary. Moreover, its negative correlation with r_E and q , could be interpreted as an indication that the principal-agent problem indeed aggravates if the agent is near retirement.

5 Regression results

In a first approach I ran a multivariate regression analysis over the whole sample years and included all variables that were available over the whole range. In other words, I excluded board size, board independence, and the E-Index due to a lack of availability. Also, I did not account for different levels of CEO ownership, because in regressions not presented in this work, I did not find any significant "N-shaped" relationship between the performance variables and various levels of equity ownership by the CEO¹⁹⁰. Table 9 shows the results of the performance perspective of this first estimation. For the sake of brevity, and because they yield similar results, I will only show the most representative tables in this section. Tables including other specifications, especially ones with an alternate variable measuring the concentration of institutional holdings, can be found in the appendix.

¹⁸⁷ cf. Gupta, Fields, 2009, "Board independence and Corporate Governance: Evidence from Director Resignations"

¹⁸⁸ cf. Fahlenbrach, 2009, "Shareholder rights, Boards, and CEO compensation"

¹⁸⁹ cf. Bebchuk, Cohen, Ferrell, 2009, "What matters in corporate governance?"

¹⁹⁰ Additionally, I tested for quadratic and logarithmic relationships, but did not observe a significant relationship either.

5.1 1993 - 2009

5.1.1 Performance perspective

TABLE 9
Regression results: Performance perspective 1993 - 2009

	(1) r_E	(2) rel. r_E	(3) ROA	(4) rel. ROA	(5) q	(6) rel. q
TDC	0.508*** (4.16)	0.402*** (3.80)	0.0360*** (4.98)	0.0287*** (5.01)	0.0324*** (2.78)	0.0280*** (2.48)
ceo_own	0.239** (2.14)	0.253** (2.45)	0.109*** (10.51)	0.104*** (10.43)	0.0122*** (4.32)	0.0128*** (4.75)
instprc	-0.196*** (-6.43)	-0.0870*** (-3.07)	-0.0122*** (-3.87)	-0.00250 (-0.82)	-0.0100*** (-8.54)	-0.00740*** (-6.54)
Top5inst	-0.669*** (-11.57)	-0.529*** (-10.02)	-0.141*** (-26.02)	-0.124*** (-24.11)	-0.0284*** (-20.20)	-0.0250*** (-18.41)
agedummy	-4.771*** (-3.40)	-5.062*** (-3.81)	0.0500 (0.34)	0.0924 (0.65)	-0.171*** (-5.33)	-0.170*** (-5.47)
size	-5.789*** (-11.52)	-5.095*** (-11.01)	-0.321*** (-6.61)	-0.273*** (-5.89)	-0.210*** (-7.11)	-0.188*** (-6.57)
<i>N</i>	16853	16853	16853	16853	16853	16853
R^2	0.044	0.022	0.128	0.066	0.176	0.062

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); TDC ... total direct compensation (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

As can be referred from this table, it seems that CEO total direct compensation is significantly positively related to every performance variable employed, no matter if computed absolutely or relatively (though the relation is smaller in magnitude for relative performance proxies). It should be noted though, that the point estimations in the performance perspective concerning TDC are multiplied by 1.000 for the sake of a better readability. That means that the point estimate of e.g. CEO TDC and one year stock return in Panel A is actually only about 0.000,5. A possible interpretation of this result is that an increase CEO's TDC by \$1.000 is accompanied by an increase of about 0.000,5 percentage points in stock return.

Moreover, the findings suggest that increases in CEO ownership are accompanied by an increase in performance, henceforth supporting the convergence-of-interest theory. As

mentioned earlier, I did not find any other than a linear relationship between performance and CEO ownership, although I tested for various levels as well as for a logarithmic and quadratic relationship.

Interestingly, the point estimates concerning the presence and the concentration of institutional ownership suggest that its relationship to performance is negative, which contradicts the majority of the reviewed literature. This negative relationship is weaker for relative performance measures. However, in a specification shown in table 29 of the appendix (in which concentration was measured as the percentage of total outstanding shares held by institutions), it seems that at least the presence (not the concentration) of institutional shareholders is accompanied by high absolute and relative performance. Henceforth, the results concerning institutional ownership should be treated with caution.

A CEO near the age of retirement and firm size are both negatively related to performance in the majority of specifications. The only exemption are the estimates concerning the ROA and the near-retirement-dummy variable. Those two coefficients are positive, but statistically not significant. The negative relationship to stock return and q can be seen as an indication that a CEO near retirement is indeed prone to invest in short-time projects only since he would not be able to receive all benefits from a long-term project.

5.1.2 Compensation perspective

TABLE 10
Regression results: Compensation perspective 1993 - 2009

	(1) TDC	(2) TDC	(3) TDC	(4) TDC	(5) TDC	(6) TDC
r_E	15.69*** (4.41)					
$r_{E,t-1}$	9.245*** (3.00)					
rel. r_E		15.95*** (3.97)				
rel. $r_{E,t-1}$		7.883** (2.41)				
ROA			111.8*** (3.66)			
ROA_{t-1}			-14.31 (-0.59)			
rel. ROA				82.32*** (2.92)		
rel. ROA_{t-1}				10.84 (0.50)		
q					786.0* (1.93)	
q_{t-1}					658.6* (1.84)	
rel. q						529.4 (1.43)
rel. q_{t-1}						867.8*** (2.92)
ceo_own	-6.682 (-0.50)	-7.472 (-0.56)	-11.09 (-0.84)	-10.55 (-0.80)	-20.68 (-1.40)	-21.33 (-1.44)
instprc	-20.24*** (-3.73)	-22.18*** (-4.01)	-23.02*** (-4.09)	-23.80*** (-4.16)	-10.57 (-1.58)	-12.40* (-1.88)
Top5inst	5.591 (0.71)	2.596 (0.33)	3.957 (0.50)	1.602 (0.20)	27.35** (2.13)	23.94* (1.89)
agedummy	307.8 (1.31)	314.0 (1.33)	203.2 (0.85)	197.2 (0.83)	383.0 (1.61)	379.2 (1.58)

Table 10 continued

size	2616.0*** (26.91)	2608.5*** (27.02)	2555.8*** (27.07)	2553.3*** (27.10)	2657.7*** (27.04)	2647.4*** (27.42)
interlock	258.2 (0.32)	293.5 (0.36)	178.7 (0.22)	198.2 (0.24)	158.1 (0.19)	194.0 (0.24)
<i>N</i>	13802	13802	13802	13802	13802	13802
<i>R</i> ²	0.142	0.140	0.135	0.135	0.171	0.168

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: TDC ... total direct compensation; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q ; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets;

In looking on the performance / compensation relationship presented in this table, it becomes evident that there is a significant positive relationship between a firm's contemporaneous performance and CEO's total direct compensation. The high coefficients of model 3 and 4 suggest that firms are especially concerned about the operating performance in setting a CEO's pay¹⁹¹. Firm value, as measured with Tobin's q , apparently also plays a important role in the compensation / performance relationship. The remarkably high level of this measure is most likely a result from the small magnitude of q ¹⁹². If, for example, a firm has a q of one (i.e. its market value is equal to its replacement cost) an increase by one means an enormous change in firm value that is bound to be accompanied by an outstanding increase in CEO compensation. Thus, even incremental changes in q would lead to a considerable reaction in the level of compensation, which in turn results in a very high point estimate. Concerning relative performance measures it seems that they are of equivalent importance as the absolute proxies. Moreover, it seems that the preceding year's stock return and q also play a role in the relationship.

Contrary to empirical results by other researches¹⁹³, the presence of institutional shareholders is significantly negatively related to the level of compensation, but the concentration seems to be positively related to it. The point estimates of concentration in the models 1 to 4 are not statistically significant, though, making a concrete statement

¹⁹¹ It should be noted that it makes no sense to compare the point estimates of stock return and ROA with Tobin's q as well, since q is denoted as a portion rather than in percent .

¹⁹² Since the correlation between q and its lagged term is around 0.7 and significant at the 0.01 level, I did not include an interaction term in the regression function.

¹⁹³ cf. Janakiraman, Radhakrishnan, Tsang, 2010, "Institutional Investors, Managerial Ownership, and Executive Compensation"

impossible. In addition, models 3 and 4 of the alternative specification shown in table 30 of the appendix, find a significant negative relationship between concentration of institutional shareholders and the level of compensation. Henceforth, the findings concerning the concentration of institutional ownership are far from conclusive yet.

The findings presented in the table are supportive to the view that CEOs of large firms earn more, which is consistent with previous findings¹⁹⁴. That a CEO near retirement earns significantly more than other CEOs cannot be confirmed by the findings, although the point estimates are all positive. Strikingly, CEO ownership seems to have a negative impact on the level of compensation, but since the coefficients are not significant that relationship is not conclusive.

Obviously, the results presented so far call for a finer grain in order to yield more meaningful statements about the interrelation of CEO compensation, performance and corporate governance. Especially because I did not yet sufficiently consider the different components of TDC prior and after 2005. To account for the deviating disclosure requirements and computations of those two sub-periods, I ran separate regressions.

5.2 1993-2005

The E-index is available for the years 1990 - 2006, which is why I included it in the regression function of this section. However, since the E-index dataset is considerably smaller than the one available from ExecuComp I ran two separate regressions, which are reported in the panels of table 11. I did only do so for the performance perspective, since Bebchuk, Cohen, and Ferrell¹⁹⁵ proposed that it mainly affects performance. In an alternative specification, which is not shown in here, I included the index in the compensation perspective too, but it substantially decreased the explanatory power of the model.

5.2.1 Performance perspective

¹⁹⁴ cf. Fahlenbrach, 2009, "Shareholder rights, Boards, and CEO compensation"

¹⁹⁵ cf. Bebchuk, Cohen, Ferrell, 2009, "What matters in corporate governance?"

TABLE 11
Regression results: Performance perspective 1993 - 2005

Panel A						
	(1)	(2)	(3)	(4)	(5)	(6)
	r_E	rel. r_E	ROA	rel. ROA	q	rel. q
TDC	0.483 ^{***} (3.84)	0.394 ^{***} (3.55)	0.0324 ^{***} (4.96)	0.0273 ^{***} (4.91)	0.0333 ^{***} (2.60)	0.0292 ^{**} (2.36)
ceo_own	0.379 ^{***} (2.74)	0.345 ^{***} (2.67)	0.0921 ^{***} (8.18)	0.0915 ^{***} (8.47)	0.0130 ^{***} (3.81)	0.0125 ^{***} (3.81)
instprc	-0.114 ^{***} (-3.24)	-0.109 ^{***} (-3.31)	-0.0125 ^{***} (-3.57)	-0.00237 (-0.70)	-0.0103 ^{***} (-7.20)	-0.00874 ^{***} (-6.30)
Top5inst	-0.634 ^{***} (-10.23)	-0.560 ^{***} (-9.82)	-0.127 ^{***} (-22.00)	-0.111 ^{***} (-20.30)	-0.0277 ^{***} (-17.09)	-0.0257 ^{***} (-16.22)
agedummy	-6.589 ^{***} (-4.19)	-6.391 ^{***} (-4.29)	0.0319 (0.20)	0.112 (0.73)	-0.191 ^{***} (-5.07)	-0.180 ^{***} (-4.87)
size	-5.904 ^{***} (-10.36)	-5.705 ^{***} (-10.69)	-0.441 ^{***} (-8.07)	-0.365 ^{***} (-6.90)	-0.215 ^{***} (-6.70)	-0.200 ^{***} (-6.42)
<i>N</i>	12876	12876	12876	12876	12876	12876
<i>R</i> ²	0.048	0.026	0.124	0.062	0.177	0.063
Panel B						
	(1)	(2)	(3)	(4)	(5)	(6)
	r_E	rel. r_E	ROA	rel. ROA	q	rel. q
TDC	0.257 ^{***} (2.87)	0.173 ^{***} (2.68)	0.0241 ^{***} (3.88)	0.0222 ^{***} (3.59)	0.0111 ^{**} (1.98)	0.00791 (1.60)
ceo_own	0.503 [*] (1.87)	0.409 (1.64)	0.0922 ^{***} (4.37)	0.0987 ^{***} (4.85)	0.0144 [*] (1.86)	0.0148 ^{**} (2.00)
instprc	0.0793 (1.48)	-0.0383 (-0.76)	-0.0124 [*] (-1.87)	0.000121 (0.02)	-0.00819 ^{***} (-3.29)	-0.00708 ^{***} (-2.91)
Top5inst	-0.555 ^{***} (-6.59)	-0.500 ^{***} (-6.29)	-0.160 ^{***} (-14.37)	-0.143 ^{***} (-13.57)	-0.0276 ^{***} (-10.43)	-0.0259 ^{***} (-9.99)
agedummy	-6.947 ^{***} (-3.16)	-6.390 ^{***} (-3.06)	0.0233 (0.09)	0.0165 (0.07)	-0.235 ^{***} (-3.87)	-0.232 ^{***} (-3.82)
eindex	-1.272 [*] (-1.95)	-1.720 ^{***} (-2.86)	-0.335 ^{***} (-4.05)	-0.249 ^{***} (-3.13)	-0.184 ^{***} (-7.31)	-0.178 ^{***} (-7.28)
size	-2.340 ^{***} (-3.22)	-2.734 ^{***} (-4.06)	-0.402 ^{***} (-4.11)	-0.345 ^{***} (-3.61)	-0.0951 ^{***} (-4.08)	-0.0879 ^{***} (-4.00)
<i>N</i>	4347	4347	4347	4347	4347	4347
<i>R</i> ²	0.061	0.026	0.143	0.089	0.169	0.054

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: Panel A shows the results of a regression without E-index, because including the index substantially decreases sample size (from 12,876 to 4,347). Panel B reports the estimates if it is included. It is worth noting that the coefficient of determination increased in this specification.

r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); TDC ... total direct compensation (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; eindex ... E-index; size ... log of total assets

Both panels indicate that CEO compensation is positively related to the employed performance variables, though the point estimates are lower for the relative performance proxies. This could be due to a tendency of firms to evaluate the performance of their CEOs by using absolute measures rather than relative ones. Additionally, they both support the notion of a positive relationship between CEO ownership and performance.

Concerning the relationship between institutional ownership and performance, the picture changed slightly in some specifications. Although presence and concentration remain negatively related to performance in the specification without E-index, in the one including it the statistical significance is waning. In addition, in the two specifications shown in the appendix (both with a different variables capturing institutional investor concentration), the presence is positively related to performance. The point estimates of concentration on the opposite, remain negative in every specification, indicating that concentrated institutional ownership coincides with low performance. Moreover, both tables show that a CEO near retirement and firm size are negatively correlated with performance.

The coefficients of the E-index support the findings by Bebchuk, Cohen, and Ferrell¹⁹⁶, in that all estimates have a negative prefix and are statistically meaningful. These findings however, do not necessarily indicate that the performance decreases the more provisions are in place. It is also possible that low performing firms establish more provisions, in order to secure their jobs. As pointed out by other researchers as well¹⁹⁷, tracking causality is oftentimes a tricky task.

¹⁹⁶ cf. Bebchuk, Cohen, Ferrell, 2009, "What matters in corporate governance?"

¹⁹⁷ cf. Gompers, Ishii, Metrick, 2003, "Corporate Governance and Equity Prices"

5.2.2 Compensation perspective

TABLE 12
Regression results: Compensation perspective 1993 - 2005

	(1) TDC	(2) TDC	(3) TDC	(4) TDC	(5) TDC	(6) TDC
r_E	16.33 ^{***} (4.08)					
$r_{E,t-1}$	9.552 ^{***} (2.83)					
rel. r_E		16.55 ^{***} (3.65)				
rel. $r_{E,t-1}$		8.512 ^{**} (2.37)				
ROA			117.1 ^{***} (3.02)			
ROA _{t-1}			-5.215 (-0.18)			
rel. ROA				96.03 ^{***} (2.71)		
rel. ROA _{t-1}				13.67 (0.53)		
q					788.3 [*] (1.85)	
q _{t-1}					747.3 ^{**} (2.03)	
rel. q						563.5 (1.43)
rel. q _{t-1}						930.3 ^{***} (2.97)
ceo_own	-3.642 (-0.22)	-3.071 (-0.19)	-5.066 (-0.31)	-5.093 (-0.31)	-16.54 (-0.92)	-16.30 (-0.91)
instprc	-27.07 ^{***} (-4.30)	-27.21 ^{***} (-4.31)	-27.25 ^{***} (-4.28)	-28.32 ^{***} (-4.34)	-13.33 [*] (-1.69)	-14.85 [*] (-1.89)
Top5inst	1.644 (0.19)	-0.0883 (-0.01)	1.882 (0.21)	-0.205 (-0.02)	26.32 [*] (1.86)	23.47 [*] (1.66)
agedummy	104.5 (0.40)	103.0 (0.39)	-38.95 (-0.15)	-47.80 (-0.18)	171.3 (0.64)	160.5 (0.60)

Table 12 continued

size	2611.1*** (20.66)	2610.7*** (20.68)	2557.0*** (20.61)	2551.6*** (20.74)	2649.8*** (21.03)	2643.6*** (21.17)
interlock	335.0 (0.40)	294.3 (0.35)	145.2 (0.17)	162.4 (0.19)	168.5 (0.20)	176.9 (0.21)
<i>N</i>	10752	10752	10752	10752	10752	10752
<i>R</i> ²	0.123	0.121	0.115	0.115	0.156	0.153

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: TDC ... total direct compensation; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q ; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

Similar to the findings presented earlier, it seems that firms reward their CEOs primary on the basis of contemporaneous performance indicators. Nevertheless they seem to consider lagged stock return and q too. Moreover, in line with the findings presented in section 5.1, relative performance seems to play an equivalent role to absolute measures. Last year's Tobin's q is also highly positively related to compensation. The findings concerning CEO ownership remain more or less unchanged, still indicating an insignificant negative relationship to performance.

In line with the findings in the 1993 - 2009 sample, the presence of institutional investors is negatively related to compensation. Concentrated institutional shareholdings on the opposite seem to be positively related to the level of compensation, though this relationship is only mildly significant in the specification that uses Tobin's q as performance indicator. Again, the alternative specification presented in table 32 of the appendix contradicts this impression, with the majority of its concentration point estimates being negatively related to compensation, although not all of them significantly. Thus, it is still not possible to draw any clear conclusions addressing concentrated institutional ownership. Still consistent with previous empirical evidence, compensation is heavily related to firm size. Although the point estimates concerning interlock and near-retirement age indicate a positive relationship they are not conclusive.

5.3 2006-2009

5.3.1 Performance perspective

TABLE 13
Regression results: Performance perspective 2006 - 2009

	(1)	(2)	(3)	(4)	(5)	(6)
	r_E	rel. r_E	ROA	rel. ROA	q	rel. q
TDC	0.665*** (3.96)	0.476*** (3.03)	0.0645*** (3.42)	0.0465*** (2.60)	0.0146*** (4.16)	0.0117*** (3.45)
ceo_own	-0.0817 (-0.61)	-0.113 (-0.86)	0.126*** (4.95)	0.124*** (4.96)	0.0115** (2.57)	0.0111** (2.56)
bsize	-0.773* (-1.68)	-0.766* (-1.82)	-0.163*** (-2.87)	-0.180*** (-3.27)	-0.0320*** (-3.41)	-0.0335*** (-3.77)
bind	0.0262 (0.32)	0.0447 (0.57)	-0.0154 (-1.37)	-0.00864 (-0.78)	-0.000119 (-0.06)	0.000575 (0.32)
instprc	-0.107 (-1.29)	-0.0616 (-0.78)	0.000225 (0.02)	0.000939 (0.11)	-0.00365*** (-2.63)	-0.00314** (-2.31)
Top5inst	-0.479*** (-3.05)	-0.437*** (-3.00)	-0.190*** (-12.55)	-0.180*** (-12.60)	-0.0247*** (-10.86)	-0.0232*** (-10.60)
agedummy	2.881 (0.90)	2.050 (0.66)	0.130 (0.35)	0.0679 (0.19)	-0.0991* (-1.96)	-0.104** (-2.13)
size	-3.254*** (-2.93)	-2.871*** (-2.78)	0.0429 (0.35)	0.0800 (0.66)	-0.108*** (-5.16)	-0.0991*** (-4.89)
N	3899	3899	3899	3899	3899	3899
R ²	0.040	0.014	0.197	0.107	0.217	0.072

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); TDC ... total direct compensation (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; bsize ... board size, bind ... board independence; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

Apparently it makes not much of a difference if one analyses the relationship between CEO compensation and performance from 1993 to 2005, or from 2006 till 2009, the point estimates remain comparable, even though the disclosure requirements and the computation changed. Despite the fact that the magnitude is slightly higher than in the previous period, it still seems that CEO compensation is higher related to absolute than to relative performance measures. This is again an indication that firms tend to reward their CEOs with a higher emphasis on absolute than on firm-specific performance. Although two of them have a negative prefix, the significant point estimates concerning stock ownership

by the CEO also indicate a positive relationship with performance, which could be caused by the better alignment of interests and less inefficient spending.

In line with findings by Yermack in 1996¹⁹⁸, a high number of board members is negatively related to performance, possibly indicating that the higher coordination effort indeed offsets the benefits of a more specialized board. Concerning the independence of the board the regression results do not allow any conclusions, which is also consistent with part of the literature¹⁹⁹.

The findings about the presence of institutional shareholders remain mixed in this subsample too, again yielding statistically significant negative relationships when used in a specification where concentration is measured with the variable Top5inst, and statistically positive relationships when employed in a regression that uses Top5tot. The prefix of the concentration of institutional ownership remains the same, indicating that concentrated holdings by institutions coincide with poor performance.

Somehow contrary to the results presented above CEOs near retirement are not as much negatively related to performance anymore. Although the previous specifications indicated an insignificant positive relationship to operating performance as well, in the 2006-2009 sample the point estimates to stock performance are not negative anymore, but (insignificantly) positive. Despite the fact that these results cannot be taken as conclusive, it is still worth mentioning the change in the prefixes. Moreover, it is worth noting that the negative relationship between size and ROA ceased to exist too.

¹⁹⁸ cf. Yermack, 1996, "Higher market valuation of companies with a small board of directors"

¹⁹⁹ cf. Bhagat, Bolton, 2008, "Corporate governance and firm performance"; Yermack, 1996, "Higher market valuation of companies with a small board of directors"

5.3.2 Compensation perspective

TABLE 14
Regression results: Compensation perspective 2006 - 2009

	(1) TDC	(2) TDC	(3) TDC	(4) TDC	(5) TDC	(6) TDC
r_E	12.21*** (2.82)					
$r_{E,t-1}$	0.348 (0.11)					
rel. r_E		11.83*** (2.97)				
rel. $r_{E,t-1}$		-1.348 (-0.49)				
ROA			76.22** (2.37)			
ROA _{t-1}			-48.45 (-1.31)			
rel. ROA				47.99 (1.45)		
rel. ROA _{t-1}				-26.64 (-0.73)		
q					978.9*** (4.10)	
q _{t-1}					-582.7*** (-2.94)	
rel. q						710.5*** (3.03)
rel. q _{t-1}						-372.3* (-1.95)
ceo_own	-27.43 (-1.17)	-26.87 (-1.15)	-29.78 (-1.28)	-29.05 (-1.25)	-30.80 (-1.32)	-30.04 (-1.29)
bsize	-49.33 (-0.76)	-50.37 (-0.77)	-53.49 (-0.81)	-51.82 (-0.79)	-50.46 (-0.77)	-47.17 (-0.72)
bind	-13.85 (-0.94)	-14.69 (-1.00)	-15.02 (-1.02)	-15.66 (-1.06)	-14.59 (-0.99)	-15.47 (-1.05)
instprc	10.12 (1.16)	10.10 (1.16)	8.157 (0.97)	8.770 (1.03)	9.517 (1.09)	10.12 (1.17)
Top5inst	36.08** (2.31)	34.92** (2.23)	34.21** (2.31)	32.80** (2.20)	36.73** (2.39)	35.56** (2.33)

Table 14 continued

agedummy	1074.1** (2.09)	1077.5** (2.09)	1097.0** (2.13)	1090.3** (2.11)	1089.8** (2.12)	1091.9** (2.12)
size	2463.0*** (14.55)	2467.3*** (14.55)	2459.9*** (14.64)	2456.0*** (14.63)	2479.3*** (14.59)	2473.5*** (14.59)
<i>N</i>	2275	2275	2275	2275	2275	2275
<i>R</i> ²	0.420	0.418	0.416	0.415	0.420	0.417

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: TDC ... total direct compensation; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; bsize ... board size, bind ... board independence; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

The point estimates of the one year stock return, both in absolute and in relative terms, and the absolute ROA, are comparable to the estimates in section 0. The coefficients of the relative ROA and both specifications of q changed however. Other than in the findings above, the relative ROA is not significantly related to CEO compensation anymore, which could serve as an indicator that in recent years firms departed from evaluating the CEO's personal performance, but rather reward him on an absolute basis. If this is the case, it is possibly an outcome of the financial crisis in which compensation committees may were reluctant to punish their CEO for poor operating performance during times of an economic downturn. As mentioned previously, the high estimates addressing contemporaneous Tobin's q are most likely a result from the small magnitude of q. Although the negative prefix of both lagged terms of q stands in sharp contrast to the estimates observed above, it is somehow consistent with what we observe in looking on the other lagged performance measures. As already pointed out in section 4.2, this could be an outcome of the potentially distorting effect of the recent financial crisis that seriously affected the market value in the calculation of q.

In line with the previous evidence, CEO ownership seems to be negatively related to the level of compensation, but its coefficients remain insignificant. The results addressing board size and independence are both not significant. They can merely serve as weak indications that the compensation level tends to be lower the higher the portion of outsiders on the

board (which is consistent with part of the literature²⁰⁰), and also with increasing board size (which is inconsistent with the findings of others²⁰¹).

Contrary to the findings in the 1993-2005 specification, the presence of institutional investors is not negatively related to the level of TDC anymore (neither is it in the alternative specification in the appendix). Concentration of institutional ownership on the other hand, is now significantly positively related to the level of compensation, which is in opposition to earlier evidence²⁰².

In line with the indications of the preceding tables, though now significant, a CEO near the age of retirement seem to get paid more than his younger colleagues. The coefficients of firm size stay literally the same. Interlock is not included in the 2006 - 2009 subsample, since not a single firm indicated that possible conflict of interest.

5.4 Analyzing the components of compensation

In order to estimate the impact of the various components of executive compensation on performance this section computes the level of compensation by using different specifications. In particular, it will analyze the relationship under specifications that exclude either salary, bonus, or option grants. The changes in point estimates, compared to the ones reported above, will serve as indications of the effectiveness of the remaining components as well as of the omitted component.

5.4.1 Exclude salary from TDC

The first component to be omitted in the calculation of the level of CEO compensation is the base salary. This procedure enables me to evaluate if salary contributes to the positive relationship between performance and compensation or not. If the point estimates stay roughly the same, this can be taken as an indicator that salary is indeed independent of performance.

²⁰⁰ Bebchuck, Fried, 2006, "Pay without Performance: An overview of the issues", Gupta, Fields, 2009, "Board independence and Corporate Governance: Evidence from Director Resignations"

²⁰¹ cf. Chiang, Lin, 2011, "Examining Board Composition and Firm Performance", Yermack, 1996, "Higher market valuation of companies with a small board of directors"

²⁰² cf. Hartzell, Starks, 2003, "Institutional Investors and Executive Compensation"; Janakiraman, Radhakrishnan, Tsang, 2010, "Institutional Investors, Managerial Ownership, and Executive Compensation"

5.4.1.1 1993-2005

Performance perspective

TABLE 15
Regression results: Performance perspective 1993 - 2005, salary excluded

Panel A						
	(1)	(2)	(3)	(4)	(5)	(6)
	r_E	rel. r_E	ROA	rel. ROA	q	rel. q
ceo_c_os	0.487*** (3.82)	0.398*** (3.54)	0.0322*** (4.95)	0.0270*** (4.90)	0.0336*** (2.60)	0.0294** (2.37)
ceo_own	0.379*** (2.74)	0.344*** (2.67)	0.0921*** (8.18)	0.0915*** (8.47)	0.0129*** (3.80)	0.0125*** (3.80)
instprc	-0.113*** (-3.23)	-0.108*** (-3.30)	-0.0125*** (-3.57)	-0.00236 (-0.70)	-0.0103*** (-7.17)	-0.00872*** (-6.28)
Top5inst	-0.634*** (-10.24)	-0.561*** (-9.83)	-0.127*** (-22.00)	-0.111*** (-20.30)	-0.0277*** (-17.11)	-0.0257*** (-16.24)
agedummy	-6.566*** (-4.18)	-6.372*** (-4.28)	0.0334 (0.21)	0.113 (0.73)	-0.189*** (-5.03)	-0.178*** (-4.83)
size	-5.843*** (-10.39)	-5.656*** (-10.73)	-0.435*** (-8.02)	-0.360*** (-6.85)	-0.211*** (-6.90)	-0.197*** (-6.62)
<i>N</i>	12876	12876	12876	12876	12876	12876
<i>R</i> ²	0.048	0.026	0.124	0.062	0.177	0.064
Panel B						
	(1)	(2)	(3)	(4)	(5)	(6)
	r_E	rel. r_E	ROA	rel. ROA	q	rel. q
ceo_c_os	0.258*** (2.86)	0.175*** (2.67)	0.0240*** (3.88)	0.0220*** (3.59)	0.0112** (1.97)	0.00802 (1.60)
ceo_own	0.503* (1.87)	0.409 (1.64)	0.0922*** (4.37)	0.0987*** (4.85)	0.0144* (1.86)	0.0148** (2.00)
instprc	0.0795 (1.48)	-0.0381 (-0.76)	-0.0123* (-1.87)	0.000131 (0.02)	-0.00818*** (-3.29)	-0.00707*** (-2.91)
Top5inst	-0.554*** (-6.59)	-0.500*** (-6.29)	-0.160*** (-14.37)	-0.143*** (-13.58)	-0.0276*** (-10.44)	-0.0259*** (-9.99)
agedummy	-6.934*** (-3.16)	-6.381*** (-3.05)	0.0246 (0.10)	0.0177 (0.07)	-0.235*** (-3.87)	-0.231*** (-3.82)
eindex	-1.270* (-1.95)	-1.717*** (-2.85)	-0.334*** (-4.05)	-0.249*** (-3.13)	-0.184*** (-7.31)	-0.177*** (-7.27)
size	-2.303*** (-3.19)	-2.712*** (-4.04)	-0.398*** (-4.09)	-0.341*** (-3.58)	-0.0937*** (-4.08)	-0.0869*** (-4.01)
<i>N</i>	4347	4347	4347	4347	4347	4347
<i>R</i> ²	0.061	0.026	0.143	0.089	0.169	0.054

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: Panel A shows the results of a regression without E-index, because including the index substantially decreases sample size (from 12,876 to 4,347). Panel B reports the estimates if it is included. It is worth noting that the coefficient of determination increased in this specification.

Note of table 15 continued

r_E ... return on equity; ROA ... return on assets; q ... Tobin's q ; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_c_os ... CEO compensation without salary (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; $instprc$... presence of institutional investors; $top5inst$... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; $agedummy$... dummy variable equal to 1 if the CEO is older than 63; $eindex$... E-index; $size$... log of total assets

The coefficients concerning CEO compensation are almost exactly the same as reported in table 11, where salary was still included in the computation of TDC. Moreover, the R^2 also remained about the same. Thus, it seems that salary does not contribute to the relationship between performance and compensation at all, which is consistent with the common belief that base salary is not rewarded in a performance sensitive way.

The point estimates addressing stock ownership by the CEO remain literally the same as in the original results. The same applies for the values of the performance / E-Index relationship. The point estimates concerning size and the dummy variable capturing near-retirement-age are comparable to the original estimates too, though they are sometimes moderately higher in magnitude.

Not surprisingly, the significant coefficients concerning the presence of institutional ownership in the E-index including specification remained about the same, still indicating that the presence coincides with low performance. However, in a regression with an alternative measure for concentration of institutional ownership (see table 35 of the appendix), the presence is again positively associated with all performance variables. The prefix of the concentration did not change in a single specification, still indicating a negative relationship.

Compensation perspective

TABLE 16
Regression results: Compensation perspective 1993 - 2005, salary excluded

	(1) ceo_c_os	(2) ceo_c_os	(3) ceo_c_os	(4) ceo_c_os	(5) ceo_c_os	(6) ceo_c_os
r_E	16.35*** (4.09)					
$r_{E,t-1}$	9.636*** (2.85)					
rel. r_E		16.59*** (3.66)				
rel. $r_{E,t-1}$		8.605** (2.39)				
ROA			115.9*** (2.99)			
ROA _{t-1}			-4.868 (-0.17)			
rel. ROA				94.37*** (2.67)		
rel. ROA _{t-1}				14.31 (0.56)		
q					788.7* (1.85)	
q _{t-1}					754.0** (2.05)	
rel. q						562.3 (1.43)
rel. q _{t-1}						938.1*** (3.00)
ceo_own	-3.271 (-0.20)	-2.710 (-0.16)	-4.595 (-0.28)	-4.595 (-0.28)	-16.24 (-0.91)	-15.99 (-0.89)
instprc	-27.58*** (-4.39)	-27.72*** (-4.40)	-27.78*** (-4.37)	-28.85*** (-4.44)	-13.78* (-1.75)	-15.30* (-1.95)
Top5inst	1.991 (0.23)	0.273 (0.03)	2.069 (0.23)	-0.0270 (-0.00)	26.78* (1.89)	23.93* (1.70)
agedummy	53.33 (0.20)	52.13 (0.20)	-90.48 (-0.34)	-99.22 (-0.37)	120.6 (0.45)	109.7 (0.41)

Table 16 continued

size	2463.2*** (19.51)	2462.9*** (19.52)	2408.6*** (19.43)	2403.2*** (19.55)	2502.2*** (19.88)	2496.0*** (20.01)
interlock	366.8 (0.44)	326.0 (0.39)	177.6 (0.21)	194.8 (0.23)	199.8 (0.24)	208.3 (0.25)
<i>N</i>	10752	10752	10752	10752	10752	10752
<i>R</i> ²	0.115	0.113	0.107	0.106	0.149	0.146

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: ceo_c_os ... CEO compensation without salary; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

Interestingly, each point estimate addressing the compensation / performance relationship, stayed roughly the same compared to the ones presented above. Also, the equivalence of relative performance measures remained more or less unchanged. This gives additional support to the previously indicated missing link between salary and performance. Moreover, it is worth noting that, with exemption of Tobin's q, the remaining components are not related to lagged operating performance measures either. The coefficients of CEO ownership are also comparable to previously presented results.

The significant coefficients of institutional ownership remain more or less the same, further indicating a negative relationship between the presence and compensation. In reverse, this can serve as an indication that institutional investors are quite indifferent to level of base salary. The point estimates of ownership concentration still do not allow any meaningful conclusions, since they remain positive in the models 5 and 6, negative in the models 3 and 4 (see table 36 in the appendix), and insignificant in the models 1 and 2.

There is still no significant relationship between the retirement dummy variable and interlock on one side, and the level of compensation on the other. The interrelation of firm size and the level of compensation stays positive on the 0.01 significance level. R^2 did not change substantially, with an negligible decrease of only about 0.007.

To see whether or not the new rules effective under US GAAP FAS 123(R) also changed the role of base salary, the next section shows the results of the years 2006 to 2009.

5.4.1.2 2006 - 2009

Performance perspective

TABLE 17
Regression results: Performance perspective 2006 - 2009, salary excluded

	(1) r_E	(2) rel. r_E	(3) ROA	(4) rel. ROA	(5) q	(6) rel. q
ceo_c_os	0.680*** (3.95)	0.483*** (3.01)	0.0645*** (3.39)	0.0457** (2.54)	0.0152*** (4.26)	0.0121*** (3.54)
ceo_own	-0.0831 (-0.62)	-0.114 (-0.87)	0.125*** (4.95)	0.124*** (4.95)	0.0115** (2.57)	0.0110** (2.56)
bsize	-0.767* (-1.67)	-0.761* (-1.80)	-0.162*** (-2.86)	-0.180*** (-3.26)	-0.0319*** (-3.40)	-0.0333*** (-3.76)
bind	0.0261 (0.32)	0.0445 (0.56)	-0.0154 (-1.37)	-0.00868 (-0.79)	-0.000118 (-0.06)	0.000575 (0.32)
instprc	-0.107 (-1.29)	-0.0613 (-0.78)	0.000254 (0.03)	0.000956 (0.11)	-0.00364*** (-2.62)	-0.00313** (-2.31)
Top5inst	-0.479*** (-3.05)	-0.437*** (-3.00)	-0.190*** (-12.55)	-0.180*** (-12.60)	-0.0247*** (-10.87)	-0.0232*** (-10.60)
agedummy	2.925 (0.91)	2.085 (0.67)	0.135 (0.37)	0.0731 (0.20)	-0.0984* (-1.95)	-0.103** (-2.12)
size	-3.191*** (-2.89)	-2.817*** (-2.75)	0.0523 (0.43)	0.0887 (0.74)	-0.107*** (-5.22)	-0.0984*** (-4.95)
N	3899	3899	3899	3899	3899	3899
R ²	0.040	0.014	0.197	0.107	0.217	0.073

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_c_os ... CEO compensation without salary (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; bsize ... board size, bind ... board independence; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

As in the 1993 - 2005 subsample the estimates concerning the relationship between performance and compensation remain almost unchanged and highly significant. Some point estimates even increased slightly. Consistent with the results of the earlier years, this outcome too, implies that salary is not connected to performance in an observable way. The coefficients of CEO ownership and the number of board members stay at the same magnitude as well, indicating a positive (negative) relationship between ownership (board size) and performance. The estimates concerning board independence remain insignificant.

Concerning institutional ownership the picture is similar to the one presented earlier. Although the prevalent specification indicates that the presence and the concentration of institutional shareholders is negatively related to performance, the alternative specification shown in table 37 of the appendix indicates that at least the presence is positively related to performance, which again makes a powerful conclusion about this relationship impossible. Concentration, however, has a negative prefix in the alternative specification as well.

The point estimates of size and CEO retirement dummy, as well as the R^2 , stay fairly close at their original values.

Compensation perspective

TABLE 18
Regression results: Compensation perspective 2006 - 2009, salary excluded

	(1) ceo_c_os	(2) ceo_c_os	(3) ceo_c_os	(4) ceo_c_os	(5) ceo_c_os	(6) ceo_c_os
r_E	12.20*** (2.85)					
$r_{E,t-1}$	0.450 (0.14)					
rel. r_E		11.75*** (3.00)				
rel. $r_{E,t-1}$		-1.283 (-0.47)				
ROA			71.30** (2.31)			
ROA _{t-1}			-45.03 (-1.28)			
rel. ROA				42.43 (1.33)		
rel. ROA _{t-1}				-22.81 (-0.65)		
q					963.3*** (4.15)	
q _{t-1}					-558.8*** (-2.92)	
rel. q						688.8*** (3.04)
rel. q _{t-1}						-344.3* (-1.88)

Table 18 continued

ceo_own	-23.13 (-1.00)	-22.56 (-0.98)	-25.33 (-1.10)	-24.59 (-1.07)	-26.64 (-1.16)	-25.88 (-1.13)
bsize	-59.06 (-0.92)	-60.13 (-0.94)	-63.31 (-0.98)	-61.82 (-0.96)	-59.96 (-0.94)	-56.78 (-0.89)
bind	-12.56 (-0.87)	-13.41 (-0.93)	-13.77 (-0.95)	-14.37 (-0.99)	-13.28 (-0.92)	-14.15 (-0.97)
instprc	9.480 (1.12)	9.453 (1.12)	7.575 (0.92)	8.165 (0.98)	8.910 (1.05)	9.498 (1.12)
Top5inst	35.42** (2.30)	34.20** (2.22)	33.22** (2.28)	31.78** (2.17)	36.24** (2.41)	35.03** (2.34)
agedummy	964.7* (1.89)	968.2* (1.90)	986.5* (1.93)	979.7* (1.91)	982.7* (1.93)	984.9* (1.92)
size	2314.6*** (13.74)	2318.8*** (13.74)	2311.0*** (13.82)	2307.1*** (13.81)	2331.1*** (13.80)	2325.3*** (13.79)
<i>N</i>	2275	2275	2275	2275	2275	2275
<i>R</i> ²	0.397	0.395	0.393	0.391	0.397	0.394

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: ceo_c_os ... CEO compensation without salary; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; bsize ... board size, bind ... board independence; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

Despite the fact that the β -values of the performance indicators changed a little bit, they are still highly comparable to the ones reported in section 5.3.2. Interestingly, some of the estimates even increased, not only indicating that salary is not related to performance, but that it potentially weakens the relationship between compensation and performance. It should be noted, though, that the explanatory power of this regression slightly decreased. As the results in table 14, the coefficients in this table can also be interpreted as an indication that firms seem to jointly use absolute and relative stock market proxies to evaluate and reward their CEO's performance. Moreover, consistent with what we generally observed so far, the ROA is higher related to compensation than stock return, in this case indicating that the components other than salary are more sensitive to accounting performance.

As in the performance perspective, the values concerning CEO ownership, board size and independence, and size preserve the same prefix and significance levels in a specification

that omits base salary. The β -values of the retirement dummy variable increased in magnitude as well as in significance.

Concerning institutional holdings we observe a similar situation as in section 5.3.2. Contrary to the findings of the years 1993 - 2005 the presence is not significantly negatively related to compensation (not even in the alternative specification). As in the original results the point estimates of concentration are still positive and significant though, indicating that firms with highly concentrated institutional holdings pay their CEOs more of the components other than salary. In reverse, this implies that institutional investors do not care too much about base salary.

5.4.2 Excluding bonus from TDC

In this section the results of the specifications that omitted bonus payments in the calculation of compensation are presented. Omitting the bonus should help to further understand the role of bonus payments as a compensation component. Again, the relationship is tested in two subsamples covering the years 1993 to 2005 and 2006 to 2009 respectively.

5.4.2.1 1993 - 2005

Performance perspective

TABLE 19
Regression results: Performance perspective 1993 - 2005, bonus excluded

Panel A						
	(1) r_E	(2) rel. r_E	(3) ROA	(4) rel. ROA	(5) q	(6) rel. q
ceo_c_ob	0.465*** (3.71)	0.387*** (3.42)	0.0299*** (4.92)	0.0259*** (4.82)	0.0342** (2.55)	0.0301** (2.32)
ceo_own	0.379*** (2.74)	0.345*** (2.67)	0.0921*** (8.18)	0.0915*** (8.46)	0.0130*** (3.81)	0.0125*** (3.81)
instprc	-0.114*** (-3.26)	-0.109*** (-3.33)	-0.0126*** (-3.60)	-0.00243 (-0.72)	-0.0103*** (-7.22)	-0.00875*** (-6.32)
Top5inst	-0.635*** (-10.24)	-0.561*** (-9.83)	-0.127*** (-22.01)	-0.111*** (-20.31)	-0.0277*** (-17.14)	-0.0257*** (-16.26)
agedummy	-6.563*** (-4.17)	-6.368*** (-4.27)	0.0335 (0.21)	0.113 (0.74)	-0.189*** (-5.02)	-0.178*** (-4.82)
size	-5.687*** (-10.40)	-5.544*** (-10.75)	-0.424*** (-7.90)	-0.352*** (-6.75)	-0.205*** (-7.10)	-0.191*** (-6.83)
N	12876	12876	12876	12876	12876	12876
R ²	0.047	0.025	0.124	0.062	0.177	0.064

Panel B (of table 19)

	(1)	(2)	(3)	(4)	(5)	(6)
	r_E	rel. r_E	ROA	rel. ROA	q	rel. q
ceo_c_ob	0.241*** (2.86)	0.170*** (2.62)	0.0230*** (3.92)	0.0215*** (3.60)	0.0112* (1.93)	0.00800 (1.56)
ceo_own	0.504* (1.87)	0.409 (1.64)	0.0923*** (4.37)	0.0988*** (4.86)	0.0145* (1.87)	0.0148** (2.00)
instprc	0.0790 (1.47)	-0.0382 (-0.76)	-0.0124* (-1.88)	0.000115 (0.02)	-0.00818*** (-3.29)	-0.00707*** (-2.91)
Top5inst	-0.556*** (-6.61)	-0.500*** (-6.30)	-0.160*** (-14.39)	-0.144*** (-13.59)	-0.0277*** (-10.45)	-0.0260*** (-10.00)
agedummy	-6.929*** (-3.15)	-6.378*** (-3.05)	0.0250 (0.10)	0.0181 (0.07)	-0.234*** (-3.86)	-0.231*** (-3.82)
eindex	-1.283** (-1.97)	-1.724*** (-2.87)	-0.336*** (-4.06)	-0.250*** (-3.14)	-0.185*** (-7.32)	-0.178*** (-7.28)
size	-2.211*** (-3.09)	-2.665*** (-3.99)	-0.391*** (-4.03)	-0.335*** (-3.53)	-0.0913*** (-4.06)	-0.0852*** (-4.00)
<i>N</i>	4347	4347	4347	4347	4347	4347
<i>R</i> ²	0.060	0.026	0.142	0.089	0.169	0.054

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: Panel A shows the results of a regression without E-index, because including the index substantially decreases sample size (from 12,876 to 4,347). Panel B reports the estimates if it is included. It is worth noting that the coefficient of determination increased in this specification.

r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_c_ob ... CEO compensation without bonus (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; eindex ... E-index; size ... log of total assets

If bonus payments are not added to the total direct compensation in the sample period from 1993 to 2005, the coefficients of the compensation / performance relationship change only moderately. For model 1 to 4 they slightly decline, and for the models using Tobin's q as performance measure 3 out of 4 point estimates slightly increase. Since the magnitude of the change is very small and the R^2 stays almost exactly the same, these findings support the interpretation that bonuses apparently do not account for the previously observed positive relationship between TDC and performance. This apparently weak impact is at least partly caused by the fact that from the 12,876 (4,347) firm year observations in this subsample, 3,625 (738) reported bonus payments equal to zero. According to Wade, Porac, and

Pollock²⁰³ not paying a bonus is a powerful signal to the market that the board, and especially the compensation committee, acts independently from the CEO.

Concerning the various control variables, not a single one changed substantially compared to the estimates shown in table 11. The coefficients of CEO ownership are almost identical to those presented earlier. The significant point estimates of a CEO near retirement, size and E-index remain comparable to the original values, all indicating that they coincide with low performance. The only exemption is the relationship between a CEO near retirement and operating performance, which is positive but not significant.

The estimates of the employed institutional variables are almost identical to those reported in the original table, i.e. that no clear statements about the relationship between presence of institutional investors can be made, since the coefficients change with the alternative specifications. The β -values of ownership concentration are also unchanged, i.e. negative.

²⁰³ cf. Wade, Porac, Pollock, 1997, "Worth, words, and the justification of executive pay"

Compensation perspective

TABLE 20
Regression results: Compensation perspective 1993 - 2005, bonus excluded

	(1) ceo_c_ob	(2) ceo_c_ob	(3) ceo_c_ob	(4) ceo_c_ob	(5) ceo_c_ob	(6) ceo_c_ob
r_E	15.20 ^{***} (3.83)					
$r_{E,t-1}$	9.423 ^{***} (2.81)					
rel. r_E		15.77 ^{***} (3.50)				
rel. $r_{E,t-1}$		8.485 ^{**} (2.38)				
ROA			105.3 ^{***} (2.73)			
ROA _{t-1}			-1.718 (-0.06)			
rel. ROA				90.94 ^{***} (2.59)		
rel. ROA _{t-1}				12.29 (0.48)		
q					762.9 [*] (1.80)	
q _{t-1}					773.0 ^{**} (2.12)	
rel. q						546.6 (1.40)
rel. q _{t-1}						949.2 ^{***} (3.04)
ceo_own	-3.535 (-0.22)	-3.120 (-0.19)	-4.632 (-0.29)	-4.822 (-0.30)	-16.86 (-0.95)	-16.63 (-0.94)
instprc	-25.61 ^{***} (-4.15)	-25.72 ^{***} (-4.16)	-25.85 ^{***} (-4.14)	-26.84 ^{***} (-4.20)	-11.78 (-1.51)	-13.25 [*] (-1.71)
Top5inst	1.792 (0.21)	0.370 (0.04)	1.623 (0.19)	-0.0697 (-0.01)	27.12 [*] (1.95)	24.38 [*] (1.76)
agedummy	11.59 (0.05)	12.73 (0.05)	-124.4 (-0.48)	-132.5 (-0.51)	85.26 (0.33)	74.80 (0.29)

Table 20 continued

size	2207.8*** (17.81)	2208.8*** (17.83)	2155.6*** (17.72)	2150.8*** (17.84)	2250.5*** (18.22)	2244.5*** (18.34)
interlock	399.2 (0.48)	361.1 (0.43)	222.0 (0.27)	237.2 (0.28)	237.4 (0.28)	245.5 (0.29)
<i>N</i>	10752	10752	10752	10752	10752	10752
<i>R</i> ²	0.098	0.096	0.091	0.090	0.135	0.132

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: ceo_c_ob ... CEO compensation without options; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

Overall, the decrease in the coefficient of determination (unadjusted R^2) by roughly 20% indicates that bonus in fact plays a considerable role in the relationship between compensation on one hand, and performance and control variables on the other²⁰⁴. This impact, however, cannot be observed in the β -values of the performance variables, since the magnitude of the decrease in the coefficients seems too small to be of any relevance. In particular, it is surprising that the point estimates of the ROA versions did not change substantially, since one would expect that bonus payments are typically based on accounting performance²⁰⁵. This expected but not observed decline, however, is probably at least partly caused by the previously mentioned observations in which a bonus of zero was reported.

The results on CEO ownership and interlock are comparable to the original terms, and also still not significant. The prefix of the variable addressing presence of institutional ownership stays the same and is significant in 11 of 12 combinations (including the alternative specification in the appendix), indicating that institutional investors were indifferent to bonus payments as well (during the examined period of time). Consistent with every other regression result there is no conclusive relationship between concentrated institutional holdings and CEO compensation level during the sample period. Moreover it is worth noting that the coefficients of size slightly increased and stayed significantly positive related to all performance variables, no matter if measured relatively or absolutely. The point estimates of the retirement dummy dropped by about 80.

²⁰⁴It should be noted that the decrease in R^2 is not caused by a lower number of employed variables - they remain exactly the same. The only difference is that, except for observations where no bonus was paid in the first place, TDC has a lower value.

²⁰⁵cf. Wade, Porac, Pollock, 1997, "Worth, words, and the justification of executive pay"

5.4.2.2 2006 - 2009

Performance perspective

TABLE 21
Regression results: Performance perspective 2006 - 2009, bonus excluded

	(1) r_E	(2) rel. r_E	(3) ROA	(4) rel. ROA	(5) q	(6) rel. q
ceo_c_ob	0.711*** (3.73)	0.507*** (2.82)	0.0901*** (4.02)	0.0717*** (3.45)	0.0193*** (4.49)	0.0159*** (3.83)
ceo_own	-0.0867 (-0.64)	-0.117 (-0.89)	0.126*** (4.96)	0.125*** (4.97)	0.0115** (2.57)	0.0111** (2.57)
bsize	-0.788* (-1.72)	-0.776* (-1.84)	-0.165*** (-2.91)	-0.182*** (-3.31)	-0.0325*** (-3.46)	-0.0339*** (-3.82)
bind	0.0185 (0.23)	0.0391 (0.50)	-0.0161 (-1.43)	-0.00909 (-0.83)	-0.000273 (-0.15)	0.000455 (0.26)
instprc	-0.108 (-1.31)	-0.0624 (-0.79)	0.000178 (0.02)	0.000928 (0.10)	-0.00367*** (-2.64)	-0.00315** (-2.32)
Top5inst	-0.477*** (-3.04)	-0.436*** (-2.99)	-0.190*** (-12.56)	-0.180*** (-12.61)	-0.0247*** (-10.85)	-0.0232*** (-10.59)
agedummy	3.018 (0.94)	2.150 (0.69)	0.122 (0.33)	0.0559 (0.16)	-0.0997** (-1.98)	-0.105** (-2.15)
size	-3.225*** (-2.84)	-2.846*** (-2.70)	-0.00235 (-0.02)	0.0321 (0.26)	-0.116*** (-5.41)	-0.106*** (-5.13)
N	3899	3899	3899	3899	3899	3899
R ²	0.040	0.014	0.198	0.109	0.219	0.074

* p < 0.10, ** p < 0.05, *** p < 0.01; t statistics in parentheses

Note: r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_c_ob ... CEO compensation without bonus (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; bsize ... board size, bind ... board independence; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

Strikingly, the β -values concerning the performance / compensation relationship increased considerably when the bonus is not considered, while the coefficient of determination stays unchanged. This increase seems attributable to the very low number of firms that reported bonus payments other than zero. Out of 3,899 firm year observations in this subsample only 628 reported a bonus greater than zero. As mentioned earlier, not paying a bonus to the CEO can serve as a signal to the market that the compensation committee is not influenced by the CEO. However, to validate this statement, an event study would be required, which is not aim of this work. Obviously, due to the low number of non-zero bonus values in the

original sample, the analysis of its impact becomes less meaningful. Nevertheless, I reported the findings in short for the sake of completeness.

The coefficients of all other variables are comparable to those presented in the original set. CEO ownership still coincides with high operating performance and a high firm value (as measured with Tobin's q), while being insignificantly related to stock performance. Still consistent with Yermack's findings²⁰⁶, the size of the board is considerably negatively related to performance. The coefficients of board independence did not change either, remaining insignificant as in all other results. Moreover, the picture concerning institutional ownership is the same as in the preceding specifications. A clear statement about the effect of its presence is impossible, and its concentration is negatively related to every performance variable employed. The point estimates of (i) *agedummy* and (ii) *size* that are significant are also fairly close to the original terms, all indicating a negative relationship.

²⁰⁶ cf. Yermack, 1996, "Higher market valuation of companies with a small board of directors"

Compensation perspective

TABLE 22
Regression results: Compensation perspective 2006 - 2009, bonus excluded

	(1) ceo_c_ob	(2) ceo_c_ob	(3) ceo_c_ob	(4) ceo_c_ob	(5) ceo_c_ob	(6) ceo_c_ob
r_E	10.53 ^{***} (2.83)					
$r_{E,t-1}$	1.173 (0.43)					
rel. r_E		10.68 ^{***} (2.98)				
rel. $r_{E,t-1}$		-0.677 (-0.27)				
ROA			68.51 ^{**} (2.56)			
ROA _{t-1}			-32.28 (-1.12)			
rel. ROA				51.71 [*] (1.90)		
rel. ROA _{t-1}				-18.99 (-0.66)		
q					954.4 ^{***} (4.28)	
q _{t-1}					-530.6 ^{***} (-2.93)	
rel. q						731.2 ^{***} (3.34)
rel. q _{t-1}						-353.3 ^{**} (-2.02)
ceo_own	-16.74 (-0.75)	-16.23 (-0.73)	-19.97 (-0.90)	-19.50 (-0.88)	-20.57 (-0.93)	-19.87 (-0.90)
bsize	-26.69 (-0.48)	-27.44 (-0.49)	-28.70 (-0.51)	-26.93 (-0.48)	-26.73 (-0.48)	-23.28 (-0.42)
bind	0.432 (0.05)	-0.323 (-0.04)	-0.535 (-0.06)	-1.135 (-0.13)	-0.0818 (-0.01)	-0.959 (-0.11)
instprc	11.82 (1.47)	11.85 (1.47)	10.07 (1.28)	10.56 (1.33)	11.41 (1.41)	12.04 (1.49)
Top5inst	32.68 ^{**} (2.18)	31.68 ^{**} (2.11)	32.62 ^{**} (2.27)	31.77 ^{**} (2.20)	34.39 ^{**} (2.32)	33.43 ^{**} (2.26)

Table 22 continued

agedummy	873.0 [*] (1.91)	876.5 [*] (1.91)	893.7 [*] (1.95)	889.9 [*] (1.94)	894.6 [*] (1.96)	896.1 [*] (1.95)
size	2271.1 ^{***} (14.65)	2275.5 ^{***} (14.64)	2268.0 ^{***} (14.69)	2265.3 ^{***} (14.67)	2290.5 ^{***} (14.65)	2285.7 ^{***} (14.64)
<i>N</i>	2275	2275	2275	2275	2275	2275
<i>R</i> ²	0.457	0.456	0.454	0.453	0.459	0.456

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: ceo_c_ob ... CEO compensation without bonus; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; bsize ... board size, bind ... board independence; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

The R^2 of all models rose considerable compared to the original set (table 14), which shows that the scarcely made bonus payments were not only apparently insufficiently connected to performance, but that they even made the connection between TDC and performance weaker. This is probably also the reason why there is a significant relationship between relative ROA and compensation now. Moreover, even the puzzling negative point estimates of lagged q got less severe. The other coefficients are all similar to the ones reported in table 14.

The point estimates of the rows concerning CEO ownership, board size, and board independence all have the same prefix as in the original table and remain insignificant. The relationship between institutional ownership and compensation did not change either, which is not surprising since it is hardly imaginable that institutional investors in the aggregate care about seldom paid bonuses. Interestingly, the findings show a lower significance and magnitude concerning a situation in which the CEO is near retirement, in the reverse indicating that CEOs near retirement are more likely to receive bonus payments. Firm size is still highly significantly related to the level of pay.

5.4.3 Excluding options from TDC

Options are a frequently and extensively used component of executive pay, as the descriptive statistics in section 4.2 already indicated. Due to this popularity, and because they are oftentimes praised as to align interests, it seems rewarding to examine the change in the models if options are excluded in the calculation of CEO compensation. In addition, such an analysis will show whether the other components are rewarded in a performance-

contingent way or if options are the only component that connects shareholders' wealth with managers'. As in the previous analysis, this section will also start with the 1993-2005 period.

5.4.3.1 1993 - 2005

Performance perspective

TABLE 23
Regression results: Performance perspective 1993 - 2005, options excluded

Panel A						
	(1) r_E	(2) $\text{rel. } r_E$	(3) ROA	(4) rel. ROA	(5) q	(6) $\text{rel. } q$
ceo_c_oo	0.268** (2.48)	0.182*** (2.70)	0.0369** (2.54)	0.0313*** (2.74)	0.00341** (2.46)	0.00267* (1.78)
ceo_own	0.379*** (2.73)	0.345*** (2.67)	0.0922*** (8.17)	0.0916*** (8.46)	0.0129*** (3.77)	0.0125*** (3.78)
instprc	-0.124*** (-3.53)	-0.117*** (-3.57)	-0.0132*** (-3.78)	-0.00297 (-0.88)	-0.0110*** (-7.80)	-0.00941*** (-6.87)
Top5inst	-0.642*** (-10.32)	-0.567*** (-9.90)	-0.127*** (-22.07)	-0.112*** (-20.37)	-0.0282*** (-17.39)	-0.0261*** (-16.53)
agedummy	-6.708*** (-4.25)	-6.479*** (-4.34)	0.0195 (0.12)	0.101 (0.66)	-0.195*** (-5.15)	-0.184*** (-4.94)
size	-5.071*** (-9.60)	-4.982*** (-10.08)	-0.407*** (-7.37)	-0.336*** (-6.35)	-0.140*** (-10.40)	-0.134*** (-10.31)
N	12876	12876	12876	12876	12876	12876
R^2	0.042	0.021	0.123	0.060	0.146	0.035

Panel B (of table 23)

	(1)	(2)	(3)	(4)	(5)	(6)
	r_E	rel. r_E	ROA	rel. ROA	q	rel. q
ceo_c_oo	0.202*** (2.99)	0.127*** (5.60)	0.0262*** (3.50)	0.0237*** (3.07)	0.00273** (2.30)	0.00162 (1.39)
ceo_own	0.500* (1.86)	0.406 (1.63)	0.0919*** (4.34)	0.0984*** (4.83)	0.0143* (1.84)	0.0147** (1.98)
instprc	0.0714 (1.33)	-0.0436 (-0.86)	-0.0131** (-1.98)	-0.000540 (-0.09)	-0.00856*** (-3.39)	-0.00734*** (-2.98)
Top5inst	-0.558*** (-6.64)	-0.502*** (-6.32)	-0.160*** (-14.41)	-0.144*** (-13.61)	-0.0278*** (-10.43)	-0.0261*** (-9.98)
agedummy	-6.963*** (-3.16)	-6.399*** (-3.05)	0.0207 (0.08)	0.0142 (0.06)	-0.235*** (-3.85)	-0.232*** (-3.82)
eindex	-1.349** (-2.07)	-1.772*** (-2.94)	-0.341*** (-4.13)	-0.255*** (-3.21)	-0.188*** (-7.37)	-0.180*** (-7.30)
size	-1.918*** (-2.70)	-2.439*** (-3.67)	-0.371*** (-3.85)	-0.316*** (-3.35)	-0.0693*** (-3.40)	-0.0691*** (-3.52)
N	4347	4347	4347	4347	4347	4347
R ²	0.057	0.024	0.141	0.088	0.163	0.050

* p < 0.10, ** p < 0.05, *** p < 0.01; t statistics in parentheses

Note: Panel A shows the results of a regression without E-index, because including the index substantially decreases sample size (from 12,876 to 4,347). Panel B reports the estimates if it is included. It is worth noting that the coefficient of determination increased in this specification.

r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_c_oo ... CEO compensation without options (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; eindex ... E-index; size ... log of total assets

In looking on the panels A and B from table 23 it becomes evident that options apparently contribute substantially to the link between compensation and performance as measured with r_E and Tobin's q. In both specifications, the point estimates concerning those proxies dropped dramatically compared to the original estimates, indicating that options account for a large part of the previously observed positive relationship. Although this is not surprising, due to the fact that options become more valuable (and henceforth raise the level of compensation) the more they are "in the money" (i.e. the higher the value of the stock of the firm), the results still serve as an illustration of the magnitude and importance of options as a tool to align the interests of the CEO with those of the shareholders. All other relationships, including the puzzling results concerning the presence of institutional holdings, remain more or less unchanged.

Compensation perspective

TABLE 24
Regression results: Compensation perspective 1993 - 2005, options excluded

	(1)	(2)	(3)	(4)	(5)	(6)
	ceo_c_oo	ceo_c_oo	ceo_c_oo	ceo_c_oo	ceo_c_oo	ceo_c_oo
r_E	3.420 [*] (1.81)					
$r_{E,t-1}$	-0.953 (-0.64)					
rel. r_E		2.967 (1.56)				
rel. $r_{E,t-1}$		-1.141 (-0.72)				
ROA			54.15 [*] (1.67)			
ROA _{t-1}			-28.68 (-1.24)			
rel. ROA				45.44 (1.51)		
rel. ROA _{t-1}				-20.62 (-1.02)		
q					119.4 (1.32)	
q _{t-1}					-115.5 (-1.49)	
rel. q						97.71 (1.50)
rel. q _{t-1}						-96.30 [*] (-1.70)
ceo_own	-3.350 (-0.60)	-3.086 (-0.55)	-4.891 (-0.97)	-4.941 (-1.00)	-2.471 (-0.43)	-2.475 (-0.43)
instprc	-2.325 (-0.87)	-2.345 (-0.88)	-2.000 (-0.78)	-2.502 (-0.90)	-2.388 (-0.93)	-2.596 (-0.96)
Top5inst	8.695 [*] (1.90)	8.170 [*] (1.78)	10.95 ^{**} (2.40)	10.03 ^{**} (2.24)	7.653 [*] (1.70)	7.332 (1.62)
agedummy	327.9 ^{***} (2.59)	323.6 ^{**} (2.55)	312.5 ^{**} (2.44)	308.4 ^{**} (2.38)	314.1 ^{**} (2.46)	313.1 ^{**} (2.44)

Table 24 continued

size	1258.9*** (15.49)	1256.7*** (15.53)	1257.2*** (15.42)	1254.7*** (15.62)	1251.8*** (15.53)	1251.1*** (15.64)
interlock	-47.80 (-0.31)	-52.20 (-0.33)	-81.89 (-0.51)	-73.97 (-0.47)	-61.94 (-0.39)	-61.07 (-0.38)
<i>N</i>	10752	10752	10752	10752	10752	10752
<i>R</i> ²	0.081	0.081	0.081	0.081	0.081	0.080

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: ceo_c_oo ... CEO compensation without options; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

If options grants are excluded in the calculation of compensation the model gets considerably weaker, i.e. the coefficient of determination drops by at least 30%. Thus, it seems that options play a considerable role in the relationship between compensation and performance. As mentioned above, this is not surprising however, since the value of the grants rises if the value of the underlying (i.e. the firm) rises. However, this specifications allows to draw conclusions how well the other components of executive pay are connected to various performance measures. Moreover, the argumentum e contrario gives an indication of the great extent to which options are the cause of the previously observed connection between shareholders' and the CEO's wealth.

In the 1993-2005 subsample, all point estimates of absolute performance drop dramatically and loose statistical power. If performance is measured using Tobin's q as in model 5, the β -value cease to be significant all together. Moreover, with exemption of q, the remaining components do not seem to be related to relative performance anymore, indicating that these components did not reward the CEOs for the firm specific performance. These findings imply that options have been the crucial component between 1993 and 2005 that connected compensation and performance. This interpretation is confirmed by table 48 in the appendix, which shows the results of an regression that used options only.

The β -values of CEO compensation are still comparable to the original estimates. The ones concerning the presence of institutional shareholders however, changed substantially. Previously they always indicated that the presence is negatively related to the level of compensation. If options are omitted however, this relationship is not significant anymore.

This can be seen as an indication that institutional shareholders particularly influence the compensation-like option grants²⁰⁷, possibly because they dislike the diluting effect of option grants. Under this impression, the apparently positive relationship of the concentration in this specification is puzzling. This result should not be taken as conclusive, though, since in the alternative specification shown in the appendix, the point estimates of concentration are negative, though not significant.

What is really interesting is that the coefficients of the retirement dummy variable increased remarkably and are significant above the 0.05% level now. This indicates that CEOs near retirement tend to get more of the remaining components than their younger colleagues. This is also somehow confirmed by the findings reported in table 48 in the appendix, which reports negative, though insignificant, point estimates concerning the near-retirement dummy. These results are especially interesting since the remaining components are apparently weaker connected to performance, which would support the previously indicated concern that the agency problem aggravates if the CEO is near retirement. The relationship between firm size and compensation remains highly significant, though lower in magnitude. This decline could be due to a tendency of large firms to grant relatively more options. Interlock is still insignificant.

²⁰⁷ This interpretation is again supported by the findings of table 48 in the appendix, which presents point estimates that are comparable to those reported in the original table. This indicates that institutional investors were particularly concerned about option grants in these years.

5.4.3.2 2006 - 2009

Performance perspective

TABLE 25
Regression results: Performance perspective 2006 - 2009, options excluded

	(1) r_E	(2) rel. r_E	(3) ROA	(4) rel. ROA	(5) q	(6) rel. q
ceo_c_oo	0.527*** (3.09)	0.331** (2.14)	0.0533** (2.35)	0.0342 (1.61)	0.00455 (1.45)	0.00229 (0.75)
ceo_own	-0.0848 (-0.63)	-0.117 (-0.89)	0.125*** (4.93)	0.124*** (4.94)	0.0112** (2.49)	0.0107** (2.48)
bsize	-0.790* (-1.72)	-0.775* (-1.84)	-0.165*** (-2.90)	-0.181*** (-3.29)	-0.0319*** (-3.42)	-0.0333*** (-3.78)
bind	0.0242 (0.29)	0.0425 (0.54)	-0.0156 (-1.38)	-0.00883 (-0.80)	-0.000280 (-0.15)	0.000424 (0.24)
instprc	-0.107 (-1.28)	-0.0615 (-0.78)	0.000296 (0.03)	0.000958 (0.11)	-0.00369*** (-2.66)	-0.00319** (-2.35)
Top5inst	-0.480*** (-3.06)	-0.437*** (-3.00)	-0.190*** (-12.56)	-0.180*** (-12.61)	-0.0247*** (-10.86)	-0.0231*** (-10.60)
agedummy	3.121 (0.97)	2.274 (0.73)	0.150 (0.41)	0.0877 (0.25)	-0.0859* (-1.70)	-0.0919* (-1.88)
size	-2.525** (-2.44)	-2.269** (-2.37)	0.110 (0.93)	0.136 (1.17)	-0.0797*** (-4.06)	-0.0743*** (-3.90)
N	3899	3899	3899	3899	3899	3899
R ²	0.037	0.012	0.195	0.107	0.212	0.068

* p < 0.10, ** p < 0.05, *** p < 0.01; t statistics in parentheses

Note: r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_c_oo ... CEO compensation without options (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; bsize ... board size, bind ... board independence; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

As can be referred from table 25 excluding options substantially weakened the relationship between compensation and performance from 2006 to 2009. Other than in the estimates presented in the earlier subsample, an increase in compensation is now also associated with a lower increase in operating performance, when we compare the results to the original table. This finding however, is only statistically meaningful for the absolute measure of ROA, since the relative one, together with both versions of q, ceased to be significant. Nevertheless it is consistent with table 49 of the appendix, which shows that, in a regression that uses only options as compensation variable, the point estimates are higher than in the

regression that employed all components. Together, these findings suggest that options, although less extensively used, also play an important role during the year 2006 - 2009.

The estimates addressing managerial ownership and board size are unchanged, still indicating a negative relationship between the number of directors on the board, and a positive between ownership and operating performance and firm value. Consistent with other researchers²⁰⁸, I did not observe a significant relationship between board independence and performance in this specification either. The interrelations of the presence of institutional ownership show a familiar situation. Although negatively related with performance in the models 5 and 6 of this specification, the alternative specification depicts a positive and significant relationship. Concentration is negatively related as usual. As the near-retirement dummy, the firm size measures, too, yield results fairly close to the original.

²⁰⁸ cf. Bhagat, Bolton, 2008, "Corporate governance and firm performance"; Yermack, 1996, "Higher market valuation of companies with a small board of directors"

Compensation perspective

TABLE 26
Regression results: Compensation perspective 2006 - 2009, options excluded

	(1) ceo_c_oo	(2) ceo_c_oo	(3) ceo_c_oo	(4) ceo_c_oo	(5) ceo_c_oo	(6) ceo_c_oo
r_E	8.384** (2.57)					
$r_{E,t-1}$	0.916 (0.36)					
rel. r_E		7.890*** (2.70)				
rel. $r_{E,t-1}$		0.552 (0.26)				
ROA			51.75** (1.98)			
ROA _{t-1}			-33.39 (-1.24)			
rel. ROA				27.13 (0.99)		
rel. ROA _{t-1}				-14.57 (-0.55)		
q					535.7*** (3.07)	
q _{t-1}					-455.4*** (-3.04)	
rel. q						350.7** (2.09)
rel. q _{t-1}						-312.7** (-2.23)
ceo_own	-38.52*** (-2.71)	-38.16*** (-2.69)	-40.03*** (-2.81)	-39.41*** (-2.77)	-38.30*** (-2.69)	-37.83*** (-2.66)
bsize	2.780 (0.05)	2.754 (0.05)	-0.531 (-0.01)	0.432 (0.01)	-2.256 (-0.04)	-0.683 (-0.01)
bind	-14.34 (-1.12)	-14.91 (-1.16)	-15.24 (-1.19)	-15.67 (-1.22)	-15.50 (-1.21)	-15.97 (-1.25)
instprc	-0.246 (-0.03)	-0.176 (-0.02)	-1.623 (-0.22)	-1.170 (-0.16)	-1.149 (-0.15)	-0.851 (-0.11)
Top5inst	24.23* (1.70)	23.81* (1.66)	22.37 (1.63)	21.15 (1.53)	19.99 (1.43)	19.17 (1.37)

Table 26 continued

agedummy	666.6* (1.85)	669.0* (1.85)	682.8* (1.89)	677.0* (1.87)	654.7* (1.81)	656.4* (1.81)
size	1686.1*** (15.14)	1688.2*** (15.16)	1684.3*** (15.30)	1681.1*** (15.32)	1687.1*** (15.29)	1683.2*** (15.32)
<i>N</i>	2275	2275	2275	2275	2275	2275
<i>R</i> ²	0.368	0.367	0.365	0.364	0.367	0.365

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: ceo_c_oo ... CEO compensation without options; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; bsize ... board size, bind ... board independence; instprc ... presence of institutional investors; top5inst ... shares held by top 5 institutional shareholders as a percentage of total shares held by institutions; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

Omitting option grants from the calculation of CEO compensation results in a substantial decrease of R^2 , indicating that options are indeed an important component in the compensation / performance relationship. This impression is supported by the changes of the point estimates concerning performance, which dropped substantially too. Although they did not decrease as dramatically as the estimates presented in the 1993-2005 subsample, the decline in magnitude and statistical power is still remarkable. That the decrease did not turn out as severe as above, is probably attributable to the lower reliance on compensation-like options during the year 2006 - 2009, as already indicated in the descriptive statistics. Since compensation in this period seems to be better balanced, dilution should be less of an issue. This could also explain why the presence of institutional shareholders did not have a significant negative relationship to the level of compensation in any specification during this period of time. If institutional investors are concerned about dilution, and henceforth influence compensation, better balanced compensation schemes could make such an effort obsolete. This argumentation is also supported by table 50 in the appendix, which reports considerably lower point estimates than the corresponding table in the 1993 - 2005 subsample.

The most surprising result is without a doubt the significant negative relationship between CEO ownership and performance. Though this was indicated by the results of all other regressions too, it was never significant. The negative sign of the estimates gives support to the view that CEOs with high ownership portions receive considerably less compensation

from components other than options. In reverse, this could imply that high-ownership CEOs get more option grants than those with a lower stake²⁰⁹.

The variables addressing board characteristics still have a negative sign, yet they are not significant. The situation of the variables describing institutional ownership is unaffected by the exclusion of option grants. Concentration remains positively connected to compensation and the presence estimates are insignificant and point in different directions.

Interestingly, the previously highly significant retirement dummy variable is now lower in magnitude and less powerful. This is somehow contrary to the findings in the earlier subsample, since in this the dummy variable never yielded significant estimates until options were excluded from compensation. In the prevailing subsample the opposite is the case. If options are excluded the near retirement dummy becomes less significant and lower in magnitude, indicating that a CEO near retirement receives more option grants than his younger colleagues.

Although the magnitude of the point estimates addressing firm size is considerably lower, they are of high statistical power. Nevertheless, the decline in magnitude can be seen as an indicator that large companies grant relatively more options, which is consistent with the argumentation in the 1993-2005 subsample and the evidence in table 50 of the appendix.

6 Conclusion

In recent months and years the compensation arrangements of top managers have been extensively discussed in public, the media and in politics. This increased concern is probably attributable to the fact that "executive compensation is at the center of a complex mix of societal problems, most notably the increasing gap between rich and poor and the economic crisis"²¹⁰. Especially in times when the economy is on the verge of recession and future prospects getting worse and worse, publics' and politics' concern about corporate top management compensation plans increase considerably. During such periods shareholders, although almost indifferent to compensation levels during booms²¹¹, start to question

²⁰⁹ Again, this is supported by the table in the appendix.

²¹⁰ Dillon, 2009, "The coming battle over executive pay", p.97

²¹¹ cf. Bebchuk, Grinstein, 2005, "The Growth of Executive Pay"

prevailing compensation arrangements. That their "say on pay" increases can easily be illustrated by a recent incident at Citigroup Inc., where, for only the second time in the history of corporate America, a large U.S. bank's compensation plan was rejected by its shareholders. Although Citigroup Inc. announced that the proposed compensation plan "[...] will attract and retain top talent [...]"²¹², shareholders' did not agree with awarding the CEO a compensation package worth about \$55 million for a year in which the share price dropped about 44 percent. As Mike Mayo, and analysts at CLSA in New York declares: "Are you going to give the manager of the New York Yankees an incentive bonus if he wins one-third of his games?"²¹³. Due to this increased concern it seemed rewarding to take a closer look at the relationship between performance and compensation. Tables 27 and 28 summarize the results of my analysis in comparison to the expected values.

²¹² cf. <http://www.bloomberg.com/news/2012-04-17/citigroup-shareholders-reject-management-s-compensation-plan-1.html> (last access on June 8th, 2012)

²¹³ cf. <http://www.bloomberg.com/news/2012-04-17/citigroup-shareholders-reject-management-s-compensation-plan-1.html> (last access on June 8th, 2012)

TABLE 27 & 28
Comparison of expected and actually observed empirical relationships

<i>Performance perspective</i>				<i>Compensation perspective</i>			
	Performance measure				Level of compensation _t		
	exp.	1993 - 2005	2006 - 2009		exp.	1993 - 2005	2006 - 2009
Compensation _t	+	+	+	(rel.) stock return _t	+	+	+
Managerial ownership (0%-L ₁) _t	+	+	+	(rel.) stock return _{t-1}	+	+	~
Managerial ownership (L ₁ -L ₂) _t	-			(rel.) ROA _t	+	+	+
Managerial ownership (L ₂ - 100%) _t	+			(rel.) ROA _{t-1}	+	~	~
Board size _t	-	n.a.	-	(rel.) Tobin's q _t	+	+	+
Board independence _t	+	n.a.	~	(rel.) Tobin's q _{t-1}	+	+	-
Presence of inst. investors _t	+	~	~	Managerial ownership _t	+	~	~
Concentration of inst. holdings _t	+	-	-	Board size _t	+	n.a.	~
CEO near retirement _t	-	-	-	Board independence _t	-	n.a.	~
E-index _t	-	-	n.a.	Presence of inst. investors _t	-	-	~
Firm size _t		-	-	Concentration of inst. holdings _t	-	~	+
				CEO near retirement		~	+
				E-index _t	+	/	/
				Firm size _t	+	+	+
				Interlock _t (TRUE)	+	~	n.a.

Note: These tables compare the expected relationships with the ones actually observed, both for the performance and the compensation perspective. The first column presents the expected (exp.) prefix of the point estimates. The second and third column summarize the actually observed relationships for the subsamples from 1993 - 2005 and 2006 - 2009 respectively. If there is no sign in the "expected" cell, this indicates that I had no expectations concerning this relationship. The signs in the remaining cells are defined as follows: + ... positive relationship, - ... negative relationship, ~ ... insignificant, / ... not tested due to a substantial decrease in the explanatory power of the model, n.a. ... the data was not available for the considered subsample

The most important result of the analysis is that there is a statistically meaningful, positive relationship between compensation and performance for both subsamples, no matter if performance is measured in absolute or relative terms²¹⁴. This indicates that, in the aggregate, high (low) performance coincides with high (low) compensation. Overall, it seems that the preceding year's performance is of subordinate importance in this relationship.

²¹⁴With exemption of the lagged Tobin's q in the 2006 - 2009 subsample.

Concerning managerial ownership my results are supportive to the convergence-of-interest hypothesis, since I did not find any indication that high or intermediate levels of ownership are negatively related to performance. Rather, my findings suggest that increases in ownership are accompanied by increases in performance.

As can be referred from the tables 27 and 28, my findings do not support the notion that higher board independence (measured as the fraction of outside directors on it) is associated with higher performance. This is consistent with the insignificant results of previous research²¹⁵. The board size on the opposite is negatively related to performance, which is consistent with earlier evidence. Neither board characteristic is significantly related to the level of compensation.

Contrary to my expectations the results do not support a positive relationship between institutional ownership and performance. Although the insignificance of the presence is consistent with the findings of a reviewed paper²¹⁶, the negative relationship between the concentration of institutional holdings and performance is surprising. In the compensation perspective, the results in the 1993 - 2005 subsample show support to the expectations in that the presence of institutional shareholders is negatively related to the level of compensation. The findings addressing the concentration of the holdings during the years 2006-2009 are not supportive though.

Since the firms with CEOs near retirement yield a lower performance (as measured with Tobin's q and stock return), the findings are consistent with the notion that the principal agent conflict aggravates in such situations. Due to the possibility that these CEOs forego profitable long-term projects because of their shorter personal time horizon, the insignificant relationship with the specification using ROA also supports the interpretation since this accounting measure does not reflect possibly foregone investments. In the compensation perspective this dummy variable was only included as a control variable without any expectations. Seemingly, CEOs near retirement earned significantly more than their younger colleagues from 2006 to 2009.

²¹⁵ cf. Bhagat, Bolton, 2008, "Corporate governance and firm performance"; Yermack, 1996, "Higher market valuation of companies with a small board of directors"

²¹⁶ cf. Sundaramurthy, Rhoades, Rechner, 2005, "A Meta-analysis of the effects of executive and institutional ownership on firm performance"

Concerning provisions that limit shareholder power and the threat of a takeover, my findings are consistent with the ones of Bebchuk, Cohen, and Ferrell in 2009²¹⁷, in that the E-index is significantly negatively related to performance. Although not expected, firm size was negatively related to performance in both subsamples (with exemption of the operating performance from 2006-2009). In the compensation perspective the coefficients concerning firm size confirm the common perception that CEOs of large firms earn more.

In addition to the findings indicated in the tables 27 and 28, the results of this work indicated that, in the aggregate, base salary is indeed not rewarded in a performance-contingent way, and that institutional investors are indifferent to the level of compensation. Moreover, the use of bonus payments substantially decreased over time, possibly because not paying a bonus signals an independent compensation committee²¹⁸. As a result bonus payments contributed to the positive relationship between performance and compensation in the earlier subsample, but not in the later one. In fact, it seems that the rare bonus payments between 2006 and 2009 were not connected to any of the used performance variables, henceforth weakening the link between TDC and performance.

No matter which subsample is considered, options have been a widely used component in executive pay. The results of the regressions imply that options were the crucial component in connecting shareholders' wealth with CEO's wealth. This connection was stronger from 1993 to 2005, probably due to their popularity in the 1990²¹⁹ and because the SEC changed the reporting requirements in 2005. Moreover the results show that during the years 1993 - 2005, where option grants have been used the most, the presence of institutional investors was negatively related to option grants, possibly because they dislike the diluting effect of excessive option grants. In addition, it is worth noting that large firms grant more options to their CEOs.

It should be noted, though, that the findings of this work do not allow any references about causality. The results do not allow to draw any conclusions if the positive relationship between performance and compensation is caused by the fact that a higher compensation leads to higher performance or that higher performance results in higher compensation.

²¹⁷ cf. Bebchuk, Cohen, Ferrell, 2009, "What matters in corporate governance?"

²¹⁸ cf. Wade, Porac, Pollock, 1997, "Worth, words, and the justification of executive pay"

²¹⁹ cf. Lavelle, 2002, "How to halt the options express"

Pinning down causality, and evaluating if the link between performance and compensation is sufficient in magnitude and socially acceptable, is left to future research. Additionally, the results of the 2006 - 2009 subsample, which are at least partly biased due to distorting effect of the financial crisis, indicate that extending this subsample, in order to facilitate more meaningful statements about the performance / compensation relationship during this period, would be rewarding. In the following, section 7 gives some more suggestions for additional research.

7 Limitations & Extensions

In the beginning, this work was intended as an attempt to capture the relationship between performance and CEO compensation as thoroughly as possible, while controlling for a selective set of corporate governance variables. Unfortunately conducting this task in sufficient detail turned out to be way beyond the scope of a master-thesis, which is why this work ended up in merely describing the relationships between the variables without raising any claims concerning causality. Nevertheless, the findings are useful indicators for future research. In order to give some suggestions for potential future research this section briefly summarizes a couple of points that would reward closer attention.

7.1 Board characteristics

As suggested by previous research²²⁰, board members' willingness to monitor with high scrutiny and establish effective compensation plans probably increases with the stake they are holding in the firm. The problem is that directors typically hold only a small fraction of the firm, which makes their personal cost of benefitting the CEO rather than the shareholders too low to offset economic, social and psychological factors²²¹. According to Weisbach²²², holding a substantial share in the firm is especially important to incentivize outside directors. Bhagat and Bolton even suggest that "[...] [board] ownership can be a good proxy for overall good governance"²²³, and that there is no need to use any other variable concerning the board. They think so, because a sufficient stake in the firm provides

²²⁰ cf. Morck, Shleifer, Vishny, 1988, "Management ownership and market valuation"

²²¹ cf. Bebchuck, Fried, 2006, "Pay without Performance: An overview of the issues"

²²² cf. Weisbach, 1988, "Outside Directors and CEO Turnover"

²²³ cf. Bhagat, Bolton, 2008, "Corporate governance and firm performance", p.258

board members with the incentive to act independently and in the best interest of the shareholders. Due to the fact that I did not have access to a relevant database, examining the performance / CEO compensation relationship while controlling for the holdings of the board has to be left to future research.

Another variable that was used in the past concerning the effectiveness of the board was CEO duality. Although it is commonly approved that CEO's entrenchment increases if he also chairs the board, the effect on performance is subject to some discussion. On the one hand Fahlenbrach²²⁴ argues that CEO duality should be beneficial to the firm, because its insulation provides the CEO with the opportunity to invest in long-term projects without having to fear dismissal. On the other hand, there is empirical evidence that this very insulation reduces the threat of dismissal and facilitates rent extraction in the form of a higher and less sensitive compensation²²⁵. CEO duality is prohibited by the law in Austria and Germany.

For the sake of completeness it is worth noting that the tenure of outside directors could also have a positive effect on performance, due to the "[...] the acquisition of firm-specific knowledge over time [...]"²²⁶.

7.2 Market for corporate control

Probably the most powerful mechanism to reduce agency cost that was not separately included in my analysis is the threat of a takeover²²⁷. Theoretically, if a company is managed inefficiently, market participants will anticipate this inefficiency and the market value of the firm will decrease. This decrease, together with the possibility to enhance efficiency, makes the firm an attractive target for a takeover. Since such takeovers are regularly accompanied by a change in the top management team, the incumbent management is forced to manage the firm as efficient as possible in order to avoid being laid off.

²²⁴ cf. Fahlenbrach, 2009, "Shareholder rights, Boards, and CEO compensation"

²²⁵ cf. Chiang, Lin, 2011, "Examining Board Composition and Firm Performance"; Yermack, 1996, "Higher market valuation of companies with a small board of directors"

²²⁶ cf. Hermalin, Weisbach, 1991, "The Effects of Board Composition and Direct Incentives on Firm Performance" p.109

²²⁷ Two of the six provisions in the E-index address a potential decrease in takeover probability. However, to make any statements about the effectiveness of the market of corporate control a more detailed analysis would be required.

An especially interesting interaction in that context would be the one between the threat and managerial entrenchment and anti-takeover amendments. Both can insulate the incumbent management from this external regulation mechanism by making a takeover less likely²²⁸. Since managing the firm efficiently becomes less important in such a situation, a decrease in takeover probability tends to be accompanied by a decrease in market value²²⁹ and an increase in compensation²³⁰.

The threat of a takeover is lower in firms with high managerial ownership because the prospective buyer may need shares that are held by the incumbent management in order to acquire the required majority of voting rights. In the opposite direction, large shareholders can facilitate a takeover, if they are not satisfied with the way the company is managed. They have an incentive to do so, because if they do not tender, the probability of a takeover declines dramatically²³¹.

7.3 The role of debt

In a widely recognized article in 1986, Jensen²³² declared that issuing a sufficient amount of debt will reduce the free cash flow (FCF) under managers' control, and thereby reduce agency cost. Under this paradigm he defined the FCF as the "[...] cash flow in excess of that required to fund all projects that have a positive net present values when discounted at the relevant cost of capital"²³³. In the extreme case, if management has to pay back debt obligations such that FCF is equal to zero, there won't be any cash left for inefficient spending and perquisite consumption. This extreme case, however, will not be feasible to firms because they have to balance the marginal benefit of debt with the marginal cost of debt (agency cost of debt, bankruptcy cost).

The problem is that firms would have to issue the debt before the cash flow and the investment opportunities are known in order to ensure that interest and principal payments are due at the time when the firm has excessive cash. If they issue less than the optimal level of debt, managers will pursue unprofitable or self-serving projects. If the level of debt is too high, it could lead to situations in which the management cannot fund all projects with a

²²⁸ cf. Byrd, Parrino, Pritsch, 1998, "Stockholder-Manager Conflicts and Firm Value"

²²⁹ cf. Jensen, 1986, "Agency Cost of Free Cash Flow, Corporate Finance and Takeovers"

²³⁰ cf. Bebchuck, Fried, 2006, "Pay without Performance: An overview of the issues"

²³¹ cf. Shleifer, Vishny, 1986, "Large shareholders and corporate control"

²³² cf. Jensen, 1986, "Agency Cost of Free Cash Flow, Corporate Finance and Takeovers"

²³³ cf. Jensen, 1986, "Agency Cost of Free Cash Flow, Corporate Finance and Takeovers", p.323

positive net present value (NPV), thereby leading to an, from the shareholders perspective, undesired situation called underinvestment²³⁴. Consequently, there should be an optimal level of debt that prevents the management from inefficient spending (overinvestment), but also allows to fund all profitable investments. This level can be expected to vary substantially with respect to industry, especially with respect to the growth potential²³⁵.

Another factor in that context is the role of cash flow volatility. Stulz 1990²³⁶ developed a theoretical model that proves that firm value will increase with a decrease in CF volatility. If cash flows are easier to predict, shareholders will find it easier to force the management to a more optimal debt level in which the cash reserves left to managements' free disposition are lower.

7.4 Miscellaneous extensions

A possible extension to this analysis would be the inclusion of strategy as a control variable. In a paper of 2011, Balsam, Fernando and Tripathy²³⁷ analyzed the differences in the compensation patterns of firms pursuing a cost leadership strategy on the one hand, and companies focusing on differentiation on the other hand. They found that "[...] cost leaders place an increased emphasis on sales, while those following a differentiation strategy reduce the emphasis on accounting measures"²³⁸. Differentiators do so because they want to encourage innovation, which is oftentimes costly. Focusing too much on accounting numbers would henceforth discourage managers from investing in R&D.

Yet another possible extension is to include the organizational form in the regression. Usually, the more restrictive an organization is in terms of managerial discretion, the lower is the implied agency cost and henceforth the need to align the interests of principals and agents²³⁹. Although it would not make any sense to include such a variable in the analysis I conducted, since my sample comprised of publicly traded firms only, studying the impact of the organizational form on the principal-agent relationship would be worthwhile because it

²³⁴ cf. Stulz, 1990, "Managerial discretion and optimal financing policies"

²³⁵ cf. Byrd, Parrino, Pritsch, 1998, "Stockholder-Manager Conflicts and Firm Value"

²³⁶ cf. Stulz, 1990, "Managerial discretion and optimal financing policies"

²³⁷ Balsam, Fernando, Tripathy, 2011, "The impact of firm strategy on performance measures used in executive compensation"

²³⁸ Balsam, Fernando, Tripathy, 2011, "The impact of firm strategy on performance measures used in executive compensation", p.187

²³⁹ cf. Damodaran, John, Liu, 2005, "What motivates managers? Evidence from organizational form changes"

will contribute to a deeper understanding of problems stemming from the separation of ownership and control.

7.5 Final note

One should be aware of the fact that the problems stemming from the separation of ownership and control differ substantially with respect to the country and culture a firm is operating in. My sample addresses only the North American market where, in contrast to e.g. Germany and Austria, employee representatives are not mandatory on the board. Since the board has to approve major decisions (such as takeovers) it is possible that German managers are able to depart more from strictly maximizing stockholder value, due to the influence of the employee representatives (if jobs are endangered, these directors will probably not agree with a merger, no matter if it would generate value or not). Henceforth, the most effective instruments to align shareholders' and managers' interests will also differ, including possibly uncommon compensation practices.

8 References

- Balsam, S., Fernando, G.D., Tripathy, A., 2011, "The impact of firm strategy on performance measures used in executive compensation", *Journal of Business Research*, Vol. 64, pp. 187-193
- Bebchuk, L.A., Cohen, A., Ferrell, A., 2009, "What matters in Corporate Governance?", *The Review of Financial Studies*, Vol. 22, No. 2, pp. 783-827
- Bebchuk, L.A., Fried, J.M., 2006, "Pay without performance: Overview of the issues", *Academy of Management Perspectives*, February 2006, pp. 5-24
- Bebchuk, L.A., Grinstein, Y., 2005, "The Growth of Executive Pay", *Oxford Review of Economic Policy*, Vol. 21, No. 2, pp. 283-303
- Bhagat, S., Bolton, B., 2008, "Corporate governance and firm performance", *Journal of Corporate Finance*; Vol. 14, pp. 257-273
- Bruslerie, H., Deffains-Crapsky, C., 2008, "Information asymmetry, contract design and process of negotiation: The stock options awarding case", *Journal of Corporate Finance*, Vol. 14, pp. 73-91
- Byrd, J., Parrion, R., Pritsch, G., 1998, "Stockholder-Manager Conflicts and Firm Value", *Financial Analysts Journal*, Vol. 54, No. 3 (May/Jun), pp. 14-30
- Chiang, H.-T., Lin, M.-C., 2011, "Examining Board Composition and Firm Performance", *The International Journal of Business and Finance Research*, Vol. 5, No. 3, pp. 15-26
- Chung, K.H., Pruitt, S.W., 1994, „A Simple Approximation of Tobin's q", *Financial Management*, Vol. 23, No. 3 (Autumn), pp. 70-74
- Damodaran, A., John, K., Liu, C. H., 2005, "What motivates managers? Evidence from organizational form changes", *Journal of Corporate Finance*, Vol. 12, pp. 1-26
- Dillon, K., 2009, "The coming battle over executive pay", *Harvard Business Review*, September, pp. 96-103

Dossi, A., Patelli, L., Zoni, L., 2010, „The Missing Link between Corporate Performance Measurement Systems and Chief Executive Officer Incentive Plans”, *Journal of Accounting, Auditing & Finance*, Vol. 25, Issue 4, pp. 531-558

Fahlenbrach, R., 2009, "Shareholder Rights, Boards, and CEO compensation", *Review of Finance*, Vol. 13, pp. 81-113

Gomez-Majia, L. R., 1992, „Structure and Process of Diversification, Compensation Strategy, and Firm Performance”, *Strategic Management Journal*, Vol. 13, No. 5, June 1992, pp. 381-397

Gompers, P., Ishii, J., Metrick, A., 2003, “Corporate Governance and Equity Prices”, *Quarterly Journal of Economics*, February, pp. 107-155

Gupta, M., Fields, P.L., 2009, "Board Independence and Corporate Governance: Evidence from Director Resignations", *Journal of Business Finance & Accounting*, Vol. 36, (January/March), pp. 161-184

Hansen, M. T., Ibarra, H., Peyer, U., 2010, “The Best-Performing CEOs in the World”, *Harvard Business Review*, January-February, pp. 104-113

Hartzell, J. C., Starks, L. T., 2003, “Institutional Investors and Executive Compensation”, *Journal of Finance*, Vol. 58, No. 6, Dec. 2003, pp. 2351-2374

Hermalin, B.E., Weisbach, M.S., 1991, „The Effects of Board Composition and Direct Incentives on Firm Performance”, *Financial Management*, Vol. 20, No. 4, Winter 1991, pp. 101-112

Janakiraman, S., Radhakrishnan, S., Tsang, A., 2010, „Institutional Investors, Managerial Ownership, and Executive Compensation”, *Journal of Accounting, Auditing & Finance*, Vol. 25, Issue 4, pp. 673-707

Jensen, M.C., 1986, “Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers”, *American Economic Review*, Vol. 76, No. 2, May, pp. 323-329

Jensen, M.C., Meckling, W.H., 1976, „Theory of the firm: Managerial Behavior, Agency Costs and Ownership Structure”, *Journal of Financial Economics*, Vol. 3, pp. 305-360

Jensen, M.C., Murphy, K.J., 1990, "CEO incentives – It's not how much you pay, but how", Harvard Business Review, No. 3, May-June, pp. 138-153

Jensen, M.C., Murphy, K.J., 1990, "Performance Pay and Top-Management Incentives", Journal of Political Economy, Vol. 98, No. 2, April, pp. 225-264

Kerr, S., 1975, "On the Folly of rewarding A, while hoping for B", The Academy of Management Journal, Vol. 18, No. 4, Dec. 1975, pp. 769-783

Lavelle, L., 2002, "How to halt the Options Express", Business Week, September 9

Maxey, D., ten Wolde, R. C., 1998, "CEO Pay may be crucial as Funds shop", Wall Street Journal (Eastern edition), May 26

Morck, R., Shleifer, A., Vishny, R.W., 1988, „Management ownership and Market Valuation", Journal of Financial Economics, Vol. 20, pp. 293-315

Nyberg, A.J., Fulmer, I.S., Gerhart, B., Carpenter, M.A., 2010, "Agency Theory Revisited: CEO Return and Shareholder Interest Alignment", Academy of Management Journal, Vol. 53, No. 5, pp. 1029-1049

Shleifer, A., Vishny, R.W., 1986, "Large Shareholders and Corporate Control", Journal of Political Economy, Vol. 94, No. 3, Part 1 (June), pp. 461-488

Stulz, R.M., 1988, "Managerial control of voting rights", Journal of Financial Economics, Vol. 20, pp. 25-54

Stulz, R.M., 1990, "Managerial discretion and optimal financing policies", Journal of Financial Economics, Vol. 26, pp. 3-27

Sundaramurthy, C., Rhoades, D.L., Rechner, P.L., 2005, "A Meta-analysis of the Effects of Executive and Institutional Ownership on Firm Performance, Journal of Managerial Issues, Vol. 17, No. 4 (Winter), pp. 494-510

Wade, J.B., Porac, J.F., Pollock, T.G., 1997, "Worth, words, and the justification of executive pay", Journal of Organizational Behavior, Vol. 18, pp. 641-664

Weisbach, M.S., 1988, „Outside Directors and CEO Turnover", Journal of Financial Economics, Vol. 20, pp. 431-460

Yermack, D., 1996, "Higher market valuation of companies with a small board of directors", Journal of Financial Economics, Vol. 40, pp. 185-211

Zheng, Y., 2010, "Heterogenous institutional investors and CEO compensation", Review of Quantitative Finance and Accounting, Vol. 35, No. 1, July 2010, pp. 21-46

<http://www.guardian.co.uk/business/2012/jan/29/rbs-stephen-hester-waives-bonus> (last access on Jan. 31st, 2012)

<http://www.bloomberg.com/news/2012-04-17/citigroup-shareholders-reject-managements-compensation-plan-1.html> (last access on June 8th, 2012)

9 Appendix - unreported tables

TABLE 29
Regression results: Performance perspective 1993 - 2009, alt. specification

	(1)	(2)	(3)	(4)	(5)	(6)
	r_E	rel. r_E	ROA	rel. ROA	q	rel. q
TDC	0.500*** (4.20)	0.395*** (3.83)	0.0349*** (5.24)	0.0278*** (5.27)	0.0323*** (2.78)	0.0278*** (2.48)
ceo_own	0.298*** (2.67)	0.301*** (2.91)	0.121*** (11.57)	0.114*** (11.39)	0.0145*** (5.12)	0.0149*** (5.49)
instprc	0.330*** (8.56)	0.338*** (9.51)	0.0857*** (21.91)	0.0829*** (22.37)	0.00844*** (8.66)	0.00893*** (9.53)
Top5tot	-1.219*** (-14.22)	-0.998*** (-12.72)	-0.214*** (-23.45)	-0.186*** (-22.12)	-0.0388*** (-19.17)	-0.0345*** (-17.91)
agedummy	-4.619*** (-3.29)	-4.936*** (-3.72)	0.0742 (0.50)	0.113 (0.80)	-0.166*** (-5.15)	-0.167*** (-5.31)
size	-5.775*** (-11.95)	-5.127*** (-11.48)	-0.263*** (-5.31)	-0.220*** (-4.67)	-0.193*** (-6.62)	-0.173*** (-6.13)
<i>N</i>	16853	16853	16853	16853	16853	16853
<i>R</i> ²	0.046	0.024	0.119	0.058	0.167	0.054

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 9 this table uses the variable Top5tot as defined further down.

r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); TDC ... total direct compensation (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 30
Regression results: Compensation perspective 1993 - 2009, alt. specification

	(1) TDC	(2) TDC	(3) TDC	(4) TDC	(5) TDC	(6) TDC
r_E	15.51 ^{***} (4.32)					
$r_{E,t-1}$	9.138 ^{***} (2.98)					
rel. r_E		15.76 ^{***} (3.90)				
rel. $r_{E,t-1}$		7.771 ^{**} (2.39)				
ROA			108.0 ^{***} (3.50)			
ROA _{t-1}			-15.41 (-0.64)			
rel. ROA				79.29 ^{***} (2.79)		
rel. ROA _{t-1}				9.211 (0.43)		
q					769.9 [*] (1.89)	
q _{t-1}					653.7 [*] (1.82)	
rel. q						517.1 (1.40)
rel. q _{t-1}						860.5 ^{***} (2.89)
ceo_own	-6.719 (-0.51)	-7.266 (-0.55)	-10.41 (-0.79)	-9.720 (-0.73)	-21.81 (-1.45)	-22.22 (-1.47)
instprc	-20.05 ^{***} (-3.25)	-19.71 ^{***} (-3.20)	-19.41 ^{***} (-3.13)	-18.43 ^{***} (-3.00)	-22.43 ^{***} (-3.42)	-21.93 ^{***} (-3.36)
Top5tot	-5.367 (-0.61)	-10.52 (-1.23)	-15.22 [*] (-1.83)	-19.18 ^{**} (-2.37)	16.90 (1.00)	11.97 (0.73)
agedummy	311.0 (1.32)	317.4 (1.35)	210.4 (0.88)	204.8 (0.86)	386.5 (1.63)	383.0 (1.60)

Table 30 continued

size	2594.6*** (25.90)	2587.4*** (26.03)	2526.3*** (26.09)	2524.1*** (26.12)	2612.6*** (26.29)	2604.2*** (26.59)
interlock	241.4 (0.29)	280.9 (0.34)	167.0 (0.20)	189.1 (0.23)	101.0 (0.12)	141.8 (0.17)
<i>N</i>	13802	13802	13802	13802	13802	13802
<i>R</i> ²	0.142	0.140	0.135	0.135	0.171	0.168

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 10 this table uses the variable Top5tot as defined further down. TDC ... total direct compensation; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q ; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets;

TABLE 31

Regression results: Performance perspective 1993 - 2005, alt. specification

Panel A

	(1) r_E	(2) rel. r_E	(3) ROA	(4) rel. ROA	(5) q	(6) rel. q
TDC	0.476*** (3.87)	0.388*** (3.57)	0.0318*** (5.19)	0.0267*** (5.12)	0.0332*** (2.60)	0.0291** (2.36)
ceo_own	0.449*** (3.25)	0.405*** (3.15)	0.104*** (9.08)	0.102*** (9.28)	0.0155*** (4.52)	0.0148*** (4.49)
instprc	0.415*** (9.28)	0.349*** (8.39)	0.0766*** (17.67)	0.0757*** (18.34)	0.00810*** (6.89)	0.00826*** (7.22)
Top5tot	-1.228*** (-12.42)	-1.055*** (-11.51)	-0.190*** (-19.41)	-0.167*** (-18.26)	-0.0380*** (-15.61)	-0.0351*** (-14.88)
agedummy	-6.575*** (-4.19)	-6.382*** (-4.29)	0.0283 (0.18)	0.109 (0.70)	-0.192*** (-5.06)	-0.181*** (-4.86)
size	-5.917*** (-10.69)	-5.677*** (-10.93)	-0.374*** (-6.61)	-0.306*** (-5.60)	-0.196*** (-6.16)	-0.182*** (-5.89)
<i>N</i>	12876	12876	12876	12876	12876	12876
<i>R</i> ²	0.050	0.027	0.113	0.052	0.169	0.055

Panel B (of table 31)

	(1)	(2)	(3)	(4)	(5)	(6)
	r_E	rel. r_E	ROA	rel. ROA	q	rel. q
TDC	0.258*** (2.89)	0.174*** (2.69)	0.0245*** (3.95)	0.0225*** (3.64)	0.0111** (1.98)	0.00798 (1.61)
ceo_own	0.507* (1.88)	0.409 (1.64)	0.0927*** (4.30)	0.0992*** (4.80)	0.0144* (1.84)	0.0148** (1.98)
instprc	0.360*** (5.60)	0.194*** (3.23)	0.0648*** (7.78)	0.0696*** (8.81)	0.00491** (2.17)	0.00508** (2.29)
Top5tot	-0.719*** (-5.72)	-0.582*** (-4.91)	-0.195*** (-11.44)	-0.176*** (-10.92)	-0.0330*** (-10.21)	-0.0305*** (-9.78)
agedummy	-6.922*** (-3.14)	-6.367*** (-3.04)	0.0306 (0.12)	0.0230 (0.09)	-0.234*** (-3.83)	-0.231*** (-3.78)
eindex	-1.325** (-2.03)	-1.734*** (-2.87)	-0.344*** (-4.12)	-0.257*** (-3.21)	-0.186*** (-7.40)	-0.178*** (-7.35)
size	-1.880*** (-2.60)	-2.224*** (-3.31)	-0.252** (-2.50)	-0.211** (-2.15)	-0.0680*** (-2.87)	-0.0618*** (-2.78)
<i>N</i>	4347	4347	4347	4347	4347	4347
<i>R</i> ²	0.058	0.023	0.126	0.074	0.163	0.047

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 11 this table uses the variable Top5tot as defined further down. Panel A shows the results of a regression without E-index, because including the index substantially decreases sample size (from 12,876 to 4,347). Panel B reports the estimates if it is included. It is worth noting that the coefficient of determination increased in this specification.

r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); TDC ... total direct compensation (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 32
Regression results: Compensation perspective 1993 - 2005, alt. specification

	(1) TDC	(2) TDC	(3) TDC	(4) TDC	(5) TDC	(6) TDC
r_E	16.20 ^{***} (4.02)					
$r_{E,t-1}$	9.471 ^{***} (2.82)					
rel. r_E		16.40 ^{***} (3.59)				
rel. $r_{E,t-1}$		8.415 ^{**} (2.35)				
ROA			113.3 ^{***} (2.90)			
ROA _{t-1}			-5.872 (-0.20)			
rel. ROA				92.97 ^{***} (2.61)		
rel. ROA _{t-1}				12.57 (0.49)		
q					773.2 [*] (1.82)	
q _{t-1}					743.1 ^{**} (2.02)	
rel. q						550.4 (1.40)
rel. q _{t-1}						924.8 ^{***} (2.95)
ceo_own	-3.243 (-0.20)	-2.475 (-0.15)	-4.023 (-0.25)	-3.900 (-0.24)	-17.33 (-0.95)	-16.88 (-0.93)
instprc	-24.65 ^{***} (-3.39)	-23.12 ^{***} (-3.24)	-22.23 ^{***} (-3.05)	-21.75 ^{***} (-3.00)	-24.63 ^{***} (-3.37)	-24.09 ^{***} (-3.34)
Top5tot	-9.468 (-0.99)	-13.58 (-1.45)	-18.21 [*] (-1.93)	-21.60 ^{**} (-2.39)	15.15 (0.83)	10.74 (0.60)
agedummy	107.6 (0.41)	106.2 (0.40)	-31.49 (-0.12)	-40.27 (-0.15)	180.8 (0.68)	169.8 (0.63)

Table 32 continued

size	2594.0 ^{***} (19.99)	2592.3 ^{***} (20.03)	2528.3 ^{***} (19.95)	2523.6 ^{***} (20.06)	2603.3 ^{***} (20.44)	2598.4 ^{***} (20.55)
interlock	326.4 (0.39)	287.8 (0.34)	138.2 (0.16)	157.4 (0.19)	120.9 (0.14)	133.1 (0.16)
<i>N</i>	10752	10752	10752	10752	10752	10752
<i>R</i> ²	0.123	0.121	0.115	0.115	0.156	0.153

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 12 this table uses the variable Top5tot as defined further down. TDC ... total direct compensation; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q ; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets;

TABLE 33
Regression results: Performance perspective 2006 - 2009, alt. specification

	(1) r_E	(2) rel. r_E	(3) ROA	(4) rel. ROA	(5) q	(6) rel. q
TDC	0.638 ^{***} (3.87)	0.452 ^{***} (2.93)	0.0566 ^{***} (3.02)	0.0391 ^{**} (2.19)	0.0135 ^{***} (3.98)	0.0107 ^{***} (3.25)
ceo_own	-0.0579 (-0.43)	-0.0911 (-0.69)	0.139 ^{***} (5.66)	0.137 ^{***} (5.62)	0.0132 ^{***} (2.98)	0.0127 ^{***} (2.96)
bsize	-0.688 (-1.50)	-0.689 (-1.64)	-0.132 ^{**} (-2.30)	-0.151 ^{***} (-2.71)	-0.0280 ^{***} (-2.99)	-0.0297 ^{***} (-3.36)
bind	0.0246 (0.30)	0.0428 (0.55)	-0.0192 [*] (-1.71)	-0.0123 (-1.12)	-0.000584 (-0.32)	0.000128 (0.07)
instprc	0.277 ^{***} (3.02)	0.285 ^{***} (3.33)	0.122 ^{***} (12.47)	0.115 ^{***} (12.29)	0.0124 ^{***} (8.50)	0.0118 ^{***} (8.33)
Top5tot	-0.947 ^{***} (-5.74)	-0.848 ^{***} (-5.47)	-0.258 ^{***} (-11.98)	-0.241 ^{***} (-11.91)	-0.0345 ^{***} (-11.21)	-0.0319 ^{***} (-11.07)
agedummy	3.299 (1.04)	2.421 (0.79)	0.226 (0.61)	0.157 (0.43)	-0.0859 [*] (-1.69)	-0.0919 [*] (-1.87)
size	-3.416 ^{***} (-3.49)	-2.997 ^{***} (-3.25)	0.136 (1.12)	0.174 (1.47)	-0.0969 ^{***} (-4.74)	-0.0882 ^{***} (-4.45)
<i>N</i>	3899	3899	3899	3899	3899	3899
<i>R</i> ²	0.046	0.019	0.192	0.101	0.215	0.070

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 13 this table uses the variable Top5tot as defined further down. r_E ... return on equity; ROA ... return on assets; q ... Tobin's q ; rel ... relative performance measure (individual performance measure - mean industry performance measure); TDC ... total direct compensation (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; bsize ... board size, bind ... board independence; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 34
Regression results: Compensation perspective 2006 - 2009, alt. specification

	(1) TDC	(2) TDC	(3) TDC	(4) TDC	(5) TDC	(6) TDC
r_E	11.90*** (2.89)					
$r_{E,t-1}$	-0.494 (-0.16)					
rel. r_E		11.29*** (3.01)				
rel. $r_{E,t-1}$		-2.237 (-0.83)				
ROA			69.90** (2.14)			
ROA _{t-1}			-55.83 (-1.50)			
rel. ROA				41.45 (1.24)		
rel. ROA _{t-1}				-33.98 (-0.93)		
q					949.4*** (4.09)	
q _{t-1}					-604.9*** (-3.11)	
rel. q						670.2*** (2.97)
rel. q _{t-1}						-389.6** (-2.10)
ceo_own	-32.11 (-1.38)	-31.54 (-1.36)	-33.11 (-1.44)	-32.28 (-1.40)	-34.94 (-1.52)	-34.16 (-1.48)
bsize	-54.86 (-0.83)	-55.94 (-0.85)	-59.68 (-0.90)	-57.94 (-0.87)	-56.47 (-0.86)	-53.10 (-0.81)
bind	-12.12 (-0.83)	-12.92 (-0.88)	-13.31 (-0.91)	-13.93 (-0.95)	-12.81 (-0.87)	-13.65 (-0.93)
instprc	-3.565 (-0.35)	-2.394 (-0.23)	-1.760 (-0.18)	-0.108 (-0.01)	-3.982 (-0.39)	-1.933 (-0.19)
Top5tot	11.77 (0.50)	8.355 (0.35)	1.613 (0.07)	-0.932 (-0.04)	10.53 (0.45)	6.205 (0.27)

Table 34 continued

agedummy	1103.8** (2.15)	1108.5** (2.15)	1130.4** (2.19)	1124.5** (2.18)	1113.4** (2.16)	1118.0** (2.17)
size	2393.0*** (14.24)	2395.2*** (14.24)	2383.7*** (14.29)	2379.5*** (14.28)	2403.8*** (14.27)	2394.4*** (14.26)
<i>N</i>	2275	2275	2275	2275	2275	2275
<i>R</i> ²	0.418	0.417	0.414	0.413	0.418	0.415

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 14 this table uses the variable Top5tot as defined further down.

TDC ... total direct compensation; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q ; rel ... relative relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; bsize ... board size, bind ... board independence; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 35

Regression results: Performance perspective 1993 - 2005, salary excluded, alt. specification
Panel A

	(1) r_E	(2) rel. r_E	(3) ROA	(4) rel. ROA	(5) q	(6) rel. q
ceo_c_os	0.480*** (3.86)	0.392*** (3.56)	0.0315*** (5.18)	0.0264*** (5.12)	0.0335*** (2.61)	0.0293*** (2.37)
ceo_own	0.448*** (3.25)	0.405*** (3.15)	0.104*** (9.08)	0.102*** (9.28)	0.0155*** (4.51)	0.0148*** (4.48)
instprc	0.415*** (9.29)	0.350*** (8.40)	0.0766*** (17.68)	0.0757*** (18.34)	0.00813*** (6.91)	0.00829*** (7.24)
Top5tot	-1.228*** (-12.42)	-1.055*** (-11.51)	-0.190*** (-19.42)	-0.167*** (-18.26)	-0.0380*** (-15.63)	-0.0351*** (-14.90)
agedummy	-6.552*** (-4.17)	-6.363*** (-4.28)	0.0297 (0.19)	0.110 (0.71)	-0.190*** (-5.02)	-0.179*** (-4.83)
size	-5.856*** (-10.73)	-5.630*** (-10.97)	-0.368*** (-6.55)	-0.301*** (-5.55)	-0.192*** (-6.33)	-0.179*** (-6.06)
<i>N</i>	12876	12876	12876	12876	12876	12876
<i>R</i> ²	0.050	0.027	0.113	0.052	0.169	0.055

Panel B (of table 35)

	(1)	(2)	(3)	(4)	(5)	(6)
	r_E	rel. r_E	ROA	rel. ROA	q	rel. q
ceo_c_os	0.259*** (2.87)	0.176*** (2.68)	0.0245*** (3.94)	0.0224*** (3.65)	0.0113** (1.98)	0.00810 (1.61)
ceo_own	0.507* (1.88)	0.409 (1.64)	0.0927*** (4.30)	0.0992*** (4.80)	0.0145* (1.84)	0.0148** (1.98)
instprc	0.360*** (5.60)	0.194*** (3.24)	0.0648*** (7.79)	0.0696*** (8.81)	0.00492** (2.18)	0.00509** (2.30)
Top5tot	-0.719*** (-5.72)	-0.582*** (-4.91)	-0.195*** (-11.44)	-0.176*** (-10.93)	-0.0330*** (-10.21)	-0.0305*** (-9.78)
agedummy	-6.909*** (-3.14)	-6.358*** (-3.03)	0.0318 (0.12)	0.0242 (0.10)	-0.233*** (-3.82)	-0.230*** (-3.78)
eindex	-1.323** (-2.02)	-1.732*** (-2.86)	-0.344*** (-4.12)	-0.257*** (-3.20)	-0.186*** (-7.40)	-0.178*** (-7.35)
size	-1.843** (-2.56)	-2.202*** (-3.29)	-0.248** (-2.47)	-0.207** (-2.12)	-0.0666*** (-2.86)	-0.0609*** (-2.78)
<i>N</i>	4347	4347	4347	4347	4347	4347
<i>R</i> ²	0.058	0.023	0.126	0.074	0.163	0.047

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 15 this table uses the variable Top5tot as defined further down. Panel A shows the results of a regression without E-index, because including the index substantially decreases sample size (from 12,876 to 4,347). Panel B reports the estimates if it is included. It is worth noting that the coefficient of determination increased in this specification.

r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_c_os ... CEO compensation without salary (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; eindex ... E-index; size ... log of total assets

TABLE 36
Regression results: Compensation perspective 1993 - 2005, salary excluded,
alt. specification

	(1)	(2)	(3)	(4)	(5)	(6)
	ceo_c_os	ceo_c_os	ceo_c_os	ceo_c_os	ceo_c_os	ceo_c_os
r_E	16.22 ^{***} (4.03)					
$r_{E,t-1}$	9.557 ^{***} (2.84)					
rel. r_E		16.44 ^{***} (3.61)				
rel. $r_{E,t-1}$		8.511 ^{**} (2.38)				
ROA			112.2 ^{***} (2.87)			
ROA _{t-1}			-5.537 (-0.19)			
rel. ROA				91.34 ^{**} (2.56)		
rel. ROA _{t-1}				13.20 (0.52)		
q					773.6 [*] (1.82)	
q _{t-1}					749.7 ^{**} (2.04)	
rel. q						549.2 (1.40)
rel. q _{t-1}						932.6 ^{***} (2.98)
ceo_own	-2.911 (-0.18)	-2.154 (-0.13)	-3.580 (-0.22)	-3.429 (-0.21)	-17.07 (-0.94)	-16.62 (-0.91)
instprc	-25.49 ^{***} (-3.51)	-23.97 ^{***} (-3.36)	-22.98 ^{***} (-3.16)	-22.47 ^{***} (-3.11)	-25.48 ^{***} (-3.50)	-24.93 ^{***} (-3.46)
Top5tot	-8.646 (-0.91)	-12.73 (-1.37)	-17.66 [*] (-1.90)	-21.08 ^{**} (-2.36)	16.09 (0.88)	11.66 (0.65)
agedummy	56.45 (0.22)	55.28 (0.21)	-83.08 (-0.31)	-91.75 (-0.34)	130.1 (0.49)	119.0 (0.45)
size	2446.3 ^{***} (18.88)	2444.8 ^{***} (18.91)	2380.1 ^{***} (18.80)	2375.5 ^{***} (18.91)	2455.7 ^{***} (19.31)	2450.8 ^{***} (19.41)
interlock	357.9 (0.42)	319.1 (0.38)	170.6 (0.20)	189.6 (0.22)	151.6 (0.18)	163.9 (0.19)
N	10752	10752	10752	10752	10752	10752
R ²	0.115	0.113	0.107	0.107	0.148	0.146

Description to table 36

* p < 0.10, ** p < 0.05, *** p < 0.01; t statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 16 this table uses the variable Top5tot as defined further down.

ceo_c_os ... CEO compensation without salary; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure);

ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 37

Regression results: Performance perspective 2006 - 2009, salary excluded, alt. specification

	(1)	(2)	(3)	(4)	(5)	(6)
	r_E	rel. r_E	ROA	rel. ROA	q	rel. q
ceo_c_os	0.654*** (3.87)	0.459*** (2.91)	0.0566*** (2.99)	0.0383** (2.13)	0.0141*** (4.09)	0.0111*** (3.35)
ceo_own	-0.0593 (-0.44)	-0.0922 (-0.70)	0.139*** (5.65)	0.137*** (5.62)	0.0132*** (2.98)	0.0127*** (2.96)
bsize	-0.682 (-1.49)	-0.684 (-1.63)	-0.132** (-2.29)	-0.151*** (-2.71)	-0.0278*** (-2.98)	-0.0296*** (-3.35)
bind	0.0245 (0.30)	0.0427 (0.54)	-0.0192* (-1.71)	-0.0124 (-1.12)	-0.000583 (-0.31)	0.000129 (0.07)
instprc	0.278*** (3.02)	0.285*** (3.34)	0.122*** (12.48)	0.115*** (12.29)	0.0124*** (8.51)	0.0118*** (8.34)
Top5tot	-0.947*** (-5.74)	-0.848*** (-5.47)	-0.258*** (-11.98)	-0.241*** (-11.91)	-0.0345*** (-11.21)	-0.0319*** (-11.08)
agedummy	3.340 (1.05)	2.455 (0.80)	0.231 (0.62)	0.161 (0.45)	-0.0854* (-1.68)	-0.0915* (-1.86)
size	-3.357*** (-3.46)	-2.947*** (-3.22)	0.144 (1.20)	0.182 (1.55)	-0.0962*** (-4.79)	-0.0877*** (-4.51)
N	3899	3899	3899	3899	3899	3899
R ²	0.046	0.019	0.192	0.101	0.216	0.070

* p < 0.10, ** p < 0.05, *** p < 0.01; t statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 17 this table uses the variable Top5tot as defined further down.

r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_c_os ... CEO compensation without salary (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; bsize ... board size, bind ... board independence; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 38
Regression results: Compensation perspective 2006 - 2009, salary excluded,
alt. specification

	(1)	(2)	(3)	(4)	(5)	(6)
	ceo_c_os	ceo_c_os	ceo_c_os	ceo_c_os	ceo_c_os	ceo_c_os
r_E	11.88*** (2.92)					
$r_{E,t-1}$	-0.383 (-0.12)					
rel. r_E		11.21*** (3.04)				
rel. $r_{E,t-1}$		-2.163 (-0.82)				
ROA			65.02** (2.06)			
ROA _{t-1}			-52.30 (-1.47)			
rel. ROA				35.96 (1.11)		
rel. ROA _{t-1}				-30.05 (-0.86)		
q					933.8*** (4.14)	
q _{t-1}					-580.7*** (-3.09)	
rel. q						648.6*** (2.98)
rel. q _{t-1}						-361.4** (-2.03)
ceo_own	-27.75 (-1.21)	-27.17 (-1.19)	-28.58 (-1.26)	-27.74 (-1.23)	-30.74 (-1.36)	-29.96 (-1.32)
bsize	-64.48 (-1.00)	-65.58 (-1.02)	-69.30 (-1.07)	-67.74 (-1.04)	-65.88 (-1.02)	-62.62 (-0.97)
bind	-10.85 (-0.75)	-11.67 (-0.81)	-12.10 (-0.84)	-12.68 (-0.87)	-11.52 (-0.80)	-12.35 (-0.85)
instprc	-3.853 (-0.38)	-2.641 (-0.26)	-1.777 (-0.18)	-0.145 (-0.01)	-4.323 (-0.43)	-2.278 (-0.23)
Top5tot	11.16 (0.48)	7.636 (0.33)	0.539 (0.02)	-1.985 (-0.09)	10.07 (0.44)	5.716 (0.25)

Table 38 continued

agedummy	994.2 [*] (1.95)	999.1 [*] (1.96)	1019.9 ^{**} (1.99)	1013.7 ^{**} (1.98)	1006.2 ^{**} (1.97)	1010.9 ^{**} (1.98)
size	2245.2 ^{***} (13.42)	2247.3 ^{***} (13.41)	2235.5 ^{***} (13.46)	2231.4 ^{***} (13.45)	2256.2 ^{***} (13.45)	2246.7 ^{***} (13.45)
<i>N</i>	2275	2275	2275	2275	2275	2275
<i>R</i> ²	0.395	0.393	0.391	0.390	0.395	0.392

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 18 this table uses the variable Top5tot as defined further down.

ceo_c_os ... CEO compensation without salary; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; bsize ... board size, bind ... board independence; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 39

**Regression results: Performance perspective 1993 - 2005, bonus excluded, alt. specification
Panel A**

	(1) r_E	(2) rel. r_E	(3) ROA	(4) rel. ROA	(5) q	(6) rel. q
ceo_c_ob	0.461 ^{***} (3.74)	0.384 ^{***} (3.45)	0.0296 ^{***} (5.15)	0.0256 ^{***} (5.04)	0.0342 ^{**} (2.56)	0.0300 ^{**} (2.33)
ceo_own	0.449 ^{***} (3.25)	0.405 ^{***} (3.15)	0.104 ^{***} (9.08)	0.102 ^{***} (9.28)	0.0155 ^{***} (4.52)	0.0148 ^{***} (4.49)
instprc	0.415 ^{***} (9.30)	0.350 ^{***} (8.40)	0.0766 ^{***} (17.68)	0.0757 ^{***} (18.35)	0.00817 ^{***} (6.94)	0.00832 ^{***} (7.27)
Top5tot	-1.232 ^{***} (-12.47)	-1.059 ^{***} (-11.55)	-0.191 ^{***} (-19.45)	-0.167 ^{***} (-18.29)	-0.0383 ^{***} (-15.86)	-0.0353 ^{***} (-15.10)
agedummy	-6.548 ^{***} (-4.17)	-6.359 ^{***} (-4.27)	0.0299 (0.19)	0.110 (0.71)	-0.190 ^{***} (-5.01)	-0.179 ^{***} (-4.82)
size	-5.711 ^{***} (-10.74)	-5.526 ^{***} (-10.99)	-0.358 ^{***} (-6.43)	-0.294 ^{***} (-5.45)	-0.186 ^{***} (-6.49)	-0.174 ^{***} (-6.23)
<i>N</i>	12876	12876	12876	12876	12876	12876
<i>R</i> ²	0.050	0.027	0.113	0.052	0.169	0.056

Panel B (of table 39)

	(1)	(2)	(3)	(4)	(5)	(6)
	r_E	rel. r_E	ROA	rel. ROA	q	rel. q
ceo_c_ob	0.242 ^{***} (2.87)	0.172 ^{***} (2.63)	0.0234 ^{***} (3.99)	0.0219 ^{***} (3.65)	0.0113 [*] (1.93)	0.00808 (1.57)
ceo_own	0.508 [*] (1.88)	0.409 (1.64)	0.0927 ^{***} (4.30)	0.0992 ^{***} (4.81)	0.0145 [*] (1.85)	0.0148 ^{**} (1.99)
instprc	0.361 ^{***} (5.60)	0.195 ^{***} (3.24)	0.0649 ^{***} (7.79)	0.0697 ^{***} (8.81)	0.00495 ^{**} (2.19)	0.00511 ^{**} (2.31)
Top5tot	-0.722 ^{***} (-5.74)	-0.584 ^{***} (-4.92)	-0.196 ^{***} (-11.46)	-0.176 ^{***} (-10.94)	-0.0331 ^{***} (-10.24)	-0.0306 ^{***} (-9.80)
agedummy	-6.904 ^{***} (-3.13)	-6.355 ^{***} (-3.03)	0.0323 (0.12)	0.0246 (0.10)	-0.233 ^{***} (-3.82)	-0.230 ^{***} (-3.78)
eindex	-1.337 ^{**} (-2.04)	-1.739 ^{***} (-2.88)	-0.345 ^{***} (-4.13)	-0.258 ^{***} (-3.21)	-0.186 ^{***} (-7.41)	-0.179 ^{***} (-7.36)
size	-1.751 ^{**} (-2.46)	-2.154 ^{***} (-3.23)	-0.241 ^{**} (-2.41)	-0.201 ^{**} (-2.07)	-0.0642 ^{***} (-2.81)	-0.0592 ^{***} (-2.75)
<i>N</i>	4347	4347	4347	4347	4347	4347
<i>R</i> ²	0.058	0.023	0.125	0.074	0.163	0.047

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 19 this table uses the variable Top5tot as defined further down. Panel A shows the results of a regression without E-index, because including the index substantially decreases sample size (from 12,876 to 4,347). Panel B reports the estimates if it is included. It is worth noting that the coefficient of determination increased in this specification.

r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_c_ob ... CEO compensation without bonus (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; eindex ... E-index; size ... log of total assets

TABLE 40
Regression results: Compensation perspective 1993 - 2005, bonus excluded,
alt. specification

	(1) ceo_c_ob	(2) ceo_c_ob	(3) ceo_c_ob	(4) ceo_c_ob	(5) ceo_c_ob	(6) ceo_c_ob
r_E	15.16 ^{***} (3.79)					
$r_{E,t-1}$	9.393 ^{***} (2.81)					
rel. r_E		15.71 ^{***} (3.46)				
rel. $r_{E,t-1}$		8.443 ^{**} (2.38)				
ROA			103.0 ^{***} (2.65)			
ROA _{t-1}			-2.168 (-0.08)			
rel. ROA				89.04 ^{**} (2.51)		
rel. ROA _{t-1}				11.60 (0.46)		
q					750.8 [*] (1.78)	
q _{t-1}					769.1 ^{**} (2.11)	
rel. q						536.1 (1.38)
rel. q _{t-1}						944.5 ^{***} (3.03)
ceo_own	-3.477 (-0.21)	-2.896 (-0.18)	-4.017 (-0.25)	-4.086 (-0.25)	-18.06 (-1.01)	-17.63 (-0.98)
instprc	-25.55 ^{***} (-3.60)	-24.26 ^{***} (-3.49)	-23.07 ^{***} (-3.25)	-22.80 ^{***} (-3.23)	-25.98 ^{***} (-3.66)	-25.47 ^{***} (-3.63)
Top5tot	-1.724 (-0.19)	-5.185 (-0.58)	-10.56 (-1.18)	-13.32 (-1.56)	24.23 (1.34)	19.97 (1.13)
agedummy	12.94 (0.05)	14.14 (0.06)	-119.7 (-0.47)	-127.8 (-0.50)	92.74 (0.36)	82.07 (0.32)

Table 40 continued

size	2200.8*** (17.23)	2200.7*** (17.27)	2137.6*** (17.14)	2133.4*** (17.25)	2214.1*** (17.68)	2209.3*** (17.77)
interlock	394.4 (0.47)	357.8 (0.43)	217.2 (0.26)	234.0 (0.28)	192.1 (0.23)	203.9 (0.24)
<i>N</i>	10752	10752	10752	10752	10752	10752
<i>R</i> ²	0.098	0.096	0.091	0.090	0.134	0.132

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; *t* statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 20 this table uses the variable Top5tot as defined further down.

ceo_c_ob ... CEO compensation without bonus; r_E ... return on equity; ROA ... return on assets; *q* ... Tobin's *q*; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 41

Regression results: Performance perspective 2006 - 2009, bonus excluded, alt. specification

	(1) r_E	(2) rel. r_E	(3) ROA	(4) rel. ROA	(5) <i>q</i>	(6) rel. <i>q</i>
ceo_c_ob	0.676*** (3.63)	0.476*** (2.71)	0.0804*** (3.59)	0.0626*** (3.00)	0.0180*** (4.32)	0.0147*** (3.64)
ceo_own	-0.0629 (-0.47)	-0.0947 (-0.72)	0.139*** (5.66)	0.137*** (5.64)	0.0132*** (2.99)	0.0127*** (2.96)
bsize	-0.702 (-1.54)	-0.698* (-1.67)	-0.134** (-2.34)	-0.153*** (-2.74)	-0.0284*** (-3.04)	-0.0301*** (-3.40)
bind	0.0172 (0.21)	0.0375 (0.48)	-0.0197* (-1.77)	-0.0127 (-1.16)	-0.000729 (-0.39)	0.0000161 (0.01)
instprc	0.275*** (3.00)	0.284*** (3.32)	0.121*** (12.45)	0.115*** (12.26)	0.0124*** (8.48)	0.0118*** (8.31)
Top5tot	-0.944*** (-5.73)	-0.846*** (-5.46)	-0.257*** (-11.99)	-0.240*** (-11.91)	-0.0344*** (-11.18)	-0.0318*** (-11.05)
agedummy	3.436 (1.07)	2.521 (0.81)	0.218 (0.59)	0.144 (0.40)	-0.0866* (-1.71)	-0.0930* (-1.89)
size	-3.374*** (-3.37)	-2.961*** (-3.13)	0.0942 (0.76)	0.130 (1.08)	-0.104*** (-4.99)	-0.0950*** (-4.70)
<i>N</i>	3899	3899	3899	3899	3899	3899
<i>R</i> ²	0.046	0.019	0.193	0.102	0.217	0.072

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; *t* statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 21 this table uses the variable Top5tot as defined further down.

r_E ... return on equity; ROA ... return on assets; *q* ... Tobin's *q*; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_c_ob ... CEO compensation without bonus (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; bsize ... board size, bind ... board independence; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 42
Regression results: Compensation perspective 2006 - 2009, bonus excluded,
alt. specification

	(1) ceo_c_ob	(2) ceo_c_ob	(3) ceo_c_ob	(4) ceo_c_ob	(5) ceo_c_ob	(6) ceo_c_ob
r_E	10.16*** (2.93)					
$r_{E,t-1}$	0.335 (0.12)					
rel. r_E		10.10*** (3.03)				
rel. $r_{E,t-1}$		-1.554 (-0.63)				
ROA			62.14** (2.25)			
ROA _{t-1}			-39.57 (-1.36)			
rel. ROA				45.17 (1.63)		
rel. ROA _{t-1}				-26.30 (-0.91)		
q					923.1*** (4.29)	
q _{t-1}					-551.2*** (-3.12)	
rel. q						690.2*** (3.30)
rel. q _{t-1}						-369.7** (-2.19)
ceo_own	-21.17 (-0.96)	-20.65 (-0.93)	-23.18 (-1.06)	-22.66 (-1.04)	-24.52 (-1.12)	-23.82 (-1.09)
bsize	-31.57 (-0.56)	-32.40 (-0.58)	-34.57 (-0.61)	-32.84 (-0.58)	-32.30 (-0.58)	-28.82 (-0.51)
bind	2.063 (0.24)	1.345 (0.16)	1.127 (0.13)	0.569 (0.07)	1.624 (0.19)	0.791 (0.09)
instprc	0.543 (0.06)	1.557 (0.17)	1.249 (0.14)	2.415 (0.27)	-0.557 (-0.06)	1.328 (0.15)
Top5tot	6.337 (0.29)	3.532 (0.16)	-0.830 (-0.04)	-2.590 (-0.12)	7.275 (0.33)	3.413 (0.16)

Table 42 continued

agedummy	904.0** (1.98)	908.4** (1.99)	927.7** (2.02)	924.5** (2.02)	918.7** (2.01)	922.5** (2.02)
size	2201.3*** (14.41)	2204.1*** (14.39)	2191.9*** (14.40)	2188.9*** (14.38)	2215.9*** (14.39)	2207.6*** (14.37)
<i>N</i>	2275	2275	2275	2275	2275	2275
<i>R</i> ²	0.455	0.454	0.452	0.451	0.456	0.453
<i>R</i> ²	0.395	0.393	0.391	0.390	0.395	0.392

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 22 this table uses the variable Top5tot as defined further down.

ceo_c_ob ... CEO compensation without bonus; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q ; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; bsize ... board size, bind ... board independence; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 43
Regression results: Performance perspective 1993 - 2005, options excluded,
alt. specification

Panel A

	(1) r_E	(2) rel. r_E	(3) ROA	(4) rel. ROA	(5) q	(6) rel. q
ceo_c_oo	0.249*** (2.65)	0.165*** (2.92)	0.0334*** (2.85)	0.0282*** (3.11)	0.00265** (2.17)	0.00196 (1.56)
ceo_own	0.450*** (3.25)	0.406*** (3.15)	0.104*** (9.07)	0.102*** (9.27)	0.0155*** (4.50)	0.0148*** (4.47)
instprc	0.411*** (9.16)	0.346*** (8.28)	0.0763*** (17.60)	0.0755*** (18.27)	0.00783*** (6.61)	0.00802*** (6.98)
Top5tot	-1.245*** (-12.59)	-1.069*** (-11.66)	-0.191*** (-19.49)	-0.168*** (-18.33)	-0.0393*** (-16.36)	-0.0362*** (-15.59)
agedummy	-6.688*** (-4.24)	-6.465*** (-4.33)	0.0167 (0.10)	0.0988 (0.64)	-0.196*** (-5.13)	-0.184*** (-4.93)
size	-5.079*** (-9.99)	-4.951*** (-10.35)	-0.337*** (-5.97)	-0.275*** (-5.07)	-0.121*** (-8.67)	-0.116*** (-8.62)
<i>N</i>	12876	12876	12876	12876	12876	12876
<i>R</i> ²	0.045	0.023	0.112	0.051	0.138	0.026

Panel B (of table 43)

	(1)	(2)	(3)	(4)	(5)	(6)
	r_E	rel. r_E	ROA	rel. ROA	q	rel. q
ceo_c_oo	0.202 ^{***} (3.03)	0.127 ^{***} (5.69)	0.0260 ^{***} (3.62)	0.0235 ^{***} (3.17)	0.00271 ^{**} (2.32)	0.00160 (1.39)
ceo_own	0.503 [*] (1.86)	0.406 (1.63)	0.0923 ^{***} (4.27)	0.0988 ^{***} (4.78)	0.0143 [*] (1.82)	0.0147 ^{**} (1.97)
instprc	0.354 ^{***} (5.48)	0.190 ^{***} (3.15)	0.0642 ^{***} (7.71)	0.0691 ^{***} (8.73)	0.00462 ^{**} (2.02)	0.00487 ^{**} (2.18)
Top5tot	-0.723 ^{***} (-5.75)	-0.585 ^{***} (-4.93)	-0.196 ^{***} (-11.47)	-0.176 ^{***} (-10.95)	-0.0332 ^{***} (-10.23)	-0.0307 ^{***} (-9.80)
agedummy	-6.937 ^{***} (-3.14)	-6.376 ^{***} (-3.03)	0.0280 (0.11)	0.0208 (0.08)	-0.234 ^{***} (-3.81)	-0.230 ^{***} (-3.77)
eindex	-1.403 ^{**} (-2.14)	-1.787 ^{***} (-2.95)	-0.351 ^{***} (-4.20)	-0.264 ^{***} (-3.28)	-0.190 ^{***} (-7.45)	-0.181 ^{***} (-7.38)
size	-1.449 ^{**} (-2.05)	-1.920 ^{***} (-2.90)	-0.220 ^{**} (-2.21)	-0.181 [*] (-1.87)	-0.0418 ^{**} (-1.96)	-0.0427 ^{**} (-2.10)
<i>N</i>	4347	4347	4347	4347	4347	4347
<i>R</i> ²	0.055	0.021	0.124	0.073	0.156	0.043

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 23 this table uses the variable Top5tot as defined further down. Panel A shows the results of a regression without E-index, because including the index substantially decreases sample size (from 12,876 to 4,347). Panel B reports the estimates if it is included. It is worth noting that the coefficient of determination increased in this specification.

r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_c_oo ... CEO compensation without options (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; eindex ... E-index; size ... log of total assets

TABLE 44
Regression results: Compensation perspective 1993 - 2005, options excluded,
alt. specification

	(1)	(2)	(3)	(4)	(5)	(6)
	ceo_c_oo	ceo_c_oo	ceo_c_oo	ceo_c_oo	ceo_c_oo	ceo_c_oo
r_E	3.243 [*] (1.68)					
$r_{E,t-1}$	-1.059 (-0.72)					
rel. r_E		2.780 (1.43)				
rel. $r_{E,t-1}$		-1.256 (-0.81)				
ROA			50.71 (1.54)			
ROA _{t-1}			-30.13 (-1.30)			
rel. ROA				42.71 (1.40)		
rel. ROA _{t-1}				-22.59 (-1.12)		
q					111.0 (1.22)	
q _{t-1}					-117.3 (-1.51)	
rel. q						90.34 (1.38)
rel. q _{t-1}						-99.00 [*] (-1.76)
ceo_own	-3.299 (-0.59)	-2.982 (-0.53)	-4.655 (-0.95)	-4.643 (-0.96)	-2.265 (-0.40)	-2.244 (-0.39)
instprc	-3.597 (-1.04)	-3.153 (-0.94)	-4.553 (-1.15)	-4.376 (-1.11)	-2.752 (-0.82)	-2.725 (-0.83)
Top5tot	-3.108 (-0.69)	-4.222 (-0.96)	-0.582 (-0.10)	-2.023 (-0.39)	-5.436 (-1.19)	-5.919 (-1.34)
agedummy	333.2 ^{***} (2.63)	328.8 ^{***} (2.59)	320.2 ^{**} (2.50)	316.2 ^{**} (2.44)	319.5 ^{**} (2.50)	318.5 ^{**} (2.47)

Table 44 continued

size	1232.3*** (14.93)	1229.8*** (14.99)	1229.1*** (14.89)	1227.0*** (15.07)	1225.1*** (15.00)	1224.6*** (15.09)
interlock	-68.78 (-0.44)	-72.15 (-0.46)	-99.14 (-0.62)	-90.70 (-0.57)	-80.10 (-0.50)	-78.87 (-0.50)
<i>N</i>	10752	10752	10752	10752	10752	10752
<i>R</i> ²	0.081	0.080	0.081	0.081	0.080	0.080

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; *t* statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 24 this table uses the variable Top5tot as defined further down.

ceo_c_oo ... CEO compensation without options; r_E ... return on equity; ROA ... return on assets; *q* ... Tobin's *q*; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 45
Regression results: Performance perspective 2006 - 2009, options excluded,
alt. specification

	(1) r_E	(2) rel. r_E	(3) ROA	(4) rel. ROA	(5) <i>q</i>	(6) rel. <i>q</i>
ceo_c_oo	0.506*** (3.05)	0.312** (2.07)	0.0458** (2.03)	0.0272 (1.28)	0.00358 (1.17)	0.00138 (0.46)
ceo_own	-0.0611 (-0.45)	-0.0952 (-0.72)	0.139*** (5.63)	0.137*** (5.60)	0.0129*** (2.90)	0.0123*** (2.87)
dirnbr	-0.704 (-1.54)	-0.697* (-1.66)	-0.134** (-2.33)	-0.152*** (-2.73)	-0.0278*** (-2.99)	-0.0295*** (-3.36)
outb	0.0229 (0.28)	0.0408 (0.52)	-0.0193* (-1.72)	-0.0125 (-1.14)	-0.000737 (-0.40)	-0.0000154 (-0.01)
instprc	0.280*** (3.04)	0.287*** (3.34)	0.122*** (12.52)	0.115*** (12.32)	0.0124*** (8.48)	0.0118*** (8.30)
Top5tot	-0.955*** (-5.80)	-0.854*** (-5.51)	-0.259*** (-12.01)	-0.241*** (-11.92)	-0.0348*** (-11.25)	-0.0321*** (-11.12)
agedummy	3.534 (1.10)	2.641 (0.85)	0.246 (0.66)	0.176 (0.49)	-0.0729 (-1.43)	-0.0800 (-1.63)
size	-2.726*** (-3.04)	-2.429*** (-2.87)	0.196* (1.68)	0.223* (1.95)	-0.0700*** (-3.64)	-0.0646*** (-3.46)
<i>N</i>	3899	3899	3899	3899	3899	3899
<i>R</i> ²	0.044	0.017	0.191	0.100	0.211	0.067

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; *t* statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 25 this table uses the variable Top5tot as defined further down.

r_E ... return on equity; ROA ... return on assets; *q* ... Tobin's *q*; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_c_oo ... CEO compensation without options (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; bsize ... board size, bind ... board independence; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 46
Regression results: Compensation perspective 2006 - 2009, options excluded,
alt. specification

	(1)	(2)	(3)	(4)	(5)	(6)
	ceo_c_oo	ceo_c_oo	ceo_c_oo	ceo_c_oo	ceo_c_oo	ceo_c_oo
r_E	8.239*** (2.61)					
$r_{E,t-1}$	0.406 (0.16)					
rel. r_E		7.607*** (2.72)				
rel. $r_{E,t-1}$		0.00524 (0.00)				
ROA			47.93* (1.78)			
ROA _{t-1}			-37.97 (-1.39)			
rel. ROA				23.15 (0.83)		
rel. ROA _{t-1}				-19.07 (-0.71)		
q					515.9*** (3.01)	
q _{t-1}					-467.3*** (-3.15)	
rel. q						325.2** (2.00)
rel. q _{t-1}						-322.2** (-2.34)
ceo_own	-41.53*** (-2.94)	-41.20*** (-2.93)	-42.16*** (-2.99)	-41.46*** (-2.95)	-40.62*** (-2.88)	-40.14*** (-2.86)
dirnbr	-1.022 (-0.02)	-1.123 (-0.02)	-4.602 (-0.08)	-3.527 (-0.06)	-5.469 (-0.10)	-3.834 (-0.07)
outb	-13.22 (-1.03)	-13.75 (-1.07)	-14.16 (-1.10)	-14.58 (-1.13)	-14.49 (-1.13)	-14.94 (-1.17)
instprc	-10.25 (-1.13)	-9.570 (-1.06)	-8.717 (-0.99)	-7.391 (-0.85)	-7.820 (-0.88)	-6.597 (-0.75)
Top5tot	11.06 (0.49)	9.097 (0.40)	3.328 (0.15)	1.264 (0.06)	3.137 (0.14)	0.435 (0.02)

Table 46 continued

agedummy	683.6 [*] (1.89)	687.0 [*] (1.90)	702.7 [*] (1.94)	697.3 [*] (1.93)	669.6 [*] (1.85)	672.7 [*] (1.85)
size	1643.7 ^{***} (15.09)	1643.9 ^{***} (15.14)	1637.6 ^{***} (15.22)	1634.4 ^{***} (15.23)	1642.1 ^{***} (15.28)	1636.1 ^{***} (15.31)
<i>N</i>	2275	2275	2275	2275	2275	2275
<i>R</i> ²	0.367	0.366	0.364	0.363	0.366	0.364

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: This table uses an alternative specification to capture the concentration of institutional holdings. Other than in table 26 this table uses the variable Top5tot as defined further down.

ceo_c_oo ... CEO compensation without options; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q ; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; bsize ... board size, bind ... board independence; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 47
Regression results: Performance perspective 1993 - 2005, options only

Panel A						
	(1) trs1yr	(2) re_rel	(3) roa	(4) roa_rel	(5) q	(6) q_rel
ceo_opt	0.602 ^{***} (3.41)	0.508 ^{***} (3.17)	0.0316 ^{***} (3.84)	0.0265 ^{***} (3.68)	0.0485 ^{***} (2.66)	0.0427 ^{**} (2.41)
ceo_own	0.377 ^{***} (2.73)	0.343 ^{***} (2.66)	0.0920 ^{***} (8.17)	0.0914 ^{***} (8.46)	0.0128 ^{***} (3.76)	0.0124 ^{***} (3.76)
instprc	-0.111 ^{***} (-3.18)	-0.106 ^{***} (-3.25)	-0.0126 ^{***} (-3.59)	-0.00242 (-0.71)	-0.00998 ^{***} (-6.96)	-0.00847 ^{***} (-6.08)
Top5inst	-0.629 ^{***} (-10.16)	-0.556 ^{***} (-9.76)	-0.127 ^{***} (-21.99)	-0.111 ^{***} (-20.29)	-0.0272 ^{***} (-16.73)	-0.0253 ^{***} (-15.87)
agedummy	-6.433 ^{***} (-4.09)	-6.258 ^{***} (-4.20)	0.0393 (0.25)	0.118 (0.77)	-0.178 ^{***} (-4.69)	-0.168 ^{***} (-4.52)
size	-5.482 ^{***} (-10.31)	-5.381 ^{***} (-10.72)	-0.402 ^{***} (-7.61)	-0.332 ^{***} (-6.46)	-0.195 ^{***} (-7.93)	-0.183 ^{***} (-7.61)
<i>N</i>	12876	12876	12876	12876	12876	12876
<i>R</i> ²	0.048	0.026	0.123	0.061	0.190	0.075

Panel B (of table 47)

	(1)	(2)	(3)	(4)	(5)	(6)
	trs1yr	re_rel	roa	roa_rel	q	q_rel
ceo_opt	0.309* (1.83)	0.216 (1.61)	0.0231** (2.33)	0.0215** (2.20)	0.0183 (1.46)	0.0133 (1.21)
ceo_own	0.505* (1.88)	0.410 (1.64)	0.0923*** (4.37)	0.0988*** (4.86)	0.0146* (1.88)	0.0149** (2.02)
instprc	0.0800 (1.50)	-0.0376 (-0.75)	-0.0125* (-1.89)	0.0000279 (0.00)	-0.00801*** (-3.27)	-0.00695*** (-2.89)
Top5inst	-0.554*** (-6.59)	-0.499*** (-6.29)	-0.160*** (-14.39)	-0.143*** (-13.59)	-0.0276*** (-10.48)	-0.0259*** (-10.03)
agedummy	-6.901*** (-3.14)	-6.358*** (-3.04)	0.0271 (0.11)	0.0200 (0.08)	-0.233*** (-3.84)	-0.230*** (-3.80)
eindex	-1.283** (-1.97)	-1.725*** (-2.87)	-0.337*** (-4.08)	-0.251*** (-3.16)	-0.184*** (-7.34)	-0.177*** (-7.30)
size	-2.089*** (-2.89)	-2.576*** (-3.83)	-0.370*** (-3.83)	-0.316*** (-3.34)	-0.0911*** (-3.72)	-0.0854*** (-3.73)
<i>N</i>	4347	4347	4347	4347	4347	4347
<i>R</i> ²	0.060	0.026	0.141	0.088	0.172	0.056

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

Note: This table reports the point estimates of a regression that considers options the only component of executive pay.

r_E ... return on equity; ROA ... return on assets; q ... Tobin's q ; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_opt ... CEO compensation with options only (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; eindex ... E-index; size ... log of total assets

TABLE 48
Regression results: Compensation perspective 1993 - 2005, options only

	(1)	(2)	(3)	(4)	(5)	(6)
	ceo_opt	ceo_opt	ceo_opt	ceo_opt	ceo_opt	ceo_opt
trs1yr	12.91*** (3.65)					
trs1yr_t	10.51*** (3.44)					
re_rel		13.58*** (3.30)				
re_rel_t		9.653*** (2.97)				
roa			62.93*** (2.94)			
roa_t			23.47 (1.35)			
roa_rel				50.59*** (2.69)		
roa_rel_t				34.29** (2.17)		
q					668.9* (1.67)	
q_t					862.8** (2.49)	
q_rel						465.8 (1.24)
q_rel_t						1026.6*** (3.41)
ceo_own	-0.293 (-0.02)	0.0153 (0.00)	-0.175 (-0.01)	-0.152 (-0.01)	-14.07 (-0.84)	-13.82 (-0.82)
instprc	-24.74*** (-4.46)	-24.86*** (-4.46)	-25.25*** (-4.44)	-25.82*** (-4.50)	-10.94 (-1.49)	-12.25* (-1.69)
Top5inst	-7.051 (-0.99)	-8.258 (-1.15)	-9.069 (-1.26)	-10.23 (-1.42)	18.66 (1.43)	16.14 (1.24)
agedummy	-223.4 (-1.03)	-220.6 (-1.02)	-351.5 (-1.59)	-356.2 (-1.61)	-142.8 (-0.64)	-152.6 (-0.68)

Table 48 continued

size	1352.2*** (14.10)	1354.0*** (14.10)	1299.8*** (14.07)	1296.8*** (14.10)	1398.0*** (14.65)	1392.5*** (14.75)
interlock	382.8 (0.46)	346.5 (0.42)	227.0 (0.27)	236.4 (0.29)	230.4 (0.28)	238.0 (0.29)
N	10752	10752	10752	10752	10752	10752
R ²	0.079	0.077	0.068	0.068	0.136	0.132

* p < 0.10, ** p < 0.05, *** p < 0.01; t statistics in parentheses

Note: This table reports the point estimates of a regression that considers options the only component of executive pay.

ceo_opt ... CEO compensation with options only; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 49
Regression results: Performance perspective 2006 - 2009, options only

	(1) trs1yr	(2) re_rel	(3) roa	(4) roa_rel	(5) q	(6) q_rel
ceo_opt	1.122*** (2.73)	0.919** (2.42)	0.104*** (2.77)	0.0850** (2.44)	0.0421*** (4.53)	0.0370*** (4.31)
ceo_own	-0.109 (-0.81)	-0.133 (-1.01)	0.123*** (4.84)	0.122*** (4.88)	0.0109** (2.42)	0.0105** (2.44)
bsize	-0.712 (-1.54)	-0.718* (-1.69)	-0.157*** (-2.77)	-0.176*** (-3.20)	-0.0300*** (-3.23)	-0.0317*** (-3.61)
bind	0.0150 (0.18)	0.0366 (0.47)	-0.0165 (-1.47)	-0.00943 (-0.86)	-0.000372 (-0.20)	0.000372 (0.21)
instprc	-0.114 (-1.37)	-0.0664 (-0.84)	-0.000374 (-0.04)	0.000482 (0.05)	-0.00383*** (-2.78)	-0.00329** (-2.44)
Top5inst	-0.473*** (-3.02)	-0.432*** (-2.97)	-0.189*** (-12.47)	-0.180*** (-12.54)	-0.0246*** (-10.79)	-0.0230*** (-10.54)
agedummy	3.569 (1.12)	2.527 (0.82)	0.197 (0.54)	0.115 (0.32)	-0.0862* (-1.70)	-0.0941* (-1.92)
size	-2.444** (-2.44)	-2.377** (-2.55)	0.125 (1.11)	0.132 (1.20)	-0.103*** (-5.63)	-0.0977*** (-5.53)
N	3899	3899	3899	3899	3899	3899
R ²	0.039	0.014	0.196	0.107	0.223	0.079

* p < 0.10, ** p < 0.05, *** p < 0.01; t statistics in parentheses

Note: This table reports the point estimates of a regression that considers options the only component of executive pay.

r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_opt ... CEO compensation with options only (multiplied by 1,000 for the sake of readability); ceo_own ... CEO ownership; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; bsize ... board size, bind ... board independence; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

TABLE 50
Regression results: Compensation perspective 2006 - 2009, options only

	(1) ceo_opt	(2) ceo_opt	(3) ceo_opt	(4) ceo_opt	(5) ceo_opt	(6) ceo_opt
trs1yr	3.829** (2.31)					
trs1yr_t	-0.568 (-0.43)					
re_rel		3.937** (2.29)				
re_rel_t		-1.900 (-1.54)				
roa			24.48* (1.70)			
roa_t			-15.06 (-0.88)			
roa_rel				20.86 (1.38)		
roa_rel_t				-12.07 (-0.72)		
q					443.2*** (3.14)	
q_t					-127.3 (-1.20)	
q_rel						359.8** (2.50)
q_rel_t						-59.60 (-0.57)
ceo_own	11.09 (0.63)	11.30 (0.64)	10.25 (0.60)	10.36 (0.60)	7.500 (0.44)	7.797 (0.45)
dirnbr	-52.11* (-1.70)	-53.12* (-1.73)	-52.96* (-1.71)	-52.25* (-1.69)	-48.20 (-1.55)	-46.48 (-1.50)
outb	0.482 (0.11)	0.218 (0.05)	0.221 (0.05)	0.00118 (0.00)	0.915 (0.21)	0.500 (0.11)
instprc	10.36*** (2.80)	10.27*** (2.77)	9.781*** (2.67)	9.940*** (2.71)	10.67*** (2.87)	10.97*** (2.95)
inst	11.84* (1.75)	11.10* (1.65)	11.85* (1.78)	11.66* (1.75)	16.75** (2.47)	16.39** (2.43)

Table 50 continued

agedummy	407.5 (1.12)	408.5 (1.12)	414.2 (1.13)	413.4 (1.13)	435.1 (1.19)	435.5 (1.19)
size	776.9*** (5.98)	779.2*** (5.97)	775.6*** (5.99)	774.9*** (5.98)	792.2*** (6.04)	790.4*** (6.05)
N	2275	2275	2275	2275	2275	2275
R ²	0.180	0.180	0.179	0.179	0.187	0.185

* p < 0.10, ** p < 0.05, *** p < 0.01; t statistics in parentheses

Note: This table reports the point estimates of a regression that considers options the only component of executive pay.

ceo_opt ... CEO compensation with options only; r_E ... return on equity; ROA ... return on assets; q ... Tobin's q; rel ... relative performance measure (individual performance measure - mean industry performance measure); ceo_own ... CEO ownership; bsize ... board size, bind ... board independence; instprc ... presence of institutional investors; top5tot ... shares held by top 5 institutional shareholders as a percentage of total shares outstanding; agedummy ... dummy variable equal to 1 if the CEO is older than 63; size ... log of total assets

Abstract

German

Die vorliegende Arbeit beschäftigt sich mit dem Zusammenhang zwischen dem Erfolg eines Unternehmens und der Bezahlung ihres Vorstandsvorsitzenden. Um ein möglichst vollständiges Bild dieser Beziehung präsentieren zu können, werden neben diesen beiden Variablen auch zusätzliche Größen wie etwa die Zahl der Aufsichtsräte, die Größe der Firma, der durch den Vorstandsvorsitzenden gehaltene Anteil des Eigenkapitals, sowie ausgewählte Corporate Governance Instrumente (Unabhängigkeit des Aufsichtsrates, ausgewählte Rechte der Anteilseigner) berücksichtigt. Darüber hinaus ermöglicht die Berücksichtigung dieser Variablen Aussagen über deren Effektivität als Instrumente der Einflussnahme auf die Unternehmensperformance und die Vergütung des Vorstandsvorsitzenden.

Die Analyse stützt sich auf die in ExecuComp enthaltenen Daten zwischen 1993 und 2009, insgesamt somit 23.167 Beobachtungen von 3.010 einzelnen Firmen. Aufgrund einer maßgeblichen Änderung der von Seiten der betroffenen Unternehmen zu meldenden Daten in 2005, werden die Daten größtenteils in zwei separaten Datensätzen analysiert (1993 – 2005 und 2006 – 2009). Diese Vorgehensweise bietet zudem die Möglichkeit, Zusammenhänge vor und während der Krise zu vergleichen. Beide Datensätze werden anfangs mittels einer multivariaten Regression untersucht. Später werden einzelne Komponenten der Vergütung weggelassen um Aussagen über den Zusammenhang zwischen den verbleibenden Teilen und der Unternehmensleistung treffen zu können. Im Umkehrschluss lassen sich so auch Rückschlüsse über die Effektivität der nicht berücksichtigten Komponente ziehen.

Obwohl die Ergebnisse dieser Studie keinen Anspruch auf Kausalität oder soziale Angemessenheit der Zusammenhänge erheben können, ist es sehr wohl möglich Rückschlüsse über die Effektivität der in den USA gebräuchlichen Management Vergütung, sowie ihrer Komponenten zu ziehen. Darüber hinaus regen die Ergebnisse zu einer kritischen Reflexion von oft als positiv wahrgenommenen Unternehmenscharakteristika, wie der Unabhängigkeit des Aufsichtsrates und der Anwesenheit großer Anteilseigner, an.

English

The paper at hand deals with the relationship between firm performance and CEO compensation. To present this relationship as thorough as possible it considers additional variables such as the number of seats on the board, firm size, and CEO equity ownership as control variables. Moreover, it analyses the interrelations between performance and CEO compensation on one hand, and typically corporate governance related variables such as board independence and certain shareholder rights on the other hand. Thereby it is possible to draw conclusions over the effectiveness of those variables in influencing corporate performance and CEO compensation.

The analysis of this work includes data from the ExecuComp database within Standard and Poor's Compustat between 1993 and 2009, in total 23.167 observations of 3010 separate firms. Due to a major change in disclosure requirements made by the SEC in 2005, which in turn affected the data collected in ExecuComp, most of the analysis is conducted on two subsamples (1993 – 2005 and 2006 – 2009). Splitting the dataset in those two subsamples additionally provides the opportunity to observe the relationships before and during the crisis. In a first step both subsamples are analyzed using a multivariate regression. Afterwards, in order to facilitate statements about the relationship between firm performance and certain components of CEO compensation, CEO pay is calculated in different ways (i.e. components of interest are omitted). Thereby I am able to draw conclusion about the effectiveness of the remaining components and, in turn, about the effectiveness of the omitted one.

Although the results of this paper cannot raise any claim about causality or social acceptability of the observed relationship between firm performance and CEO compensation, they allow to draw meaningful conclusions about the effectiveness of prevalent CEO compensation practices in the U.S., and about the effectiveness of a selective set of components of CEO pay. In addition, they induce a critical reexamination of corporate governance practices that are nowadays oftentimes perceived as to have a positive effect on performance, such as to have an independent board of directors.

Curriculum Vitae

Angaben zur Person

Nachname(n) / Vorname(n)	Gunacker Manuel, Bakk.
Adresse	Schweinern 47, A - 3123 Obritzberg (Österreich)
E-Mail	manuel_gunacker@gmx.at
Staatsangehörigkeit	Österreich
Geburtsdatum	30. Mai 1985

Schul- und Berufsbildung

Zeitraum	Oktober 2009 - September 2012
Bezeichnung der erworbenen Qualifikation	Magister / Master of Science
Hauptfächer/berufliche Fähigkeiten	Betriebswirtschaft mit Spezialisierung in Corporate Finance und Controlling
Name und Art der Bildungs- oder Ausbildungseinrichtung	Universität Wien Dr. Karl-Lueger-Ring 1, 1010 Wien (Österreich)
Stufe der nationalen oder internationalen Klassifikation	Master of Science
Zeitraum	Januar 2011 - April 2011
Hauptfächer/berufliche Fähigkeiten	Business
Name und Art der Bildungs- oder Ausbildungseinrichtung	Carleton University 1125 Colonel By Drive, Ottawa, ON, Canada
Zeitraum	Oktober 2006 - Juni 2009
Bezeichnung der erworbenen Qualifikation	Bakkalaureus rer. soc. oec.
Hauptfächer/berufliche Fähigkeiten	Betriebswirtschaft
Name und Art der Bildungs- oder Ausbildungseinrichtung	Universität Wien Dr. Karl-Lueger-Ring 1, 1010 Wien
Stufe der nationalen oder internationalen Klassifikation	Bachelor of Science
Zeitraum	September 1999 - Juni 2005
Bezeichnung der erworbenen Qualifikation	Matura
Hauptfächer/berufliche Fähigkeiten	Maschinenbau
Name und Art der Bildungs- oder Ausbildungseinrichtung	HTBLuVA St. Pölten (Höhere Technische Schule) Waldstraße 3, 3100 St. Pölten
Stufe der nationalen oder internationalen Klassifikation	Abitur

Berufserfahrung	
Zeitraum	01.August 2012 laufend
Beruf oder Funktion	Group Treasurer
Wichtigste Tätigkeiten und Zuständigkeiten	Fremdwährungsmanagement (Hedging, Berechnung von Projektkalkulationskursen) Sicherung der kurzfristigen Liquidität, Cashmanagement Bankkontenverwaltung Rohstoffsicherung Verwaltung der Cash Pools Financial Reporting Kredit- und Wertpapieradministration
Name und Anschrift des Arbeitgebers	Andritz Hydro GmbH Penzinger Straße 76, 1140 Wien (Österreich)
Tätigkeitsbereich oder Branche	Intercompany Banking
Zeitraum	06. Juni 2011 - 31.Juni 2012
Beruf oder Funktion	Controller
Wichtigste Tätigkeiten und Zuständigkeiten	Planung: Erstellung von Budgets und quartalsweisen Forecasts monatliches Ist-Reporting sowie ad-hoc Reports Analyse und Plausibilisierung von Abweichungen in Soll/Ist Vergleichen Kostenmonitoring und Rechnungsprüfung Personalcontrolling Administration von Programmen zur Effizienzsteigerung / Kostenreduktion sonstige kaufmännische Prozesse: Leistungsverrechnung, Umbuchungen, Bestellwesen
Name und Anschrift des Arbeitgebers	Siemens Personaldienstleistungen GmbH Siemensstraße 90, 1210 Wien (Österreich) Beschäftigter: Siemens AG Österreich
Tätigkeitsbereich oder Branche	Energy Fossil Power Generation
Zeitraum	08. September 2009 - 31. Mai 2011
Beruf oder Funktion	Werkstudent in der Personalverrechnung
Wichtigste Tätigkeiten und Zuständigkeiten	Reiseabrechnungen Datenpflege; insbesondere Entwicklung und Implementierung eines Systems zur Einspielung aktueller Währungskurse Erstellung von Dienstzeugnissen Mitarbeiterstammdatenerfassung
Name und Adresse des Arbeitgebers	Siemens Personaldienstleistungen GmbH Siemensstraße 90, 1210 Wien (Österreich)
Tätigkeitsbereich oder Branche	Personalbereitstellung, Personalrecruiting, Personalbetreuung
Persönliche Fähigkeiten und Kompetenzen	
Muttersprache(n)	Deutsch
Sonstige Sprache(n)	Englisch - <i>verhandlungssicher in Wort und Schrift</i>
IKT-Kenntnisse und Kompetenzen	gute Kenntnisse in: Windows 95 - 7; Office 95 – 10, DPW, SAP, 360T Basiskenntnisse in: STATA, 3D-Konstruktionsprogramme, SPS und C++