STOCKHOLM SCHOOL OF ECONOMICS
Department of Finance
649 Degree Project in Finance
Spring 2015

INSTITUTIONAL INVESTORS AS DRIVERS OF INCENTIVE COMPENSATION

The Development of Institutional Investors' Effect on Structure and Level of Executive Compensation during the 21st Century

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Abstract
This study aims to examine the effect institutional investors have on compensation schemes within their holdings. The model constructed assumes both the structure and level of compensation to be dependent on institutional investor ownership. By first using a Tobit model and verifying the results with an instrumental variables regression, the study demonstrates with a high degree of certainty that institutional investors prefer and drive up both levels of incentivized structures and incentive compensation. The size of the effect has increased during the 21st century with a drastic regime shift between 2005 and 2006. The influence of institutional investors is subsequently fairly steady, showing no signs of changes during the financial crisis. It is clear that institutional investors drive up both levels of incentive compensation and the fraction of total compensation that is incentivized. Further research into the identified regime shift and drivers within institutional investment firms are suggested.

Keywords: executive compensation, incentive compensation, institutional investors, financial crisis, Tobit

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Date submitted: May 17, 2015
Date examined:
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* We would like to extend a special thanks to Markus Senn for his support and insightful comments.

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1. INTRODUCTION

1.1. Background

Executive compensation has during the last half century undergone great changes (The Guardian, 2005). Incentive programs as well as executive compensation levels have increased dramatically, the determinants of which are still largely unknown. Possible explanations from a multitude of fields have been provided. It has been hypothesized that it is due to shifting relationships of power, increased competition or as an attempt to battle agency conflicts.

In the after-math of the global financial crisis, when the United States (U.S.) housing bubble burst resulting in decline in credit availability and investor confidence, criticism of corporate governance mounted. Though the primary focus of reform and criticism has been on the complex interplay of policies causing the housing bubble, increased attention was also directed at companies not operating in financial markets but in physical consumer markets, physical business markets and non-physical markets. Together, the popular outrage, perceived excessive risk-taking and changing macroeconomic environment conspire to alter the principles by which firms act (United Nations, Corporate governance in the wake of the financial crisis, 2010; Pascual, 2008; Walker, 2009).

This could conceivably translate into changed corporate governance policies with regard to executive compensation as investors endeavor to rein in managers in an effort to adapt. This change in institutional investor driven corporate governance strategy could conceivably be observed both directly and indirectly. It could be observed directly by observing changes in compensation, shifting usage and intensity of bonuses, long-term incentive plans, employee benefits, etc. Indirectly it would be observed by changing investments patterns, in which holdings are chosen based on a common understanding of corporate governance and executive compensation schemes.

An institutional investor is generally an organization which pools money to invest in for example securities and real property, but could also be an operating company setting aside funds to invest outside of its core business. Typical investors include banks, insurance companies and investment funds. Institutional investors have due to their holdings voting rights enabling them to potentially shape corporate governance issues and trends.

Institutional investors are therefore likely to be in the fore-front of this endeavor of pressuring firms to adapt due to their desire and ability to swiftly exert considerable influence. The roots of this comparably significant influence are multifaceted. Primarily it is a matter of

market capitalization; since 1950 public equity owned by institutional investors in the US has increased precipitously from low levels of 7% to approximately 67% in 2010. Institutional investor ownership is even more significant when looking at the 1.000 largest firms in the US, reaching approximately 73%. It is thereby likely that institutional investors now have a larger capacity to influence issues of corporate governance. Furthermore, an institutional investor is by design more focused in its actions compared to a dispersed host of individual investors as it acts as a pooled-investment vehicle, entrusted with representing and acting in the name of its owners and customers. There is also the issue of immediacy and timing of impact. Trends do not immediately permeate the populace, especially not with regard to their investing strategies, as many perhaps do not look over their holding as regularly and routinely as professional and institutional investors (Aguilar, 2013).

This thesis will therefore try to answer the question if decisive changes in the macroeconomic environment, i.e. the global financial crisis of 2007-2008, caused institutional investors to change their supported incentives schemes.

1.2. Purpose and Relevance

The determinants of executive compensation remain largely unknown though there seems to be a trend of both increasing compensation and focus on incentives programs. By studying the subject the hope is to illuminate the influence exerted by institutional investors on executive compensation with regard to the level of influence and changes observed in a turbulent and transformative period in history. Identifying both the timing and the drivers of change, be they either trend breaking or trend intensifying changes, could help further academia's attempts, both normative and descriptive, to map corporate governance issues.

1.3. Outline

This study will begin by explaining the theoretical framework surrounding the concepts of interest, which include a ground up examination of the theoretical work which has led to academia's current understanding. After constructing the necessary framework the analysis is divided into four main parts, each segment aimed at carrying the analysis forward with the intention of illuminating the diverse intricacies of the subject to draw sound conclusions and test the validity of the hypothesis, followed by a section dedicated to results and implications. These four parts are hereafter briefly outlined.

1. First, an overview of the statistics is presented. These descriptive statistics are shown to be indicative and support the necessity of conducting the regression analyses to determine

if there is indeed a correlation between the presented data. This part also contributes as it quantitatively describes the main features of the data, adding a quantitative component to the previously presented theoretical framework.

2. Consequently a statistical analysis of the influence wielded by institutional investors on executive compensation is undertaken. The relationship between the two is studied in attempt to mirror and support previous studies which have concluded that such a relationship exists. A multitude of measures are taken to ensure that the correlation is properly disentangled from other effects previously uncovered. Both level and incentive compensation will be studied throughout.
3. The third part of the analysis is concerned with examining causality and endogeneity. An instrumental variables regression is conducted aimed at discerning whether the relationship holds in the face of endogeneity. Secondly, lagged regressions directed at uncovering irregular causal relationships between variables are executed.
4. In the subsequent fourth part of the analysis the relationship between the variables is studied with the added interest of discerning trends and trend-breaking tendencies. Previously utilized measures to ensure statistical significance and correctness are repeated.

The ensuing results are then discussed; topics of discussion include the paper's over-all weaknesses and robustness, possible explanations and implications of the results, and their significance to academia. In the last section, the study also offers suggestion of future topics of study which might further the efforts of understanding institutional investor ownership, executive compensation and corporate governance issues.

1.4. Expected Results

With the advent of institutional investor ownership and its rise to significance, monitoring and incentivizing as a means of aligning disparate interest also became significant. This study begins by hypothesizing that there is a continuing and increasing need to monitor and consequently correctly incentivize managers. Thanks to technological and theoretical advancements, monitoring has become more frequent, effective and cheap. However there needs to be a concerted effort to execute strategies aimed at aligning interests through executive compensation.

With increased competition in globalized financial markets and the means necessary to enact change and influence strategy present, it is plausible to hypothesize an increasing trend where institutional investors have an ever increasing effect on the mechanisms of incentive compensation. It therefore follows that there should be an increasing trend with regard to the influence wielded by institutional investors in response these.

Furthermore, changing perceptions in the public as to the perceived operation and goal of institutional investors might change. Trends relating to activism and fads might exacerbate the changed relationships further. The financial crisis of 2008 is also of interest in this regard. It is possible that the crunch lead to a prioritization of core business over executive compensation. Thereby we could expect institutional investors to target more pressing concerns during this period leading to a weaker relationship throughout the time-period. Alternatively, changed incentives might have been concluded to be a remedy and efforts to align interests intensified due to the crisis.

The determinants of compensation and incentivizing schemes have been theorized upon with a host of explanations being identified (Chung & Pruitt, 1996). The explanations put forward include the over-arching concept of operating environment. This concept contains factors such as operating risk, firm value and ownership structure. Macro-economic changes and shocks do in this framework invariably alter the determinants of executive compensation. This leads to the hypothesis of institutional investors changing their proposed compensation schemes in the light of a changing business environment, i.e. the financial crisis of 2008.

The hypothesis can thereby be summarized in the following way. (1) Institutional investors influence executive compensation, (2) this influence is increasing over time, (3) institutional investors pushed for changed compensation schemes as a result of the financial crisis. Evidence of such a shift is expected to be found within the studied time period.

2. THEORY

A modern corporation is comprised of diverse units, primarily shareholders, managers and workforce i.e. stakeholders, which are compelled to work in concert. Stakeholders are in essence the groups necessary for the continuation of operations but also the groups which stand to gain or lose from such operations (Brealey & Myers, 2003). The conflict between these groups can largely be summarized as a conflict of interest, where interest and actions of groups are not clearly aligned. Thereby, expectations, gain and losses are not commonly shared among the dispersed factions.

Jensen and Meckling (1976) examined the conflict between managers and shareholders and subsequently argued for means of solving what is known as the agency problem. It is defined as "a contract under which one or more persons [principal(s)] engage another person [the agent] to perform some service on their behalf, which involves delegating some decision making authority to the agent". They conclude that the conflict arises due to differences in how maximization of wellbeing is achieved: Shareholders strive to increase company value while managers aim to increase their own wealth and influence while minimizing effort. Several theories have surfaced, both normative and descriptive in form, to explain the conflict and its resolution. These include tournament theory (Lazear & Rosen, 1981), equity theory (Gerhart, Minkoff & Olsen, 2005) and agency theory (Jensen & Meckling, 1976).

The apparent solution in many of these theories revolves around aligning the interest of the two groups, where much of the debate is centered on compensation as a means of achieving this alignment. Compensation is theorized to accomplish this by creating incentive schemes for managers which to some extent mirror company performance and thereby shareholder wellbeing, leading to actions which are consequently profitable for both interested parties. The relevance of the subject continues to be high, as both economic theory and empirical studies continuously shows that incentive pay contributes to firm performance. Studies which find such a positive relationship are for example Murphy (2002).

However, in both practice and theory the determinants of executive compensation are still debated, this has led to both practitioners and theoreticians suggesting relationships between executive compensation and other factors. One such factor is institutional investor ownership. This factor is of special interest partly due to the large influence wielded by institutional investors but also due to its relatively clear-cut definability and measurability, as shown by the forthcoming methodology and data analysis.

The weight of compensation and more specifically incentive schemes has through academia and practitioners been heralded as one of the tools with which to solve the agency conflict. The work of incentivizing and thereby closing the gap in disparate interest has fielded exciting and occasionally self-evident results.

Incentive effects have been shown, as one would expect, to differ across different compensation schemes (Holmstrom, 1979; Shavell, 1979), some academics even argue that it is not a matter of *how much* but of *how* a company pays its executive which relates to increased firm performance (Jensen & Murphy 1990). Furthermore, fund managers have publically pushed for more active incentives programs linked to corporate performance (Smith, 1996; Gillian & Starks, 2000). These two seemingly connected phenomenon, incentive effects and institutional investor owners as proponents of incentivizing compensation structures, thereby becomes an engaging topic of study.

A previous study was conducted on the subject of institutional investor ownership and executive compensation in 2003 (Hartzell & Starks). The study sets out to determine the relationship between executive compensation and institutional investor ownership by examining the top five executives in each holding. The data gathered is consequently regressed on the institutional investor ownership in said company. A host of control variables are used as to disentangle the effect. They find that executive compensation and institutional investor ownership are indeed related. Their study concludes that pay-for-performance is positively correlated and the level of compensation is negatively correlated to a measure of institutional investor ownership. The alternate explanation that both effects arise simultaneously and endogenously is discarded after examining the timing of the effects and conducting an instrumental variables analysis. It is thereby decisively concluded that a relationship exist where changes in institutional investor ownership leads to subsequent changes in executive compensation, as was hypothesized.

Executive compensation has undergone great changes during the last four decades. From the 1970s and onward the compensation and its diverse elements have increased. In chronological order these included seemingly precipitous increases to perquisites, parachutes, option awards and awards of restricted stock (Murphy, 2011). Furthermore, the expansion of executive compensation was considerably larger than the increases to real wages of the average production worker. The ratio of pay increased from 2,5 in 1970 to nearly 90 in 2000, and to a ratio of 500 if stock options are included (Bureau of Labor Statistics n.d.). Simultaneously there

was a great increase in institutional investor ownership where the percentage of institutionally controlled equity soared.

These facts conspire to constantly change the landscape in which investors and firms conduct corporate governance, and set executive compensation schemes, as changes in the macro undoubtedly pressures individual firms to adapt. The relationship between institutional investors and executive compensation has in this regard not been studied since the beginning of the century when Hartzell and Starks conducted their study, more than ten years ago using data from more than 20 years ago. During this time we have seen globalization pick up its pace, extraordinary growth in the developing world as well as an unprecedented financial crisis. The prevailing theories and data are outdated though a theoretical framework exists on which the forth-coming analysis will start and conceivably generate thought-provoking conclusions and become a fruitful part of academia's current understanding of the subject.

3. DATA AND METHODOLOGY

3.1. Datasets and variables

The data used in this study consist of 62.215 observations of executive compensation spanning 13 years (2001-2013) in the U.S. There is consequently data for circa 1500 companies per year during the period. The sample was selected by virtue of its extensiveness; a byproduct of this selection came to be an apparent compatibility of variables necessary for analysis. Additional efforts into data collection would only marginally increase significance of results due to the already sizable sample. The sample was deemed sufficient and such efforts were consequently disregarded. America as a base for the study was chosen considering the size and regulations of its financial market, assuring both extensiveness and availability of data.

This paper will throughout focus on two different measures of incentive compensation:

- Incentive compensation level
- Compensation structure

Incentive compensation level is the absolute amount of incentive compensation paid out to an executive during a year. Compensation structure is the fraction of total compensation that is incentivized and will henceforth be referenced to as simply compensation structure. It is calculated as incentive compensation level divided by the total compensation paid out during a period.

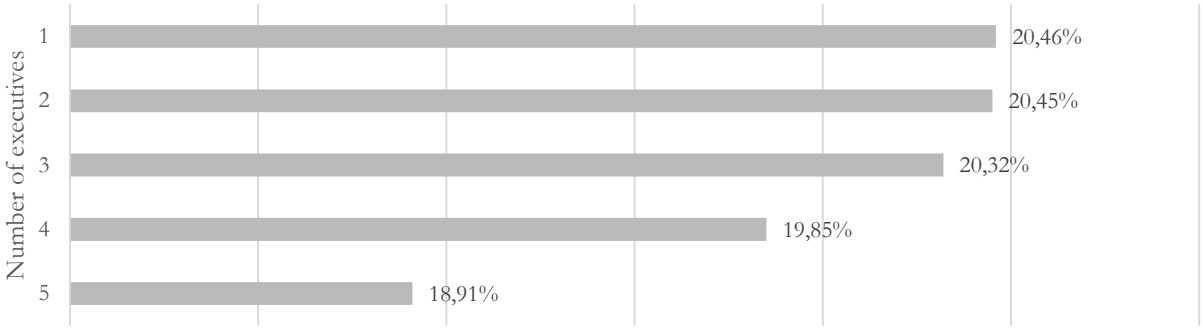
3.1.1. Executive compensation

Data on executive compensation is retrieved from the Execucomp dataset in S&P's COMPUSTAT database. The dataset contains information on several measures of compensation in U.S. companies quoted by S&P. For each company, compensation data is available for up to five top executives. Where data on five executives are available they are also utilized, where fewer are reported, as many as possible are used. Figure 1 presents the distribution of number of reported executive per company.

Figure 1

Distribution of executive data per firm

The percentage of firms with the different number of executives for which data is available.



All compensation is quoted annually from 2001 to 2013 and is based on values reported by the companies themselves to the Securities and Exchange Commission (SEC). This thesis will in the majority of the analysis divide total compensation into three subgroups:

- Direct compensation: Regular salary combined with bonus payments
- Incentive compensation: Stock and option awards, changes in pension, increase in value from non-qualified deferred compensation as well as payments from non-equity incentive programs.
- Other compensation: Other alternative compensation types.

These three subgroups are utilized since this analysis focuses on the relationship between all types of incentive compensation, rather than types within the subgroups. The variables used to describe the different compensation types are presented in Table 1. The table presents a broad and comprehensive introduction to types of compensation, how they are handled, and their assigned categories.

Table 1

Compensation variables

Explanation of the different types of compensation used in this study. The types are presented with the variable name, then categorized into either direct, incentive or other compensation. The description of the variables provide data information such as how the variables are retrieved or calculated as well as provides examples to easier understand what they contain.

Variable	Category	Explanation
Salary	Direct	Accumulated salary paid during the year
Bonus	Direct	Total amount of bonus paid (not earned) during a year. Bonus is considered a type of direct compensation since it is rewarded after an achievement, as opposed to incentive plans that are established in advance to incentivize future performance.
Option grants	Incentive	Value of option-like awards consisting of e.g. options and stock appreciation rights. The value is based on the values in the financial reports to the income statement and capitalizations in the balance sheet), i.e. charges to shareholders and not the fair value on the day of the actual award.
Stock grants	Incentive	Value of stock grants consisting of e.g. restricted stock, restricted stock units, phantom stock, phantom stock units, and common stock equivalent units. The value is based on the values in the financial reports (charges to the income statement and capitalizations in the balance sheet), i.e. charges to shareholders and not the fair value on the day of the actual award.
Non-equity compensation plans	Incentive	Value of non-equity incentive plans, i.e. future cash payments. The amount is presented for the year it was earned by meeting set up criteria, not the year it was actually paid.
Pension changes and non-qualified deferred compensation earnings	Incentive	Changes in the value of pension plans and increases in value stemming from deferred compensation plans (deferred compensation is a program that allows high income takers to defer income for tax purposes while enjoying non-taxable financial growth).
Other compensation	Other	Value of all other types of compensations as reported in financial reports, e.g. life insurance premiums, discounted stock purchases, tax reimbursements, signing bonuses.

3.1.2. Institutional investor ownership

Data on size and value of holdings are based on institutional investors' 13-f filings and are collected from the Thomson Reuters database where these are collapsed into one dataset. 13-f filings is a form that every investor in the U.S. that exercises investment discretion over $100 million or more in securities uses to report on its holdings to the SEC. As a consequence, the dataset only consists of investors that are likely to be sophisticated and powerful enough to have actual influence over their holdings. The filings include, for example, number of shares held, value of the shares held, and a Manager ID identifying the manager responsible for the particular holding. In essence, the 13-f filings provide vast possibilities to calculate institutional investors' wealth and potential influence over their holdings.

For each company in the sample, two groups of institutional investors are analyzed: the top five largest institutional investor owners and total institutional investor owners. The rationale is that owners controlling a non-negligible fraction of a company, compared to smaller owners, will be more prone to affect and influence said company and hence its compensation structure, be they institutional investors or not.

3.1.3. Additional data

Additional data consist of stock information such as share prices, monthly returns as well as shares outstanding and common shares turnover. This data is collected from S&P's COMPUSTAT where monthly information on all stocks in the S&P indices is available. The data is collapsed from monthly to annual data to make it compatible and functional in the subsequent regressions.

Shareholder wealth (or shareholder value) is a crucial driver for incentive compensation. It is defined as the sum of all management decisions during a year, i.e. its ability to increase earnings, dividends and cash-flow. It can include all types of strategic decisions, both long-term and short-term as well as official decisions and informal ones. Subsequently, it is in fact a qualitative measure; it can only be approximated with absolute quantitative values. In a perfect, frictionless market, shareholder wealth equals the share price plus paid out dividends. This would be the effect of all available information regarding the company and management decisions being reflected in valuation. However, due to inefficiencies in the market share price can only approximate shareholder wealth in a quantitative model. In this study it is defined as the return during a year on the market value on the outstanding equity in the beginning of the year.

3.2. Descriptive statistics

3.2.1. Executive compensation

In Table 2, descriptive statistics for executive compensation is summarized. As illustrated, the average direct compensation for executives within the firms in the sample is approximately $703.000 per year, with stock awards constituting the majority of the total compensation. However, the standard deviation is fairly large at more than $1 million. Interesting to notice is that in all compensation categories except for direct compensation, the lowest 10 percentile is at $0 (except for other compensation which is at a mere $3.360 per year).

Table 2

Executive compensation statistics

Descriptive statistics of the different types of executive compensation. Some variable names are shortened for the sake of simplicity as they will be continuously in the following parts of this study.

	Mean	Median	Standard Deviation	10%	90%
Direct compensation (Salary + Bonus)	702,70	486,24	1037,91	237,97	1250,00
Stock Awards	593,11	30,25	2278,58	0,00	1542,84
Option Awards	342,86	0,00	1367,80	0,00	872,73
Non-Equity Compensation	349,69	0,00	927,71	0,00	941,54
Changes in Pension	138,22	0,00	599,69	0,00	288,33
Other Compensation	146,63	31,31	821,22	3,34	245,90
Total Compensation	2273,20	1135,83	3983,62	341,22	5127,52

3.2.2. Levels and development of compensation structure

Additional descriptive statistics worth considering is the development of the different types of compensation within firms. To evaluate this, medians of the different types of compensation are used and analyzed per year. Means (averages) is often a valuable explanatory factor; however it is disregarded due to the large standard deviation, as shown in Table 3. This is a result of the previously stated fact that many firms do not employ incentive compensation programs, while others have very extensive programs over-shadowing other forms of compensation.

Table 3

Compensation levels (mean and standard deviation)

The average levels of compensation with standard deviation, during the years 2003-2013, split into categories based on the nature of compensation.

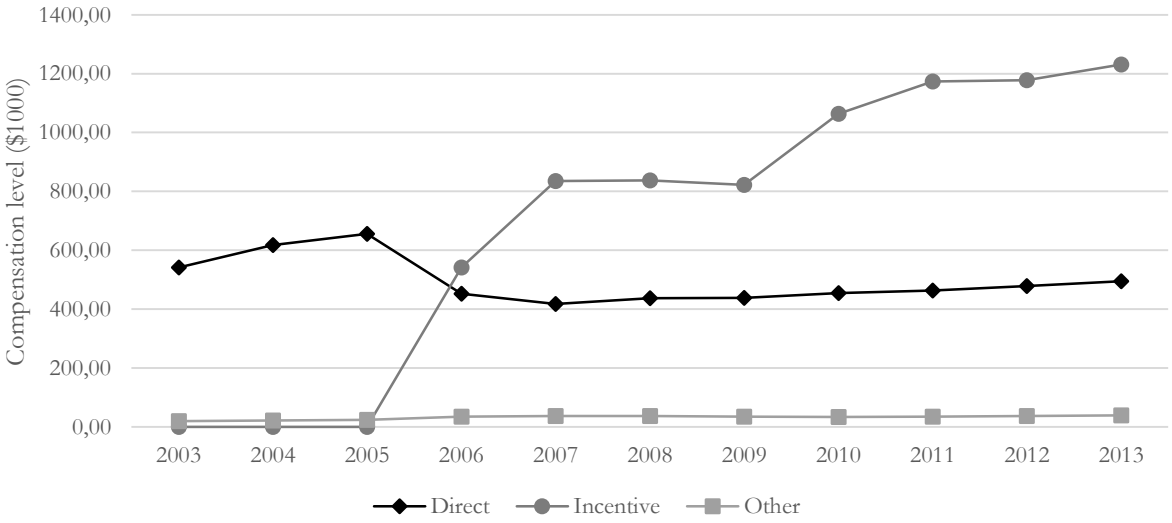
	Direct		Incentive		Other	
	Mean	Std.	Mean	Std.	Mean	Std.
2003	803,62	911,37	0,00	0,00	123,46	585,76
2004	939,90	1198,57	0,00	0,00	131,62	566,25
2005	1007,68	1299,67	0,00	0,00	141,78	785,74
2006	667,64	1036,51	1623,67	3266,03	190,59	1899,65
2007	598,25	1203,77	2019,59	3540,88	155,36	680,16
2008	602,08	1605,72	1942,71	3504,78	149,72	530,72
2009	582,70	645,42	1820,07	3156,94	138,88	667,38
2010	619,32	659,55	2233,19	3733,85	151,40	669,28
2011	620,94	705,72	2454,98	6638,37	136,58	519,42
2012	625,16	778,39	2442,61	4289,03	147,74	511,55
2013	633,28	612,52	2311,83	3298,21	169,16	879,06

Medians constitute a better measurement of compensation per year. As illustrated in Figure 2, incentive compensation has increased significantly during the last decade. Direct and other compensation are also increasing, but not as notably as incentive compensation.

Figure 2

Compensation levels (median)

Median levels of compensation during 2003-2013. Divided into groups based on the nature of the compensation. Medians are used due to large standard deviation of mean. The table with the data is presented in Appendix 1.



Although both the incentive compensation average and median are presented as equal to zero during the years 2003-2005, this does not mean that incentive compensation was non-existent, because it most certainly did exist. In the case of the median, the number of executives who received no incentive compensation was larger than that of those who did. Furthermore, this does not necessarily mean that more than half of the executives in the sample did not have access to incentive programs or that they were not enrolled in such, it plainly states that there was no incentive pay-outs. With the mean, the latter point is still valid, but in these cases the numbers are approximately zero, but are presented as such due to the fact that numbers are presented with only two decimals.

3.2.3. The different types of incentive compensation

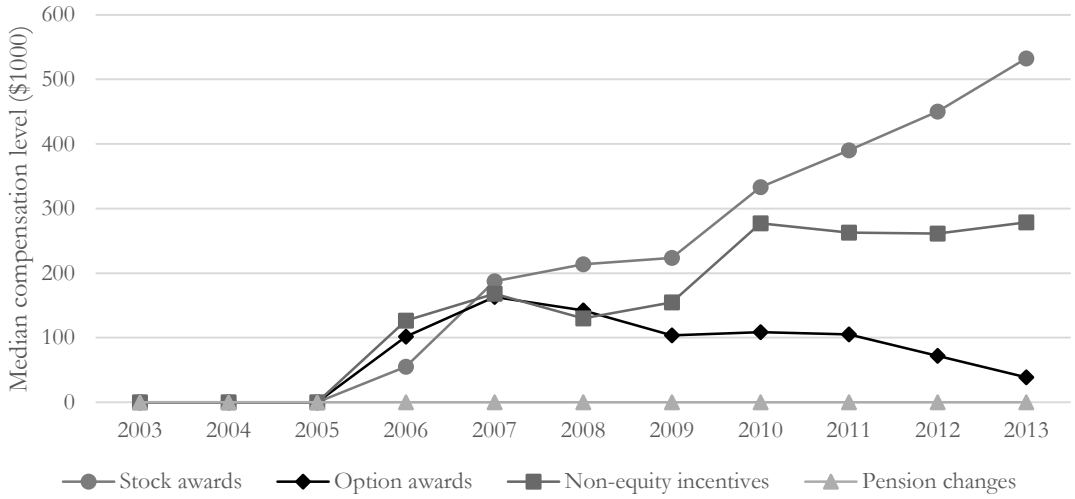
Other interesting data adding weight and insight in to the subject include the different types of incentive compensation. Figure 2 shows that incentive compensation has grown increasingly popular as a means of rewarding executives' performance – and indirectly punish them for bad performance by not paying them. The final descriptive statistics that will be evaluated in this section is the relationship between the different types of incentive compensation. This is illustrated in Figure 3 (and Appendix 2) where clear patterns are easily discernible. Notice that option awards has decreased in popularity during the past years. This is interesting as Hartzell and Starks (2003) used option awards as the only measure of incentive compensation in their study. Narrowing the scope to such a degree would in the light of these findings be a misleading method to evaluate incentive compensation in its entirety. The methodology therefore utilized all incentive compensation types as measures rather than an approach solely utilizing option awards.

Stock awards and non-equity incentive programs have grown increasingly popular while pension changes and increase in value from non-qualified deferred income have remained very low. As illustrated, stock awards are seemingly still increasing in popularity while non-equity incentive programs seem to have flattened out during recent years. Stock awards are evidently the most popular means of incentive compensation as presented in Table 2, it is also the fastest growing.

Figure 3

Different types of incentive compensation

Development of the different types of incentive compensation between 2003 and 2013. The table with the data is presented in **Appendix 3**



3.2.4. Investor and firm statistics

Table 4 provides summary statistics for the companies in the sample, presented as holdings in the Thomson Reuters dataset and employers in Execucomp. The average market capitalization is approximately $8,8 billion while the median score is considerably lower, $1,9 billion. This difference stems from the fact that the dataset contains more small-cap companies. Furthermore, annual returns average and median are approximately 16%. The average of institutional investor ownership in the sample companies is around 75% with the five largest institutional investors holding barely 30%. These figures closely resemble total market make-up as presented previously. The percentage of institutional investor ownership has remained fairly stable during the entire period studied. Annual turnover and shares outstanding are presented as number of common shares.

Table 4

Investor and firm statistics

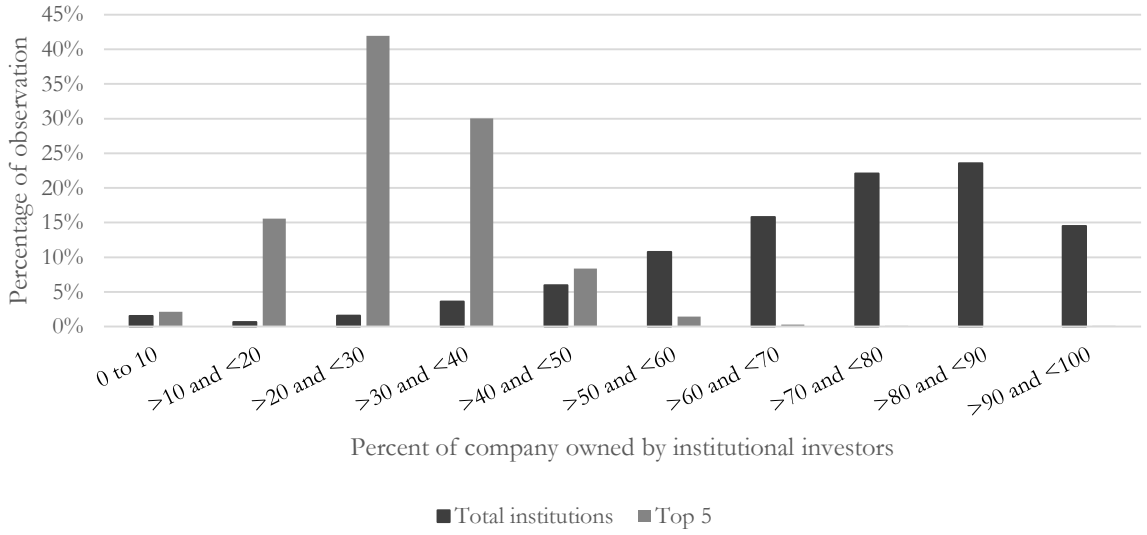
Descriptive statistics for institutional investors and firm characteristics. Market capitalization is quoted in million USD, share turnover and shares outstanding in million shares and return, institutional investor ownership and top 5 institutional investor ownership are quoted in percent.

	Mean	Median	Standard Deviation	10%	90%
Market Capitalization ($M)	8820,00	1860,00	28700,00	312,00	17300,00
Return (%)	16,84	16,22	45,57	-29,79	61,10
Shares Outstanding (M)	230,00	67,80	691,00	19,20	444,00
Shares Turnover (M)	511,00	149,00	1340,00	25,20	1140,00
Institutional investor ownership (%)	73,06	76,29	21,02	45,88	95,77
Top 5 Institutions (%)	28,36	27,88	9,91	17,00	40,29

Figure 4

Distribution of percent owned by institutional investors

The figure shows the distribution of equity in percent held by institutional investors. The x-axis describes ranges of percent owned and the y-axis is labeled with the percentage of all observations that fit into a certain range. Both the distribution of percentages owned by all institutional investors and that of the five largest are presented.



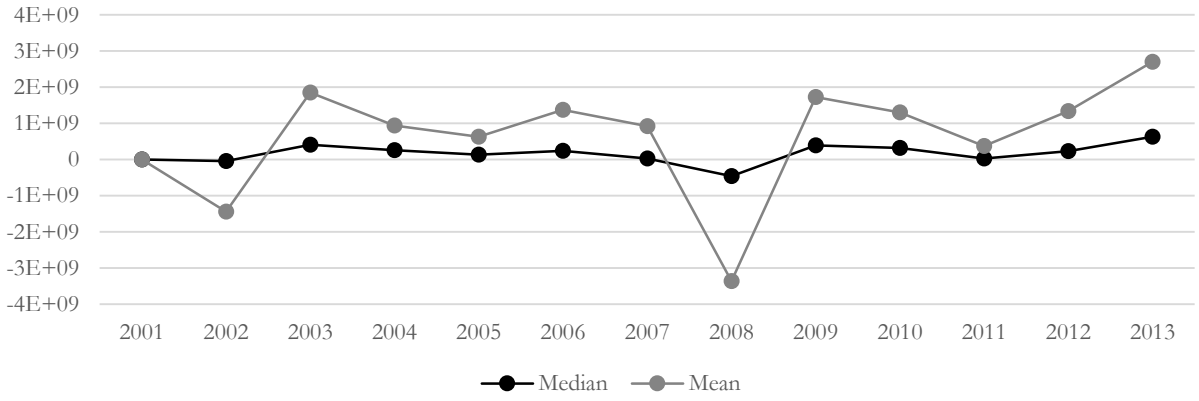
3.2.5. Shareholder wealth

The yearly changes in shareholder wealth are presented in Figure 5. Since the standard deviation of the mean is large, medians provides better grounds for describing the trend. However, as can be seen in the graph in Figure 5, they both follow the same trend even if the mean shows stronger fluctuations due to extreme outliers in the data.

Figure 5

Change in shareholder wealth

Medians and means of change in shareholder wealth during the studied period, both tabulated and illustrated in a graph. Change in shareholder wealth is defined as the year's return on the market value of outstanding equity in the beginning of the year.



Notable deteriorations in the mean are identified in 2002 and 2008. Shareholder wealth does in a way reflect the market index as can be suggested by Figure 5, with contractions possibly connected to the IT crash in 2002 and the financial crisis in 2008.

3.3. Methodology

3.3.1. Tobit model explained

To analyze the relationship between institutional investor ownership and executive compensation, a Tobit model is employed. The model builds on the assumption that an observable variable y_i is equal to an unobservable variable y_i^* in this way:

$$y_i = \begin{cases} y_i^* & if\ y_i^* > 0 \\ 0 & if\ y_i^* \leq 0 \end{cases}$$

The latent variable is linearly dependent on an independent variable or vector x_i via a parameter β. The model also includes an error term that is normally distributed, with the intention of capturing random influences on the relationship. The model can be written as follows:

$$y_i^* = \beta x_i + u_i,\ \ u_i \sim N(0, \sigma^2)$$

Tobit models allows for the possibility of censoring the dependent variable. Variations of the Tobit model can be produced by changing how input data is censored. These different methods of censoring values are named Type I, II, etc. The procedure to use censoring and Tobit models is fairly common in econometrics where Type I Tobit and Type II Tobit are the most frequently used.

3.3.2. The model used

The model used in this study is a Type I Tobit with a lower censoring limit at the standard value of zero. Using zero as the censoring level is done for two primary reasons:

- Some companies do not employ incentive compensation programs at all, making the data incomplete at points with e.g. missing values. By having a lower censoring level at zero, all missing values will be treated as zeroes.
- The model is based on pay-per-performance with change in shareholder wealth and institutional investors' ownership as the main variables. While change in shareholder value can be both negative and positive, such is not the case with incentive compensation – or any type of compensation. Therefore, the Tobit model, specifically with zero as the censoring level, is used to ensure that the practical relationship is not underestimated if there are negative values in independent variables.

The model is constructed as follows:

$$\begin{aligned} Incentive\ compensation = \quad & \beta_1 \Delta(shareholder\ wealth)_{t-1} \\ & + \beta_2 \Delta(shareholder\ wealth)_t \\ & + \beta_3 (institutional\ investor\ ownership)_{t-1} \\ & + \beta_4 (market\ capitalization)_{t-1} \\ & + \beta_5 (Tobin's\ Q)_{t-1} \\ & + Constant \end{aligned}$$

The model will examine both level of incentive compensation and compensation structure, i.e. incentive compensation as a fraction of total compensation. Both measures will be tested to check for institutional investor influence on the size of incentive compensation and potential biases with regard to incentive compensation.

Institutional investor ownership as a percentage of the total amount of shares outstanding is the key factor with which a statistically significant relationship is sought, but more factors are needed for a complete analysis. Change in shareholder value is the most intuitive driver of incentive compensation levels as the common expression pay-for-performance is derived from this relationship. Therefore, both the present and last year's actual firm performance are included in the model. The reason for using the previous year's ownership statistics is that the goal is to see how ownership affects the compensation by setting up rules and practices for the coming year, rather than introducing them in, for example, the middle of the year. Control variables are market capitalization and Tobin's Q due to their effect on firm, and management, performance. In likeness to the ownership variable, control variables are lagged since incentive compensation is awarded based on previous performance, not on ongoing or expected performance. The model initially assumes homoskedasticity but subsequently test the strength of the assumption through statistical analysis.

In previous studies (Hartzell & Starks 2003) a similar model was employed to evaluate institutional influence on executive compensation. They utilized an option sensitivity measure as the dependent compensation variable instead of a more complete analysis utilizing absolute levels of compensation and incentives as a fraction of total compensation as in this study. Not only option awards but several types of compensation are being considered, which is why a broader definition of incentive compensation is used. Also, Hartzell and Starks used data from the 1990's when incentive compensation was neither as widely used nor as diverse a concept. Furthermore, they used a CEO dummy variable as a control variable which in this study is omitted. This is done as it falls outside the scope of the study. Executives' positions are not relevant as the

objective is to look at executive compensation and incentive compensation, separating and controlling for different corporate positions is redundant.

3.3.3. Interval regression

An interval regression is a type of regression where the actual values of the data to be regressed is not observed. Instead, intervals are observed where the actual values are not, which is not completely unlike the dataset used in this study. A Tobit regression calculates betas fitted to actual values when only values within one interval are observed, an interval regression does the same but assumes all data is split up in several intervals. Technically, an interval regression can be done on a single interval, which is the intended use in this study. In this case, the two intervals are below and above zero. An interval regression is mainly used to mimic the Tobit regression with the aim to check for consistent results regardless of whether the dataset is homo- or heteroskedastic.

3.3.4. Instrumental variables regression and causality analysis

The instrumental variables method is used to estimate causal relationships when controlled experiments are not feasible or when a treatment is not successfully delivered to every unit in a research study. When having a model as the one presented above in section 3.3.1., an instrumental variable is one that is (1) independent of the error term u_i, (2) not independent of x_i and (3) not affecting y_i^* or y_i if x_i is held constant. In this study, share turnover is used as an instrumental variable for institutional investor ownership. The intuition behind this is that studies (Bennett, J., Sias, R. & Starks L., 2003) show that there is a causal relationship between turnover and institutional investor ownership, while there is no reason to believe turnover has any effect on incentive compensation levels or structures.

This study uses a two-stage least-squares (2SLS) instrumental variables approach. The method is based on the following two stages:

1. Regress X on the instrument Z to obtain $\hat{X}$.
2. Regress Y on $\hat{X}$ with an error term which is a constant consisting of either omitted variables or unquantifiable factors which could be considered "noise".

To check for abnormal or unexpected casual relationships, institutional investor ownership is regressed on lagged incentive compensation levels and on lagged compensation structure.

4. RESULTS

4.1. Institutional investors' influence

In all tests of the model, regressions with both absolute levels of compensation (level) and the fraction of total compensation (structure) will be done. To test the main Tobit model, four different regressions are made in order to show that the results are relevant when considering both all institutional investors and the five largest. Both regressions are presented in Table 5. The regressions support the hypothesis that the extent of institutional investor ownership has a positive effect on incentive compensation levels and on the structure of compensation schemes. The effect is more palpable when considering total institutional investor ownership than the five largest, with the coefficient for the prior being more than twice as large as the latter for both types of measures.

Table 5

Type I Tobit regression results

The results from the Type I Tobit regression of institutional investor influence on incentive compensation are presented. Absolute levels of compensation and the compensation structure are tested as measures. Both the models with all institutional investors and with only the five largest are included in this table. The coefficients are estimates of the respective betas in the model. Standard errors are presented within parentheses. One, two and three asterisks denote significance levels of the result of 10%, 5% and 1%, respectively. The complete regression outputs are presented in Appendix 4, Appendix 5, Appendix 6 and Appendix 7.

	Level		**Structure**	
	Total	Top 5	Total	Top 5
Δ(Shareholder wealth)$_{t-1}$	0,027***	0,028***	-5,34E-08	1,32E-07
	(0,003)	(0,003)	(2,52E-07)	(2,61E-07)
Δ(Shareholder wealth)$_{t}$	0,035***	0,033***	-2,31E-07	-3,64E-07
	(0,003)	(0,003)	(2,49E-07)	(2,57E-07)
Institutional investor ownership$_{t-1}$	3032,719***		5,57E-01***	
	(98,399)		(9,16E-03)	
Top 5 institutions$_{t-1}$		1219,611***		5,09E-01***
		(209,700)		(2,00E-02)
Market capitalization$_{t-1}$	0,040***	0,038***	1,86E-06***	1,71E-06***
	(0,001)	(0,001)	(6,48E-08)	(6,81E-08)
Tobin's Q$_{t-1}$	-131,346***	-114,577***	-1,72E-02***	-1,32E-02***
	(12,499)	(12,477)	(1,17E-03)	(1,19E-03)
Constant	-1354,557***	596,092***	6,25E-03	2,76E-01***
	(79,740)	(68,724)	(7,42E-03)	(6,56E-03)

As can be seen in the table, all coefficients in the model with levels are at a significance level of 1% which illustrates the significance of the results. An important result shown in the table is the relationship between institutional investor ownership and incentive compensation, as well as the

five largest institutional investors and incentive compensation. These are at a significance level of 1% in all four tested models which indicate reliable findings.

The ownership variable is presented in percent, therefore ranging from 0 to 1, resulting in large coefficients. Therefore, the economic interpretation of the regression is that an increase in total institutional investor ownership of 1% increases incentive compensation by $30,32719K. Shareholder wealth and market capitalization are denominated in millions of dollars. Disregarding this fact and failing to make a sound economical interpretation would grossly underestimate the effect. The absolute value of change in shareholder wealth is 200.000 and market capitalization ranges from 0 to 875.000. We can thereby conclude that these two effects have a large impact on executive compensation. A correct comparison of the predictors proves somewhat problematic due to the different denominators.

The same is true for the structure in which small coefficients are observed. This is due to the fact that structure, just as ownership, is measured as a fraction of total compensation, ranging from 0 to 1. Therefore, the coefficients of change in shareholder wealth and market capitalization are extremely small. Also, the statistical significance of change in shareholder wealth is low and insignificant. The models' test statistics are presented in Table 6, which illustrates the basic test statistics that are relevant when conducting a Tobit regression.

Table 6

Test statistics Tobit regression

The table presents a summary of test statistics for the regression. LR χ^2 is the likelihood that at least one of the coefficients is not equal to zero. Prob > χ2 is the possibility of reaching the results presented in Table **5** when all coefficients are actually equal to zero. Pseudo R^2 is McFadden's attempt to estimate an R^2.

	Level		**Structure**	
	Total	Top5	Total	Top5
Number of obs.	48077	48077	48052	48052
Censored obs.	7869	7869	7832	7832
LR χ2 (5)	5543,640	4625,410	4218,230	1260,890
Prob > χ2	0,000	0,000	0,000	0,000
Pseudo R2	0,007	0,006	0,076	0,023

LR χ^2 is the likelihood that at least one of the coefficients is not equal to zero. Given the significance of the results already presented, this number should be large for all the models tested, which it is. It is as expected by the same reasoning lower for the structure models than the level models. The statistic is presented with five degrees of freedom since five predictors are used in the models. To further strengthen the significance of the results, the probability of getting

results as extreme as the ones in this model when all coefficients in fact are zero (Prob > χ^2) is equal to zero. This is of course not a realistic actual number since in statistics, there is always a slight possibility that results are outrageously extreme and misleading, but with test statistics presenting this risk as zero that possibility is close to non-existing in this model.

The pseudo R^2 is relatively small, this neither poses a problem nor is it indicative of a flawed model. Since this is not a regular ordinary least squares (OLS) regression, no R^2 can be measured. In an OLS regression, R^2 is a measure of how well the model fits the data, but in a Tobit regression no such measure can be applied. The pseudo R^2 is a way to try to estimate some sort of similar measure for non-OLS regressions and there are several different types being used in statistical analysis. The one used in this model is a McFadden pseudo R^2 which is an attempt to imitate a regular OLS R^2. It is defined as:

$$R^2 = 1 - \frac{\log \hat{L}\,(M_{full})}{\log \hat{L}\,(M_{intercept})}$$

$\hat{L}(M_{intercept})$ is the estimated likelihood of the model without any predictors while $\hat{L}(M_{full})$ is the likelihood of the model with the predictors that are calculated. The ratio aims to explain the advantage of the model with predictors over one without. However, the result is misleading since the factors are very hard to estimate and calculate, and even when calculated correctly they are often insignificant as a measure of model accuracy. Therefore, while the low number does not improve the credibility of the model, neither does it reduce it in any meaningful way.

As for the censoring, Table 6 shows that the lower (left) censoring level, set at zero, is important. The statistics show that 7.869 out of 48.077 values were either missing or unreasonable for the level models and 7.832 out of 48.052 for the structure models, proving the choice of a Tobit regression relevant. No right-censored observations are reasonable since no upper limit was set.

The reason only 48.077 and 48.052 observations are used in the regressions instead of 62.215 is that lags are used. All variables used are lagged by one year, which makes the useable dataset significantly smaller. Furthermore, to calculate shareholder wealth, the market value of equity in the beginning of the year is used, which for all intents and purposes are the same as the value in the end of the previous year. Therefore, even more observations are lost because there is already a technical two-year lag within the already lagged shareholder wealth variable.

4.2. Replicating the Tobit with interval regression

To test the robustness of the Tobit regression, an attempt to replicate the Tobit regression using interval regressions is made. The interval regression makes sure that the model works regardless of whether the errors are homoskedastic or heteroskedastic. In Stata, it is not possible to test neither a Tobit nor an interval regression for heteroskedasticity. The interval regressions are therefore made under the assumption that the variance is not constant within the sample, as opposed to that of the Tobit.

Exact replicas of the Tobit regressions using interval regressions are provided in Appendix 8, Appendix 9, Appendix 10 and Appendix 11. They are attached in order to demonstrate that the replication process is appropriate and functional, since the coefficients are exactly the same as in the Tobit up to at least seven decimal points. The regressions shown in Table 7 are based on the same initial model but with robust standard errors. The errors are larger than in the Tobit regression, which is usually the case when comparing normal and robust standard errors. However, the statistical significance is still strong for the relevant predictors.

As displayed in Table 8, the results from the interval regressions are as statistically valid as those from the Tobit regressions. The high Wald χ^2 and low possibility that the result could be achieved if all coefficients were zero fortifies the regression's validity. The interval regression used to replicate the original Tobit regression has thereby demonstrated that regardless of whether the error is homo- or heteroskedastic, the model holds with acceptable statistical significance.

Table 7

Interval regressions

The table presents the results of the interval regressions aimed at replicating the Tobit regression. Absolute levels of compensation and the compensation structure are tested as measures. Both the models with all institutional investors and the ones with only the five largest are included in this table. The coefficients are estimates of the respective betas in the model. Standard errors are presented within parentheses. One, two and three asterisks denote significance levels of the result of 10%, 5% and 1%, respectively. The complete regression outputs are presented in Appendix 12, Appendix 13, Appendix 14 and Appendix 15.

	Level		**Structure**	
	Total	Top 5	Total	Top 5
Δ(Shareholder wealth)t-1	0,027**	0,028**	-5,34E-08	1,32E-07
	(0,014)	(0,014)	(3,02E-07)	(3,08E-07)
Δ(Shareholder wealth)t	0,035***	0,033***	-2,31E-07	-3,64E-07
	(0,012)	(0,012)	(2,74E-07)	(2,81E-07)
Institutional investor ownershipt-1	3032,719***		5,57E-01***	
	(191,263)		(9,23E-03)	
Top 5 institutionst-1		1219,611***		5,09E-01***
		(370,110)		(2,14E-02)
Market capitalizationt-1	0,040***	0,038***	1,86E-06***	1,71E-06***
	(0,003)	(0,003)	(1,03E-07)	(1,13E-07)
Tobin's Qt-1	-131,346***	-114,577***	-1,72E-02***	-1,32E-02***
	(21,727)	(17,095)	(2,58E-03)	(1,79E-03)
Constant	-1354,557***	596,092***	6,25E-03	2,76E-01***
	(212,538)	(179,800)	(7,67E-03)	(7,45E-03)

Table 8

Interval regression test statistics

Test statistics for the interval regressions of the four models tested.

	Level		**Structure**	
	Total	Top5	Total	Top5
Number of obs.	48077	48077	48052	48052
Censored obs.	7869	7869	7832	7832
Wald χ^2 (5)	4625,410	298,950	3836,580	735,060
Prob > χ^2	0,000	0,000	0,000	0,000

4.3. Instrumental variables regression and causality analysis

4.3.1. Instrumental variables regression

To further assure that the results are statistically significant, the instrumental variables approach is used to control for endogeneity. Instrumental variables approach builds on the need to check for causality within the regression results. An instrumental variables regression using the 2SLS

method is based on the intuition that one first regresses the instrumented variable on the instruments and then uses the results in the regression of actual interest, in this case the model declared in section 3.3.2. The two-stages in the name of the method hence refer to the two stages in which errors are checked, one for each regression.

Apart from the variables used in previous regressions, share turnover is used as an instrument for institutional investor ownership. Share turnover is used as an instrument because of results found by Bennett et al. (2003), that there is a 22% correlation between turnover and total institutional investor ownership. Since no studies of the correlation between the five largest institutional investors have been conducted, this is left out as a precaution. It is reasonable to assume that there is a similar correlation but it will not be tested in this study. The correlation makes it a sensible exogenous instrument, and since institutional investor ownership is lagged in the regression, so is share turnover. The results from the regression are presented in Table 9.

Table 9

Instrumental variables regression

The table presents the results from an instrumental variables regression where the model is tested with institutional investor ownership as the instrumented variable. The instruments are shareholder wealth, market capitalization, Tobin's Q and share turnover. The computational method used is the 2SLS. Absolute levels of compensation and the compensation structure are tested as measures. The coefficients are estimates of the respective betas in the model. Standard errors are presented within parentheses. One, two and three asterisks denote significance levels of the result of 10%, 5% and 1%, respectively. The complete outputs from the regressions are presented in Appendix 16 and Appendix 17.

	Level	**Structure**
Institutional investor ownership$_{t-1}$	2,237E+05***	1,720E+01***
	(8,513E+04)	(6,492E+00)
Δ(Shareholder wealth)$_{t-1}$	-1,014E-01*	-9,750E-06**
	(5,716E-02)	(4,350E-06)
Δ(Shareholder wealth)$_{t}$	1,543E-01***	8,900E-06**
	(5,331E-02)	(4,060E-06)
Market capitalization$_{t-1}$	2,444E-01***	1,730E-05***
	(8,011E-02)	(6,120E-06)
Tobin's Q$_{t-1}$	1,745E+02	8,770E-03
	(1,167E+02)	(8,701E-03)
Constant	-1,706E+05***	-1,277E+01**
	(6,542E+04)	(4,990E+00)
Instrumented variable:	Institutional investor ownership$_{t-1}$	
Instruments:	Δ(Shareholder wealth)$_{t-1}$, Δ(Shareholder wealth)$_{t}$, Market capitalization$_{t-1}$, Tobin's Q$_{t-1}$, Turnover	

Table 10

Instrumental variables regression test statistics

Test statistics from the instrumental variables regression.

	Level	Structure
Number of obs.	48077	48052
Wald χ^2 (5)	46,2	13,71
Prob. > χ^2	0	0,0175
R^2	-	-
Root MSE	42292	3,1949

As can be seen in Table 10, the numbers of observations are the same as in previous regressions. Furthermore, the Wald χ^2 is moderately large and the probability that all the predictors are zero is non-existent. None of them present any reason to doubt the significance of the test.

The R^2 is reported non-existent, which might seem to be a problem if unfamiliar with instrumental variables regressions. However, the R^2 is not non-existent but is simply reported as such when it is negative. As in the Tobit regression, the R^2 is not a significant measure since it is based on the principles of a simple one-stage OLS-regression, which this is not. The Root MSE (root-mean-square error or root-mean-square deviation) is fairly large but this number is in relation to the data points used. It is calculated as:

$$RMSE(\hat{\theta}) = \sqrt{MSE(\hat{\theta})} = \sqrt{E((\hat{\theta} - \theta)^2)}$$

A complete calculation of this will not be provided. Despite the fact that institutional investor ownership and Tobin's Q are quoted as a percentage from 0 to 1, market capitalization and shareholder wealth are much larger numbers, which should limit what could seem like a large fault in the two predictors first mentioned.

4.3.2. Causality

To check for the direction of causality, two more simplified regressions are made. These are simple models where a reverse relationship, compared to the actual analysis, is examined. In these regressions institutional investor ownership is regressed on lagged incentive compensation levels in the first and on lagged compensation structure in the second. The regressions are made in order to assure that institutional investor ownership does in fact cause the incentive compensation levels and structures and not the reverse. The lagged regressors assure causality since it would be technically impossible for incentive compensation levels one year to affect the

institutional investor ownership level of the previous year. These tests are made to check for a completely reversed relationship (lagged compensation and institutional investor ownership) rather than in order to verify the validity of the previous models and regressions.

The results show that there is no statistically significant relationship of lagged incentive compensation levels on institutional investor ownership but there is one between lagged structure and institutional investor ownership. The results are shown in Appendix 23 and Appendix 25 with complementary regressions that prove a relationship the other way around in Appendix 22 and Appendix 24.

These models are evaluated with simplistic standard OLS-regressions and the low R^2 show that they are insufficient as models to explain the regressed variables. They do however contribute to the aggregate proficiency of the study as they do not find evidence of an outright reversed relationship

4.4. Development during the 2000s

After concluding that institutional investors have a positive influence on incentive compensation levels and the structure of compensation, the next step is to evaluate how this phenomenon has developed over the course of the studied period. The point is to test the hypothesis of an increasing trend and changes occurring due to the financial crisis. By performing a Tobit regression with year dummies for each year and their interaction with the institutional investor ownership that year, the effect institutional investors have on incentive compensation levels and structure in firms per year is obtained. With this, a revised model is used in the following analysis, which is built as follows:

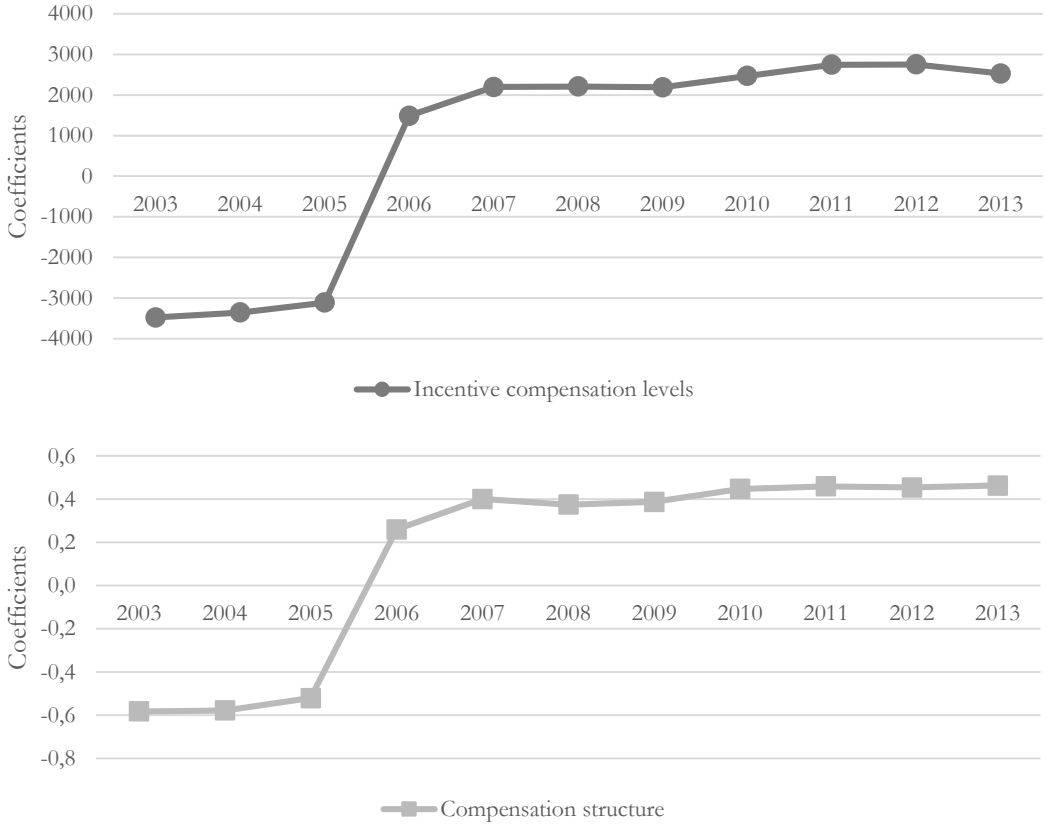
$$
\begin{aligned}
Incentive\ compensation = \quad & \beta_1 \Delta(shareholder\ wealth)_{t-1} \\
& + \beta_2 \Delta(shareholder\ wealth)_t \\
& + \beta_3 (institutional\ investor\ ownership)_{2003} \\
& + \beta_4 (institutional\ investor\ ownership)_{2004} \\
& + \cdots \\
& + \beta_{13} (institutional\ investor\ ownership)_{2013} \\
& + \beta_{14} (market\ capitalization)_{t-1} \\
& + \beta_{15} (Tobin's\ Q)_{t-1} \\
& + Constant
\end{aligned}
$$

Both measures of incentive compensation are regressed using total institutional investor ownership as well as the five largest and the regression results are presented in Appendix 18**,** Appendix 19**,** Appendix 20 and Appendix 21. Figure 6 illustrates the development of the relationship between institutional investor ownership and incentive compensation.

Figure 6

Development of institutional investors as drivers of incentive compensation

The graphs illustrate the results from the year-dependent Tobit regressions. The development is portrayed in the coefficients that describe the effect of institutional investor ownership on incentive compensation levels and structure. The complete regression outputs are presented in Appendix 18, Appendix 19, Appendix 20 and Appendix 21.



The influence of institutional investor ownership on incentive compensation has been established in the first Tobit regression (Table 5) and it has been confirmed that the relationship has increased during the last ten years. There seems to be a drastic regime shift between 2005 and 2007 after which the relationship is fairly steady. This shows with a high degree of certainty that institutional investors have had a growing bias with regard to incentive compensation. However, the result of this preference in practice is yet to be determined.

4.5. Summary of results

It is apparent that institutional investors do have a significant influence on executive compensation levels and structure. All regressions show significant, positive relationships between the magnitudes of institutional investor ownership and incentive compensation, considering both compensation levels and the structure.

The level of incentive compensation is the strongest correlated with institutional investor ownership. This signifies that a company that is to a large extent owned by institutional investors has larger incentive compensation payouts. However, it does not signify a potential bias towards incentive compensation over other forms of compensation. In theory it is conceivable that institutional investors are correlated with higher compensation levels over all, e.g. higher incentives but also higher direct compensation. So this finding is not relevant unaccompanied.

By also including the findings of a positive relationship between the fractions of total compensation made up of incentive compensation, and institutional investor ownership, a more interesting and holistic result is achieved. It demonstrates that institutional investors prefer incentive compensation over other forms of compensation. Together, the two results paint a statistically significant picture of the relationship between incentive compensation and institutional investors.

The results are complicated by the supporting analysis due to its ambiguity. The instrumental variables regression shows that, with annual share turnover as an instrumental variable, institutional investors are causal drivers of both compensation levels and structures. However, the simple regressions show that a reversed relationship likely exists where compensation structure also affects institutional investor ownership.

Furthermore, the developments of the relationships are in line with each other and they are statistically significant at a 1% level. It has been established that a regime shift occurred right before the financial crisis which will be discussed further in the conclusion and implications section (5.2. and 5.3.).

5. IMPLICATIONS AND CONCLUSION

5.1. Institutional investors influence executive compensation

The statistical analysis has hitherto demonstrated with a high degree of certainty that there exists a relationship between institutional investors and executive compensation. The mechanism under which this influence operates in not yet wholly identified however and is not expanded upon in a meaningful way in this study. A mix of factors, both direct and indirect through clientele effects, seems reasonable explanations.

While it is clear from the results that a large institutional investor ownership percentage is statistically indicative of high future levels of incentive compensation and a more incentive based structure, it also suggest that institutional investors prefer to own companies with incentive based compensation structures. This effect is identified through a non-negligible positive effect on institutional investor ownership caused by compensation structure. Interesting to notice is that no such causal relationship exists for compensation levels yet both are significantly influence by institutional investors.

This lends weight to the provided hypothesis of institutional investors' influence, both directly through ownership and reversely, as shown by the causality regressions through clientele effects. If the notion of incentive compensation proficiency has permeated institutional investors' strategies and calculations it is reasonable to find the prevailing relationships. Institutional investors value both existent incentive compensation schemes and the possibility of enacting them themselves. Instead of making the results less important, it alters and expands the implications of the results while demonstrating the veracity of the hypothesis.

Consequently, it conforms to the lack of evidence found for the claim that compensation levels attracts institutional investors. As the regressions showed, the statistical significance of the effect of changes in shareholder wealth, i.e. firm performance, is higher for incentive compensation levels than for structure. This implies that institutional investors prefer investments in firms with certain compensation structures, while levels are no such driver. The intuition is simple: institutional investors do not necessarily favor short term performance of which high incentive compensation levels is a likely indicator.

5.2. The influence has increased over time

The paper failed to identify a trend in the manner hypothesized. A long-term persistent increase possibly driven by increased efficiency and effectiveness of monitoring and capability of correctly align interests with incentive compensation as a tool failed to materialize. Adjusting the scope to

encompass a longer period of time could possibly more appropriately test the hypothesis as the current time-period proved insufficient to identify any long-term trends. The identified development is instead a regime shift in promoted executive compensation schemes by institutional investors in the year 2006. This dominating change becomes a natural focal point for discussion of results and implications.

While earlier papers (e.g. Hartzell & Starks 2003) identified a positive effect on incentive compensation brought on by institutional investors, they have not taken the development over time into consideration. As the results show, the coefficients, most notably the impact from institutional investors on incentive compensation, range from negative to positive with the mentioned regime shift in 2006. Examining the total influence during the whole period, the results could have a low predictor value as negative coefficients may partially cancel out positive ones. The total effect of institutional investors on executive compensation is thereby exposed to a risk of underestimation if time is not taken into consideration. Without regressing correctly on the entire time-period, this effect is overlooked and the result may be downwardly skewed.

Correcting for time and investigating trends and trend-breaking tendencies is reasonable as institutional investors are unlikely to be static in their proposed stratagems with regard to executive compensation. Instead the effect is during some periods positive and in others negative. Therefore, to predict the influence and effect institutional investor ownership has on future compensation schemes, e.g. the coming five to ten years, the results from the simple Tobit regression (Table 5) is possibly a lacking foundation. Attempting a prediction utilizing Figure 6 is preferable as coefficients before 2006 are fairly insignificant when predicting a short future beyond 2013.

The fact that the coefficient is increasing dramatically finds a reasonable basis in the descriptive statistics. Institutional investor ownership has been somewhat stable throughout the whole period studied, while incentive compensation has increased both in level and in relative size compared to direct and other compensation. The descriptive statistics do not assure an increased relationship between the two, but they do provide robust information about low levels of incentive compensation before 2006.

Incentive compensation has increased only during the period when institutional investors had a positive impact on incentives. As can be seen in the descriptive statistics, the level of incentive compensation has increased since 2006 and the compensation structure has become more incentive based. This further strengthens the hypothesis that institutional investors favor incentives since the positive impact on incentives combined with the rising levels strongly suggest

a continuing up-going tend. Since the effect institutional investors have on incentives remains the same, this could possibly be interpreted as a derivative of the development of incentive based structures and levels.

The main type of incentive compensation during the past years, and the one increasing fastest, is stock awards. By combining this with the main findings from the regressions, it is implied that institutional investors have an increasing bias with respect to stock. This was not explicitly tested in the thesis but is a likely implications and an interesting subject for further study.

5.3. The financial crisis lacks explanatory power

The hypothesis with regard to changes in relation to the financial crisis proved faulty. Mounting political and social pressure during and in the aftermath of the financial crisis led to no discernable changes in executive compensation driven by institutional investors. Other factors than those hypothesized are possibly at work. Conceivably they are both tangible and intangible in nature e.g. due to macroeconomic factors, theoretical findings and/or herd-like behavior. The paper does not encompass the necessary investigative study to expose the inner workings of institutional investors shaping compensation policy. Neither explanations for changing coefficients, i.e. influence, nor lack thereof are attempted.

The regime shift of 2006 is also visible in the descriptive statistics section of the paper, Figure 2, where incentive compensation increases drastically from 2006 and onward. It is conceivable that the increase of the median by $600.000 is connected to the relationship previously discerned. The subsequent increases, 2007 to 2013, where the incentive compensation median increased by approximately an additional $600.000 are maybe linked to other ownership blocks later pursuing and advocating similar executive compensation schemes. The interactions and influence diverse owners have with regard to issues of corporate governance would be an interesting topic of study: Do owners typically acts as counter-weights or do they influence each other to draw the same conclusions exacerbating already prevalent sentiments?

5.4. Generalization and implications

This thesis was conducted on U.S. companies during the 21th century. For a long time, the U.S. has been the corporate big brother both with regard the financial market and economic theory development, which makes it a good fit for financial research. However, the sample does pose problems with respect to generalization.

Firstly, the sample companies are all quoted companies. This limits the certainty with which the results are transferrable to unquoted companies, but does not assert that it is not possible. The results support the hypothesis that institutional investors prefer incentive compensation schemes over direct compensation schemes coupled with the main goal of all investors is firm performance of their holdings leads to interesting inferences. It is reasonable to claim that institutional investors assume a connection between incentive compensation schemes and firm performance, i.e. portfolio growth. The results are therefore likely transferrable to unquoted companies despite the lack of statistical backing.

Secondly, due to globalization, with American institutional investors being active in markets world-wide, it is reasonable to claim that the conclusions should be applicable outside of the U.S.. Furthermore, since the 13-f filings apply to all large investors active in the U.S., they include foreign investment companies, further strengthening the argument in favor of geographic generalization.

Finally, this study has examined institutional investors' attitudes towards incentive compensation, with the intention of using institutional investors as a proxy for all investors. Institutional investors are used since they are strong owners with the ability to implement their preferences. Also, they are likely in the forefront of potential changes in attitude, e.g. the regime shift in 2006. Therefore, the results could with fairly high probability be applied to other investors. As previously mentioned, further research focusing on the relationship, influence and interactions of diverse groups would undoubtedly prove intriguing.

5.5. Final words

The study demonstrates that there is a positive effect from institutional investors on both levels of incentive compensation and compensation structure. The size of the effect has increased during the 21st century with a drastic regime shift between 2005 and 2006 with the relationship shifting from negative to positive. Since then, the influence of institutional investors has been fairly steady, showing no signs of changing during the financial crisis. The study also indicates that institutional investors prefer to purchase firm that have already implemented incentivized compensation structures, but leaves it to future studies to further examine the subject.

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APPENDIX

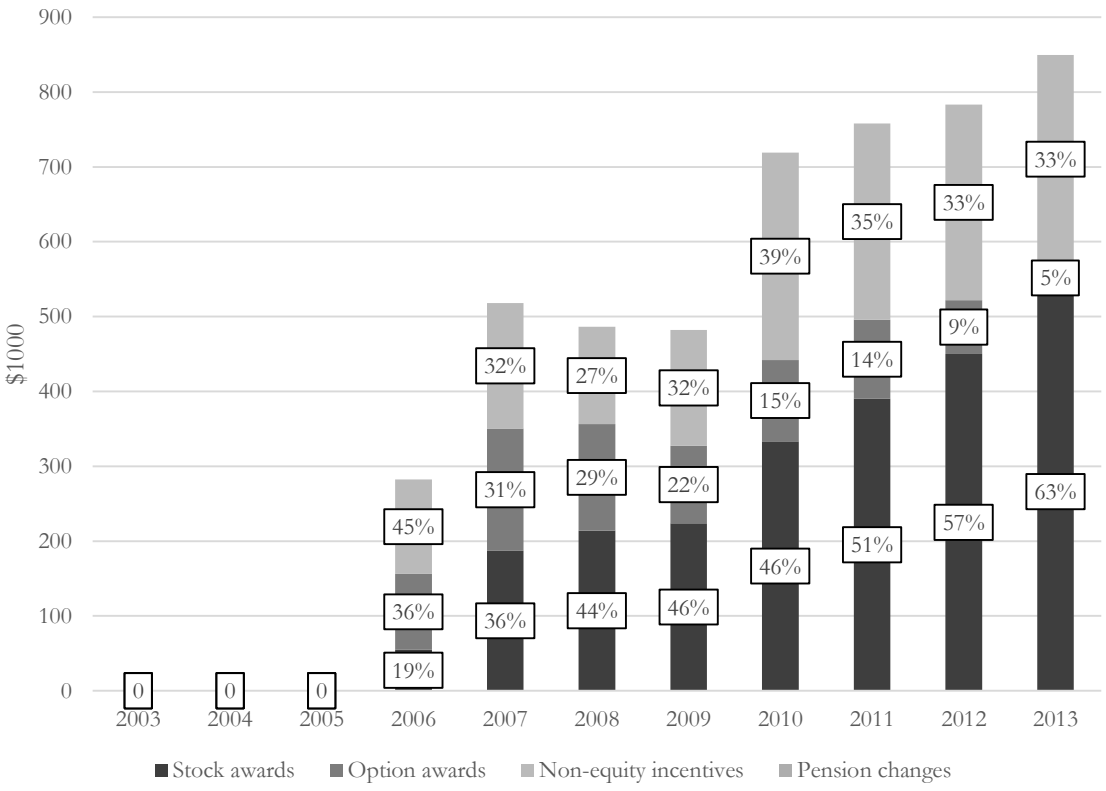
Appendix 1

Medians of compensation types per year

	Direct	Incentive	Other
2003	541,91	0,00	18,75
2004	617,20	0,00	21,65
2005	656,13	0,00	24,03
2006	452,39	540,91	34,85
2007	417,01	835,33	36,72
2008	436,67	837,44	36,55
2009	437,86	821,64	34,19
2010	454,79	1063,13	33,95
2011	463,28	1173,73	34,93
2012	478,40	1177,38	36,96
2013	494,90	1231,14	39,06

Appendix 2

Relationship between types of incentive compensation



Appendix 3

Medians of different types of incentive compensations per year

	Stock awards	Option awards	Non-equity incentives	Pension changes	Total
2003	0	0	0	0	0
2004	0	0	0	0	0
2005	0	0	0	0	0
2006	54,781	101,396	126,3	0	282,477
2007	187,197	163,14	167,908	0	518,245
2008	213,873	142,346	130,0015	0	486,2205
2009	223,65	103,732	154,688	0	482,07
2010	333,337	108,77	277,1	0	719,207
2011	390,34	105,319	262,5	0	758,159
2012	450,2195	71,659	261,338	0	783,2165
2013	532,318	38,8295	278,4035	0	849,551

Appendix 4

Type I Tobit regression: Compensation levels and total institutional investor ownership

```
Tobit regression                                  Number of obs   =      48077
                                                  LR chi2(5)      =    5543.64
                                                  Prob > chi2     =     0.0000
Log likelihood = -395851.95                       Pseudo R2       =     0.0070
```

incent_comp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
wealth_lag_M	.0269712	.0026784	10.07	0.000	.0217216	.0322208
wealth_M	.0345866	.0026356	13.12	0.000	.0294207	.0397525
inst_lag	3032.719	98.39887	30.82	0.000	2839.856	3225.582
market_cap_lag_M	.0400162	.0006876	58.19	0.000	.0386685	.041364
tobins_q_lag	-131.3456	12.49863	-10.51	0.000	-155.8431	-106.8481
_cons	-1354.557	79.74009	-16.99	0.000	-1510.849	-1198.266
/sigma	3919.672	14.02792			3892.177	3947.167

```
  Obs. summary:       7869  left-censored observations at incent_comp<=0
                     40208     uncensored observations
                         0 right-censored observations
```

Appendix 5

Type I Tobit regression: Compensation levels and top 5 institutional investor ownership

```
Tobit regression                                  Number of obs   =      48077
                                                  LR chi2(5)      =    4625.41
                                                  Prob > chi2     =     0.0000
Log likelihood = -396311.06                       Pseudo R2       =     0.0058
```

incent_comp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
wealth_lag_M	.0283761	.0026982	10.52	0.000	.0230877	.0336645
wealth_M	.0334209	.0026555	12.59	0.000	.0282162	.0386257
top5_lag	1219.611	209.7001	5.82	0.000	808.5962	1630.626
market_cap_lag_M	.037966	.0007041	53.92	0.000	.036586	.0393461
tobins_q_lag	-114.5768	12.47736	-9.18	0.000	-139.0326	-90.12104
_cons	596.0915	68.72437	8.67	0.000	461.3908	730.7922
/sigma	3949.114	14.15306			3921.374	3976.855

```
  Obs. summary:       7869  left-censored observations at incent_comp<=0
                     40208     uncensored observations
                         0 right-censored observations
```

.

Appendix 6

Type I Tobit regression: Compensation structure and total institutional investor ownership

```
Tobit regression                                  Number of obs   =      48052
                                                  LR chi2(5)      =    4218.23
                                                  Prob > chi2     =     0.0000
Log likelihood =  -25510.51                       Pseudo R2       =     0.0764
```

structure	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
wealth_lag_M	-5.34e-08	2.52e-07	-0.21	0.832	-5.48e-07	4.41e-07
wealth_M	-2.31e-07	2.49e-07	-0.93	0.352	-7.19e-07	2.56e-07
inst_lag	.5565664	.0091648	60.73	0.000	.5386032	.5745295
market_cap_lag_M	1.86e-06	6.48e-08	28.70	0.000	1.73e-06	1.99e-06
tobins_q_lag	-.0172229	.0011694	-14.73	0.000	-.0195149	-.0149309
_cons	.0062483	.007416	0.84	0.399	-.0082871	.0207837
/sigma	.3697994	.0013597			.3671343	.3724644

```
  Obs. summary:       7832  left-censored observations at structure<=0
                     40220     uncensored observations
                         0 right-censored observations
```

Appendix 7

Type I Tobit regression: Compensation structure and top 5 institutional investor ownership

```
Tobit regression                                  Number of obs   =      48052
                                                  LR chi2(5)      =    1260.89
                                                  Prob > chi2     =     0.0000
Log likelihood = -26989.184                       Pseudo R2       =     0.0228
```

structure	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
wealth_lag_M	1.32e-07	2.61e-07	0.51	0.612	-3.79e-07	6.44e-07
wealth_M	-3.64e-07	2.57e-07	-1.42	0.156	-8.68e-07	1.39e-07
top5_lag	.5091831	.0200286	25.42	0.000	.4699267	.5484394
market_cap_lag_M	1.71e-06	6.81e-08	25.12	0.000	1.58e-06	1.84e-06
tobins_q_lag	-.0131994	.0011908	-11.08	0.000	-.0155334	-.0108653
_cons	.2762443	.006563	42.09	0.000	.2633807	.2891078
/sigma	.3823011	.0014075			.3795424	.3850598

```
  Obs. summary:       7832  left-censored observations at structure<=0
                     40220     uncensored observations
                         0 right-censored observations
```

Appendix 8

Interval regression: Compensation levels and total institutional investor ownership (regular standard errors)

```
Fitting constant-only model:

Iteration 0:   log likelihood = -399493.69
Iteration 1:   log likelihood = -398625.67
Iteration 2:   log likelihood = -398623.77
Iteration 3:   log likelihood = -398623.77

Fitting full model:

Iteration 0:   log likelihood = -396813.01
Iteration 1:   log likelihood = -395855.62
Iteration 2:   log likelihood = -395851.95
Iteration 3:   log likelihood = -395851.95

Interval regression                               Number of obs   =      48077
                                                  LR chi2(5)      =    5543.64
Log likelihood = -395851.95                       Prob > chi2     =     0.0000
```

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
wealth_lag_M	.0269712	.0026784	10.07	0.000	.0217217	.0322207
wealth_M	.0345866	.0026356	13.12	0.000	.0294208	.0397524
inst_lag	3032.719	98.39887	30.82	0.000	2839.86	3225.577
market_cap_~M	.0400162	.0006876	58.19	0.000	.0386685	.041364
tobins_q_lag	-131.3456	12.49863	-10.51	0.000	-155.8425	-106.8488
_cons	-1354.557	79.74009	-16.99	0.000	-1510.845	-1198.27
/lnsigma	8.273763	.0035789	2311.85	0.000	8.266749	8.280778
sigma	3919.672	14.02792			3892.274	3947.263

```
  Observation summary:      7869  left-censored observations
                           40208     uncensored observations
                               0 right-censored observations
                               0       interval observations
```

Appendix 9

Interval regression: Compensation levels and top 5 institutional investor ownership (regular standard errors)

```
Fitting constant-only model:

Iteration 0:   log likelihood = -399493.69
Iteration 1:   log likelihood = -398625.67
Iteration 2:   log likelihood = -398623.77
Iteration 3:   log likelihood = -398623.77

Fitting full model:

Iteration 0:   log likelihood = -397225.21
Iteration 1:   log likelihood =  -396314.3
Iteration 2:   log likelihood = -396311.06
Iteration 3:   log likelihood = -396311.06

Interval regression                             Number of obs   =      48077
                                                LR chi2(5)      =    4625.41
Log likelihood = -396311.06                     Prob > chi2     =     0.0000
```

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
wealth_lag_M	.0283761	.0026982	10.52	0.000	.0230878	.0336644
wealth_M	.0334209	.0026555	12.59	0.000	.0282163	.0386256
top5_lag	1219.611	209.7013	5.82	0.000	808.6043	1630.618
market_cap_~M	.037966	.0007041	53.92	0.000	.036586	.039346
tobins_q_lag	-114.5768	12.47743	-9.18	0.000	-139.0322	-90.12152
_cons	596.0915	68.72475	8.67	0.000	461.3935	730.7895
/lnsigma	8.281247	.0035839	2310.68	0.000	8.274222	8.288271
sigma	3949.114	14.15325			3921.472	3976.952

```
  Observation summary:      7869  left-censored observations
                           40208     uncensored observations
                               0 right-censored observations
                               0       interval observations
```

Appendix 10

Interval regression: Compensation structure and total institutional investor ownership (regular standard errors)

```
Fitting constant-only model:

Iteration 0:   log likelihood = -28679.922
Iteration 1:   log likelihood = -27624.799
Iteration 2:   log likelihood = -27619.627
Iteration 3:   log likelihood = -27619.627

Fitting full model:

Iteration 0:   log likelihood = -26640.258
Iteration 1:   log likelihood =  -25515.43
Iteration 2:   log likelihood =  -25510.51
Iteration 3:   log likelihood =  -25510.51

Interval regression                               Number of obs   =      48052
                                                  LR chi2(5)      =    4218.23
Log likelihood =  -25510.51                       Prob > chi2     =     0.0000
```

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
wealth_lag_M	-5.34e-08	2.52e-07	-0.21	0.832	-5.48e-07	4.41e-07
wealth_M	-2.31e-07	2.49e-07	-0.93	0.352	-7.19e-07	2.56e-07
inst_lag	.5565664	.0091648	60.73	0.000	.5386037	.5745291
market_cap_lag_M	1.86e-06	6.48e-08	28.70	0.000	1.73e-06	1.99e-06
tobins_q_lag	-.0172229	.0011694	-14.73	0.000	-.0195148	-.0149309
_cons	.0062483	.007416	0.84	0.399	-.0082867	.0207833
/lnsigma	-.9947947	.0036769	-270.55	0.000	-1.002001	-.987588
sigma	.3697994	.0013597			.3671439	.372474

```
  Observation summary:      7832  left-censored observations
                           40220     uncensored observations
                               0 right-censored observations
                               0       interval observations
```

Appendix 11

Interval regression: Compensation structure and top 5 institutional investor ownership (regular standard errors)

```
Fitting constant-only model:

Iteration 0:   log likelihood = -28679.922
Iteration 1:   log likelihood = -27624.799
Iteration 2:   log likelihood = -27619.627
Iteration 3:   log likelihood = -27619.627

Fitting full model:

Iteration 0:   log likelihood = -28080.435
Iteration 1:   log likelihood = -26994.884
Iteration 2:   log likelihood = -26989.185
Iteration 3:   log likelihood = -26989.184

Interval regression                             Number of obs   =      48052
                                                LR chi2(5)      =    1260.89
Log likelihood = -26989.184                     Prob > chi2     =     0.0000
```

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
wealth_lag_M	1.32e-07	2.61e-07	0.51	0.612	-3.79e-07	6.44e-07
wealth_M	-3.64e-07	2.57e-07	-1.42	0.156	-8.68e-07	1.39e-07
top5_lag	.5091831	.0200287	25.42	0.000	.4699276	.5484385
market_cap_lag_M	1.71e-06	6.81e-08	25.12	0.000	1.58e-06	1.84e-06
tobins_q_lag	-.0131994	.0011908	-11.08	0.000	-.0155333	-.0108654
_cons	.2762443	.006563	42.09	0.000	.263381	.2891075
/lnsigma	-.9615467	.0036816	-261.18	0.000	-.9687626	-.9543309
sigma	.3823011	.0014075			.3795524	.3850697

```
  Observation summary:      7832  left-censored observations
                           40220     uncensored observations
                               0 right-censored observations
                               0       interval observations
```

Appendix 12

Interval regression: Compensation levels and total institutional investor ownership (robust standard errors)

```
Fitting constant-only model:

Iteration 0:   log pseudolikelihood = -399493.69
Iteration 1:   log pseudolikelihood = -398625.67
Iteration 2:   log pseudolikelihood = -398623.77
Iteration 3:   log pseudolikelihood = -398623.77

Fitting full model:

Iteration 0:   log pseudolikelihood = -396813.01
Iteration 1:   log pseudolikelihood = -395855.62
Iteration 2:   log pseudolikelihood = -395851.95
Iteration 3:   log pseudolikelihood = -395851.95

Interval regression                             Number of obs   =      48077
                                                Wald chi2(5)    =     807.03
Log pseudolikelihood = -395851.95               Prob > chi2     =     0.0000
```

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
wealth_lag_M	.0269712	.0137654	1.96	0.050	-8.57e-06	.0539509
wealth_M	.0345866	.0124427	2.78	0.005	.0101994	.0589738
inst_lag	3032.719	191.2632	15.86	0.000	2657.85	3407.588
market_cap_lag_M	.0400162	.002582	15.50	0.000	.0349556	.0450769
tobins_q_lag	-131.3456	21.72721	-6.05	0.000	-173.9302	-88.76109
_cons	-1354.557	212.5384	-6.37	0.000	-1771.125	-937.9899
/lnsigma	8.273763	.1093992	75.63	0.000	8.059345	8.488182
sigma	3919.672	428.8089			3163.217	4857.026

```
  Observation summary:      7869  left-censored observations
                           40208     uncensored observations
                               0 right-censored observations
                               0       interval observations
```

Appendix 13

Interval regression: Compensation levels and top 5 institutional investor ownership (robust standard errors)

```
Fitting constant-only model:

Iteration 0:   log pseudolikelihood = -399493.69
Iteration 1:   log pseudolikelihood = -398625.67
Iteration 2:   log pseudolikelihood = -398623.77
Iteration 3:   log pseudolikelihood = -398623.77

Fitting full model:

Iteration 0:   log pseudolikelihood = -397225.21
Iteration 1:   log pseudolikelihood =  -396314.3
Iteration 2:   log pseudolikelihood = -396311.06
Iteration 3:   log pseudolikelihood = -396311.06

Interval regression                             Number of obs   =      48077
                                                Wald chi2(5)    =     298.95
Log pseudolikelihood = -396311.06               Prob > chi2     =     0.0000
```

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
wealth_lag_M	.0283761	.0138059	2.06	0.040	.0013171	.0554351
wealth_M	.0334209	.0124812	2.68	0.007	.0089583	.0578836
top5_lag	1219.611	370.1098	3.30	0.001	494.2094	1945.013
market_cap_~M	.037966	.0026738	14.20	0.000	.0327255	.0432065
tobins_q_lag	-114.5768	17.09497	-6.70	0.000	-148.0824	-81.0713
_cons	596.0915	179.8	3.32	0.001	243.6899	948.4931
/lnsigma	8.281247	.1083201	76.45	0.000	8.068943	8.49355
sigma	3949.114	427.7684			3193.725	4883.171

```
  Observation summary:      7869  left-censored observations
                           40208     uncensored observations
                               0 right-censored observations
                               0       interval observations
```

Appendix 14

Interval regression: Compensation structure and total institutional investor ownership (robust standard errors)

```
Fitting constant-only model:

Iteration 0:   log pseudolikelihood = -28679.922
Iteration 1:   log pseudolikelihood = -27624.799
Iteration 2:   log pseudolikelihood = -27619.627
Iteration 3:   log pseudolikelihood = -27619.627

Fitting full model:

Iteration 0:   log pseudolikelihood = -26640.258
Iteration 1:   log pseudolikelihood =  -25515.43
Iteration 2:   log pseudolikelihood =  -25510.51
Iteration 3:   log pseudolikelihood =  -25510.51

Interval regression                             Number of obs   =      48052
                                                Wald chi2(5)    =    3836.58
Log pseudolikelihood =  -25510.51               Prob > chi2     =     0.0000
```

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
wealth_lag_M	-5.34e-08	3.02e-07	-0.18	0.860	-6.45e-07	5.38e-07
wealth_M	-2.31e-07	2.74e-07	-0.85	0.398	-7.67e-07	3.05e-07
inst_lag	.5565664	.0092292	60.30	0.000	.5384775	.5746553
market_cap_lag_M	1.86e-06	1.03e-07	18.02	0.000	1.66e-06	2.06e-06
tobins_q_lag	-.0172229	.0025792	-6.68	0.000	-.022278	-.0121678
_cons	.0062483	.0076722	0.81	0.415	-.008789	.0212856
/lnsigma	-.9947947	.0031537	-315.43	0.000	-1.000976	-.9886135
sigma	.3697994	.0011662			.3675206	.3720922

```
  Observation summary:      7832  left-censored observations
                           40220     uncensored observations
                               0 right-censored observations
                               0       interval observations
```

Appendix 15

Interval regression: Compensation structure and top 5 institutional investor ownership (robust standard errors)

```
Fitting constant-only model:

Iteration 0:   log pseudolikelihood = -28679.922
Iteration 1:   log pseudolikelihood = -27624.799
Iteration 2:   log pseudolikelihood = -27619.627
Iteration 3:   log pseudolikelihood = -27619.627

Fitting full model:

Iteration 0:   log pseudolikelihood = -28080.435
Iteration 1:   log pseudolikelihood = -26994.884
Iteration 2:   log pseudolikelihood = -26989.185
Iteration 3:   log pseudolikelihood = -26989.184

Interval regression                             Number of obs    =      48052
                                                Wald chi2(5)     =     735.06
Log pseudolikelihood = -26989.184               Prob > chi2      =     0.0000
```

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
wealth_lag_M	1.32e-07	3.08e-07	0.43	0.667	-4.71e-07	7.36e-07
wealth_M	-3.64e-07	2.81e-07	-1.30	0.195	-9.16e-07	1.87e-07
top5_lag	.5091831	.0214105	23.78	0.000	.4672193	.5511468
market_cap_lag_M	1.71e-06	1.13e-07	15.19	0.000	1.49e-06	1.93e-06
tobins_q_lag	-.0131994	.0017865	-7.39	0.000	-.0167008	-.0096979
_cons	.2762443	.0074499	37.08	0.000	.2616427	.2908458
/lnsigma	-.9615467	.0030074	-319.73	0.000	-.9674411	-.9556524
sigma	.3823011	.0011497			.3800543	.3845612

```
  Observation summary:      7832  left-censored observations
                           40220     uncensored observations
                               0 right-censored observations
                               0       interval observations
```

Appendix 16

Instrumental variables regression: Compensation levels and total institutional investor ownership

```
Instrumental variables (2SLS) regression              Number of obs =   48077
                                                      Wald chi2(5)  =   46.20
                                                      Prob > chi2   =  0.0000
                                                      R-squared     =       .
                                                      Root MSE      =   42292
```

incent_comp	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
inst_lag	223659	85130.18	2.63	0.009	56806.94	390511.1
wealth_lag_M	-.1014368	.0571611	-1.77	0.076	-.2134705	.0105969
wealth_M	.1542693	.0533068	2.89	0.004	.04979	.2587486
market_cap_lag_M	.2443594	.0801058	3.05	0.002	.0873549	.4013639
tobins_q_lag	174.4774	116.7013	1.50	0.135	-54.25301	403.2079
_cons	-170563.5	65424.15	-2.61	0.009	-298792.4	-42334.49

```
Instrumented:  inst_lag
Instruments:   wealth_lag_M wealth_M market_cap_lag_M tobins_q_lag turnover
```

Appendix 17

Instrumental variables regression: Compensation structure and total institutional investor ownership

```
Instrumental variables (2SLS) regression              Number of obs =   48052
                                                      Wald chi2(5)  =   13.71
                                                      Prob > chi2   =  0.0175
                                                      R-squared     =       .
                                                      Root MSE      =  3.1949
```

structure	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
inst_lag	17.19678	6.492472	2.65	0.008	4.471767	29.92179
wealth_lag_M	-9.75e-06	4.35e-06	-2.24	0.025	-.0000183	-1.23e-06
wealth_M	8.90e-06	4.06e-06	2.19	0.028	9.50e-07	.0000168
market_cap_lag_M	.0000173	6.12e-06	2.83	0.005	5.34e-06	.0000293
tobins_q_lag	.0087703	.0087007	1.01	0.313	-.0082827	.0258233
_cons	-12.76623	4.989965	-2.56	0.011	-22.54639	-2.986083

```
Instrumented:  inst_lag
Instruments:   wealth_lag_M wealth_M market_cap_lag_M tobins_q_lag turnover
```

Appendix 18

Type I Tobit regression: Compensation levels and total institutional investor ownership over time

```
Tobit regression                                  Number of obs   =      48077
                                                  LR chi2(15)     =   13421.30
                                                  Prob > chi2     =     0.0000
Log likelihood = -391913.12                       Pseudo R2       =     0.0168
```

incent_comp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
wealth_lag_M	.0261103	.0026026	10.03	0.000	.0210091	.0312115
wealth_M	.0377539	.002565	14.72	0.000	.0327264	.0427814
market_cap_lag_M	.0379584	.0006587	57.62	0.000	.0366673	.0392495
tobins_q_lag	-53.23648	11.60337	-4.59	0.000	-75.97923	-30.49372
inst1	0	(omitted)				
inst2	0	(omitted)				
inst3	-3481.223	154.2675	-22.57	0.000	-3783.59	-3178.857
inst4	-3360.335	155.5871	-21.60	0.000	-3665.288	-3055.382
inst5	-3113.388	135.7053	-22.94	0.000	-3379.372	-2847.404
inst6	1488.858	121.8185	12.22	0.000	1250.092	1727.623
inst7	2196.72	114.9784	19.11	0.000	1971.36	2422.079
inst8	2208.137	110.4953	19.98	0.000	1991.565	2424.709
inst9	2191.199	115.592	18.96	0.000	1964.638	2417.761
inst10	2470.843	114.2593	21.62	0.000	2246.893	2694.793
inst11	2744.151	114.423	23.98	0.000	2519.88	2968.422
inst12	2755.403	114.7946	24.00	0.000	2530.404	2980.402
inst13	2529.488	117.8326	21.47	0.000	2298.534	2760.441
_cons	-163.7925	78.32637	-2.09	0.037	-317.3132	-10.27178
/sigma	3728.128	13.19026			3702.275	3753.981

```
  Obs. summary:       7869  left-censored observations at incent_comp<=0
                     40208     uncensored observations
                         0 right-censored observations
```

Appendix 19

Type I Tobit regression: Compensation levels and top 5 institutional investor ownership over time

```
Tobit regression                                  Number of obs   =      48077
                                                  LR chi2(15)     =   12151.72
                                                  Prob > chi2     =     0.0000
Log likelihood = -392547.91                       Pseudo R2       =     0.0152
```

incent_comp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
wealth_lag_M	.0280525	.0026129	10.74	0.000	.0229311	.0331739
wealth_M	.0369292	.0025753	14.34	0.000	.0318817	.0419768
market_cap_lag_M	.0355948	.0006763	52.63	0.000	.0342692	.0369204
tobins_q_lag	-68.99235	11.91628	-5.79	0.000	-92.34841	-45.6363
top53	-13173.78	356.8357	-36.92	0.000	-13873.18	-12474.38
top54	-12966.93	359.2479	-36.09	0.000	-13671.06	-12262.8
top55	-12651.35	330.3417	-38.30	0.000	-13298.83	-12003.88
top56	-752.1073	283.151	-2.66	0.008	-1307.087	-197.1277
top57	1292.774	270.2618	4.78	0.000	763.0577	1822.491
top58	1266.583	260.7447	4.86	0.000	755.5203	1777.646
top59	766.5428	257.5846	2.98	0.003	261.6736	1271.412
top510	1562.511	267.3432	5.84	0.000	1038.515	2086.507
top511	2065.169	263.4267	7.84	0.000	1548.849	2581.489
top512	2115.981	261.3833	8.10	0.000	1603.666	2628.296
top513	1626.519	263.2601	6.18	0.000	1110.526	2142.512
_cons	1259.003	67.39457	18.68	0.000	1126.908	1391.097
/sigma	3768.456	13.35944			3742.272	3794.641

```
  Obs. summary:       7869  left-censored observations at incent_comp<=0
                     40208     uncensored observations
                         0 right-censored observations
```

Appendix 20

Type I Tobit regression: Compensation structure and total institutional investor ownership over time

Tobit regression — Number of obs = 48052; LR chi2(15) = 45975.54; Prob > chi2 = 0.0000; Log likelihood = -4631.8555; Pseudo R2 = 0.8323

structure	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
wealth_lag_M	-1.79e-07	1.67e-07	-1.07	0.283	-5.06e-07	1.48e-07
wealth_M	2.38e-07	1.64e-07	1.45	0.147	-8.40e-08	5.60e-07
market_cap_lag_M	1.41e-06	4.22e-08	33.36	0.000	1.32e-06	1.49e-06
tobins_q_lag	-.0024151	.0006125	-3.94	0.000	-.0036157	-.0012145
inst1	0	(omitted)				
inst2	0	(omitted)				
inst3	-.5827398	.0099396	-58.63	0.000	-.6022216	-.5632581
inst4	-.5781524	.0099921	-57.86	0.000	-.5977369	-.5585678
inst5	-.521116	.0087159	-59.79	0.000	-.5381993	-.5040327
inst6	.2602283	.0076975	33.81	0.000	.2451412	.2753154
inst7	.4007288	.007298	54.91	0.000	.3864247	.4150329
inst8	.375087	.007015	53.47	0.000	.3613376	.3888364
inst9	.3876032	.0073435	52.78	0.000	.3732098	.4019967
inst10	.4477961	.0072569	61.71	0.000	.4335724	.4620198
inst11	.4597373	.0072636	63.29	0.000	.4455006	.473974
inst12	.4546239	.0072887	62.37	0.000	.440338	.4689098
inst13	.462972	.0074821	61.88	0.000	.4483069	.4776371
_cons	.2507694	.0049456	50.71	0.000	.241076	.2604627
/sigma	.2387452	.0008532			.237073	.2404174

Obs. summary: 7832 left-censored observations at structure<=0
40220 uncensored observations
0 right-censored observations

Appendix 21

Type I Tobit regression: Compensation structure and top 5 institutional investor ownership over time

Tobit regression — Number of obs = 48052; LR chi2(15) = 39553.53; Prob > chi2 = 0.0000; Log likelihood = -7842.8601; Pseudo R2 = 0.7160

structure	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
wealth_lag_M	7.75e-08	1.78e-07	0.44	0.662	-2.71e-07	4.26e-07
wealth_M	1.94e-07	1.75e-07	1.11	0.269	-1.50e-07	5.37e-07
market_cap_lag_M	1.19e-06	4.60e-08	25.90	0.000	1.10e-06	1.28e-06
tobins_q_lag	-.0038077	.0007051	-5.40	0.000	-.0051896	-.0024257
top51	0	(omitted)				
top52	0	(omitted)				
top53	-2.056622	.0247808	-82.99	0.000	-2.105193	-2.008051
top54	-2.064097	.0249404	-82.76	0.000	-2.112981	-2.015214
top55	-1.967738	.0229378	-85.79	0.000	-2.012696	-1.922779
top56	.1121208	.019112	5.87	0.000	.0746609	.1495806
top57	.4986591	.0183362	27.20	0.000	.46272	.5345983
top58	.4361225	.017694	24.65	0.000	.4014421	.4708029
top59	.3932238	.0174646	22.52	0.000	.3589929	.4274547
top510	.5819516	.0181392	32.08	0.000	.5463986	.6175046
top511	.5900155	.0178643	33.03	0.000	.5550012	.6250299
top512	.5748964	.0177267	32.43	0.000	.5401518	.6096409
top513	.5805909	.0178592	32.51	0.000	.5455866	.6155951
_cons	.4226074	.0045308	93.27	0.000	.4137269	.4314879
/sigma	.2565874	.0009203			.2547836	.2583912

Obs. summary: 7832 left-censored observations at structure<=0
40220 uncensored observations
0 right-censored observations

Appendix 22

Incentive compensation levels regressed on institutional investor ownership

Source	SS	df	MS
Model	2.4570e+09	1	2.4570e+09
Residual	7.9271e+11	54985	14416859
Total	7.9517e+11	54986	14461281.5

Number of obs	54987
F(1, 54985)	170.43
Prob > F	0.0000
R-squared	0.0031
Adj R-squared	0.0031
Root MSE	3797

incent_comp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
inst_lag	1013.134	77.60628	13.05	0.000	861.0256	1165.243
_cons	929.7895	59.73384	15.57	0.000	812.7107	1046.868

Appendix 23

Institutional investor ownership regressed on incentive compensation levels

Source	SS	df	MS
Model	.004795344	1	.004795344
Residual	2592.75821	60498	.042856924
Total	2592.76301	60499	.042856295

Number of obs	60500
F(1, 60498)	0.11
Prob > F	0.7380
R-squared	0.0000
Adj R-squared	-0.0000
Root MSE	.20702

inst	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
incent_lag	7.63e-08	2.28e-07	0.33	0.738	-3.71e-07	5.24e-07
_cons	.7356889	.0009149	804.14	0.000	.7338957	.7374821

Appendix 24

Compensation structure regressed on institutional investor ownership

Source	SS	df	MS
Model	358.622073	1	358.622073
Residual	5837.83305	54954	.106231267
Total	6196.45512	54955	.112755075

Number of obs	54956
F(1, 54954)	3375.86
Prob > F	0.0000
R-squared	0.0579
Adj R-squared	0.0579
Root MSE	.32593

structure	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
inst_lag	.3873001	.0066658	58.10	0.000	.374235	.4003652
_cons	.1978902	.0051314	38.56	0.000	.1878326	.2079477

Appendix 25

Institutional investor ownership regressed on compensation structure

Source	SS	df	MS	Number of obs =	60469
				F(1, 60467) =	2506.86
Model	102.534055	1	102.534055	Prob > F =	0.0000
Residual	2473.17994	60467	.040901317	R-squared =	0.0398
				Adj R-squared =	0.0398
Total	2575.71399	60468	.042596315	Root MSE =	.20224

inst	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
struct_lag	.1207103	.0024109	50.07	0.000	.115985	.1254357
_cons	.6809479	.0013796	493.60	0.000	.678244	.6836519