

IT TAKES TWO TO TANGO: THE RELATIONSHIP BETWEEN PAY-PERFORMANCE SENSITIVITY AND REMUNERATION COMMITTEES

SEBASTIAN FALKE AND GUSTAV SÖNNERBERG
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ABSTRACT

A central feature in modern economics is the separation of ownership and control, leading to the use of corporate governance in business management. Regulatory environment emphasizes the use of remuneration committees as a corporate governance measure to incentivize compensation policies and monitor executive compensation. Using a sample of the largest Swedish publicly listed firms, this thesis develops a simple model for; (1) determining the sensitivity between executive pay and firm performance defined as shareholder return, (2) determining the influence on the pay-performance sensitivity by paying the remuneration committee member. Firstly, the model indicates a positive relationship between executive compensation and firm performance. Secondly, we find that if a company incorporates a fee to the remuneration committee the executive compensation is increasingly dependent on the level of firm performance. The results further indicate that the underlying pay-performance sensitivity identified in (1) is driven by the firms with paid remuneration committee members. The model is of simple characteristics and acknowledged to be limited in a more general practice.

Keywords: Pay-Performance Sensitivity, Remuneration Committee, Incentive Pay

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Correspondence: 23475@student.hhs.se (S. Falke), 23354@student.hhs.se (G. Sönnnerberg)

1. Introduction

Executive pay is highly distinguished from other remuneration within a company, due to the exposed position of the receiver as well as the level and complexity of the compensation. The development of executive pay should naturally be reflected in the output created by the executive, where size of firm, risk-exposure and firm performance are major underlying factors the remuneration should be based on. The legitimacy of this argument however, are under recurring debate. The question was highlighted by the media during the recent financial crisis, where executives in primarily the financial sector received controversial bonuses in conflict with the wealth of shareholders.

The separation of ownership and control between executives and shareholders in public firms is an example of the principal-agent problem. The principal-agent problem occurs when the agent's incentives do not align with those of the principal. In the case of executives as agents and the shareholders as the ones bearing the costs, the theory narrows further into contracting theory, i.e. the way the relationship is contracted upon. Contracting theory aims to control the risk of moral hazard.

Among others, Nobel laureate Bengt Holmström has provided important insights in the subject of contracting theory and how to motivate agents (Holmström, 1979). The link between actual wealth creation by the firm and the compensation earned by the CEO, the pay-performance sensitivity, is of great importance to academic theory in prevention of moral hazard and commercial incentive structures. While Hall and Liebman (1998) support the existence of pay-performance sensitivity among large American firms, it is contradicted by theories of managerial power (Bebchuk and Fried, 2004) and bureaucratic pay (Jensen and Murphy, 1990a; 1990b).

Core et al (1999) support the use of corporate governance to increase the pay-performance sensitivity, indicating the use of remuneration committees. According to

the Swedish Corporate Governance Code all publicly listed firms should have a remuneration committee responsible for monitoring the CEO compensation and preparing remuneration policies to the board of directors. However, some firms compensate their remuneration committee members specifically, whereas other firms do not. The question then arises, partly because current literature lack cover in the area of remuneration committee execution; does the firm receive greater value by paying the remuneration committee?

In order to test the pay-performance sensitivity we motivate a model taking firm complexity and size into consideration. We further control the 10-year sample of 114 publicly listed Swedish firms for company and time fixed effects. Using our model, we find a positive relationship between shareholder return and CEO compensation. Introducing the remuneration committee influence to the model, we argue that the paid remuneration committee provide firms with an increased alignment between compensation and performance. Moreover, we find evidence that the observations with a paid remuneration committee drives the underlying pay-performance sensitivity in the sample.

Besides the academic value in providing additional empirics to the subject of principal-agent relations in the Swedish business landscape, findings in the subject of remuneration committee payment would provide substantial value to the commercial sector in how to implement corporate governance measures.

The remainder of the thesis is organized into 7 sections. In section 2 we review earlier literature and the regulatory environment on pay-performance sensitivity and remuneration committees. Hypotheses, sample description and the regression are specified in section 3. Section 4 presents the empiric results of pay-performance sensitivity along with robustness tests. We present the discussion and suggested direction of future research in section 5, followed by the conclusions in section 6. References and appendix are found in section 7 and 8 respectively.

2.Literature review

The literature in the subject of the principal-agent dilemma, more specifically CEO remuneration and performance, are plentiful and under constant scrutiny whereas remuneration committees as a measure of corporate governance has less empiric cover. Most of the literature is highly influenced of American business culture and climate, which can be deceiving when looking to Swedish businesses. For example, the former Electrolux CEO Keith McLoughlin commented on his compensation level to Dagens Industri;

“I am aware of and sympathize with the worries of the Swedish population, where you have a different remuneration structure than other countries in the world” (2016-01-11)

The following literature review will aim to bring a perspective as geographically influenced as possible.

2.1. Pay-performance sensitivity

According to the principal-agent dilemma, executive compensation should be constructed so that the interest of the manager aligns with those of the shareholders. The separation between ownership and control has been discussed throughout history and the concept can be seen in the early theories of Adam Smith’s *Wealth of Nations* published in 1776;

“The directors of such [joint-stock] companies, however, being the managers rather of other people’s money than of their own, it cannot well be expected, that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own. Like the stewards of a rich man, they are apt to consider attention to small matters as not for their master’s honour, and very easily give themselves a dispensation from having it. Negligence and profusion,

therefore, must always prevail, more or less, in the management of the affairs of such a company”.

Smith’s theories have evolved further in the 20th century, where Berle and Means (1932) were among the earliest to develop the modern definition of principal-agent problems. They have a more theoretical approach when comparing the relationship between the manager and the shareholder to the change of solar system centre in the Copernican Revolution. They argue that the control of the corporation has moved to the hands of the manager, limiting the control of the owners. The theoretical perspective of the principal-agent problem was later added upon by Jensen and Meckling (1976) and the concept of agency costs as the direct or indirect costs that arise in principal-agent relationships. They suggest the potential improvement of the principal-agent situation through monitoring and issuance of incentive contracts.

Several papers have further explored the theoretical perspectives of agency theory and incentive structures (Ross, 1973; Banker and Datar, 1989; Mirrlees, 1999), adding to the theories of how to limit the conflicts arising in principal-agent relationships. In 1979, Bengt Holmström published a paper important to the subject of contract theory, where he distinguishes the performance of the agent to that of other observable criteria. The first-best contract according to Holmström is to compensate the agent based on its effort, however this is difficult and time-consuming to observe and measure. The second-best contract is to compensate the agent based on distinct, but noisy, performance measures of the tasks of the agent. Holmström thus predicts that when the firm has the possibility to monitor the agent efforts more closely, the compensation will depend upon the effort of the manager. Holmström and Milgrom (1991) further argues that simple compensation is insufficient for optimal control of an agent’s performance, as one can add several other instruments in motivating the agent to act on behalf of the shareholders, e.g. ownership of related assets. More comprehensive remuneration and incentive schemes

are according to Holmström and Milgrom (1991) a potential way to further motivate agents to act in the interest of the principal.

A study by Jensen and Murphy (1990a; 1990b) argues that the compensation of American CEOs is virtually independent of the company performance. They also estimate that the relation between CEO wealth and shareholder wealth is small and has decreased during the 50 years up until 1990. The significant misalignment between interests of managers and shareholders estimated by Jensen and Murphy is later contradicted by the two Harvard professors Hall and Liebman (1998), who find a strong link between firm performance and CEO compensation. They conclude that the pay-performance relationship in their sample has increased drastically in the 15 years prior to the study, driven primarily by stock option grants. The effectiveness of stock option grants in motivating CEOs correspond with the earlier theories of Holmström and Milgrom (1991).

In 2004, Bebchuk and Fried developed the concept of managerial power. They assume the manager is a utility maximizer, who aims to receive a compensation as high as possible. Furthermore, board members have little incentive to resist the manager's demand that may hurt shareholders due to low cost of yielding. Directors are also too badly informed to be effective bargainers as they devote too little time to board positions and the CEO monitoring. This provides the executive with an opportunity to increase compensation with low resistance from the board. Bebchuk and Fried (2004) further discusses the influence of managerial power that entitle the CEO with hidden compensation, e.g. retirement benefits. Cooper et al (2009) presented a study contradicting the support for pay-performance sensitivity, providing empiric results implying a negative relation between CEO pay and future shareholder wealth (5-year period). According to the discoveries by Cooper et al (2009), the question whether CEOs can be motivated to increase the returns to shareholders through incentive schemes is uncertain. Although the actual alignment of pay and performance might be questionable, Frydman and Jenter (2010) conclude

that the relation between interests of managers and shareholders has improved substantially throughout the late 20th century.

To further understand the relation, it is necessary to determine what is in the interest of the shareholders. It is possible that all financial investments are made with the intention to gain financial return. Assuming all shareholders are utility maximizers under bounded rationality (Simon, 1957), they will try to maximize wealth without being too highly risk-exposed to return postponed in time.

When examining the compensation of executives in relation to the performance, one has to account for the cross-sectional variance in performance measures. The executive should be evaluated based on the individual performance, not factors outside the control of the individual, such as an industry downturn. Bertrand and Mullainathan (2001) found that changes in firm performance beyond the control of the manager are less paid upon in firms that are better governed, supporting the use of RPE. There are several studies in the area of RPE, finding empiric evidence for the use of e.g. CEO ranking among peers (De Angelis and Grinstein, 2014) and total shareholder return (Alanis, 2015). However, Antle and Smith (1986) argue that when holding the firm's return on common stock fixed, the industry performance affects the CEO compensation negatively, although Frydman and Jenter (2010) conclude that bonuses often are based on industry benchmarks. In total, the overall evidence for RPE is weak in many of the prominent studies in the area. Indicated by the research of Frydman and Jenter (2010), the use of performance measures that incorporate industry benchmarks is valuable when performing pay-performance regressions.

There are other factors than firm performance to consider when studying executive compensation. Gao and Li (2015), examines the relationship between ownership structures and the CEO contract designs. Schaefer (1998), Cichello (2005), Gabaix and Landier (2008) and Smith and Watts (1992), find a strong relationship between the size of the firm and executive compensation. Core et al (1999) argues

that the market value of a firm affects the position complexity and thus compensation, with support of theories by Myers (1977) and Himmelberg and Hubbard (2000). Cheng et al (2016) provide results indicating a strong relationship between compensation and cash holdings of a company. Altogether, previous research suggests that the compensation of executives is exposed to more factors than simply the actual performance. Pay-performance sensitivity analyses should thus be performed when controlling for such external factors (Baker and Hall, 2004).

2.2. Remuneration committee

In pay-performance literature it is generally accepted that executives can extract additional compensation when corporate governance is weak (Core et al, 1999; Bebchuk and Fried, 2004). A remuneration committee that by legal requirements consist of independent members may strengthen the corporate governance (Core et al, 1999). Earlier literature in the area of corporate governance provides support for the dependency of pay-performance sensitivity on the board structure, and in particular the CEO influence over board members (Crystal, 1991; Rosenstein and Wyatt, 1990; Yermack, 1997).

Taiwan recently employed mandatory establishment of remuneration committees for all public firms, where Kuo and Yu (2014) performed a study on the effectiveness of remuneration committees on pay-performance sensitivity. They found that early adopters of remuneration committees held a more closely connected relationship between firm performance and CEO compensation after the change. However, it may be argued that the early adopters of remuneration committees are the ones more concerned with the pay-performance sensitivity, therefore pro adoption of a remuneration committee. It can also be questioned if their conclusions are applicable for the Swedish business climate. Abatecola et al (2012) find a positive correlation between existence of remuneration committee and Tobin's Q and ROA in firms on the Italian Stock Exchange between 2000 and 2008. An Australian study by

Kercher (2013) contradict the purpose of remuneration committees in streamlining the CEO compensation practices.

The literature surrounding remuneration committees is highly uncertain and provides little guidance in the subject, especially whether to pay or not pay the remuneration committee member. Financial incentives are often argued to be the most influential on employee performance (Baker et al, 1988; Jenkins et al, 1982; Locke et al, 1980; Locke et al, 1981; Skaggs et al, 1992). It could therefore be argued that the paid remuneration committee actually would perform better than the unpaid, implying closer monitoring of CEO performance to firm performance and more complex incentive schemes.

2.3. Regulatory environment

The presence of regulatory aspects concerning remuneration committees indicate the importance of the task and provides relevant framework for its practice. The regulatory environment that concerns corporate governance is primarily the Swedish Corporate Governance Code, valid for all publicly listed companies in Sweden, and the recommendations from the European Commission (2005/162/EC; 2009/385/EC). As most other codes of corporate governance, the Swedish code is based on the “comply or explain principle”, allowing some flexibility. However, there are no guidance in the regulations or the recommendations on whether to pay the committee members specifically. The compensation structure to the remuneration committee, as a part of the compensation to the board of directors, is decided upon by the annual general meeting.

According to the Swedish Corporate Governance Code, the remuneration committee should consist of members independent of both the company and its management, with the main task of monitoring and evaluating the compensation levels and process the board’s decisions on compensation. If the board finds it more suitable, the entire board may perform the tasks of the remuneration committee. It

further states that the variable compensation should be evaluated in a way that is connected to predetermined and measurable performance criteria, intended to promote the long-term value creation of the company. How to actually determine what the long-term value creation means, one may look to the recommendations from the European Commission for guidance.

One of the earliest recommendations from the European Commission regarding the remuneration committee came in 2005, explaining the role of the committee and its main task (2005/162/EC). From the 2005 recommendation it is understood that the remuneration committee should align the executive compensation with the long-term interests of the shareholders. In 2009, the European Commission published a new recommendation that aims to increase transparency and control over executive remuneration schemes (2009/385/EC). It says that the structure of executive compensation should ensure that compensation is based on performance and promotes long-term sustainability of the firm. It continues to state the importance of remuneration committees in supervising the board's remuneration behaviour and preventing conflicts of interest when designing the compensation policy of the company.

In determining what actually should drive the executive compensation, the regulations and recommendations provide ambiguous long-term definitions.

2.4. Swedish research

Swedish research lacks significant cover in the area of pay-performance sensitivity. A recent master's thesis by Dogan and Nellkrans (2015) indicate a weak positive relationship between CEO compensation and firm performance between 2007 to 2010 among 196 Swedish publicly listed firms. Their thesis focused on the effect of the financial crisis on the pay-performance sensitivity, and the time period studied could be argued to be too short to provide a conclusion on the overall pay-performance sensitivity, disregarding economic cycles. Dogan and Nellkrans (2015) further found a

negative relationship between performance and executive compensation between 2009 to 2010. Because of the nature of their study, we are careful to rely on their results and methodology.

Additional academic findings are of value due to lack of academic cover in Swedish research of pay-performance sensitivity and remuneration committee influence. As international research provides ambiguous discoveries we find it further valuable to contribute with our results to the global academic debate.

3.Data and methodology

The methodology of this study is based on earlier literature, with minor adjustments due to data and hypothesis differences. This section covers our hypotheses and the model characteristics and development.

3.1. Hypothesis

The majority of the literature support the view that managers are supposed to act in the interest of shareholders. However, how a manager actually aligns to the interest of the shareholders and how to measure the manager's output is of great uncertainty. One may argue that the remuneration should be based on the effort utilised by the manager to perform the task, while others may argue that the effort utilised only is of relevance if it provides financial return to the owners - the shareholders. In theory, effort-based compensation practices would be optimal (Holmström, 1979). In reality though, full observation of activities is either prohibitively costly or impossible to obtain.

Instead, it is more realistic to actually measure the output of the firm, determining the wealth of the shareholders. The rational shareholder will require utility in a reasonably near future (Simon, 1957), supporting the use of firm performance as output when measuring CEO performance. A utility maximizing shareholder will further maximize its wealth, implying the use of motivational incentives to expose the CEO to the same risks as the shareholders. However, this argument is often opposed through studies that find virtually no evidence for a connection between firm performance and CEO remuneration (Jensen and Murphy, 1990a; 1990b). Swedish research provides little cover in the subject of pay-performance sensitivity, hence our first hypothesis:

H1: The CEO compensation is positively correlated with firm performance

In the aftermath of the 2008 financial crisis, scepticism increased towards management remuneration (in primarily the financial sector) and how it is misaligned with the actual performance of the firm. The Swedish Corporate Governance Code, combined with the recommendations from the European Commission, aims to increase the transparency and control over remuneration policies and execution. By dedicating resources to more closely monitor a situation that resembles a principal-agent dilemma, the risk of information asymmetry and moral hazard will be reduced, thus aligning CEO interest with interests of shareholders (Jensen and Meckling, 1976). According to Core et al (1999), firms with weaker governance structures have increased agency problems, which in turn results in an insignificant relationship between performance and compensation. By applying the remuneration committee as a measure of corporate governance one may believe the governance structures should be enforced and result in an increased pay-performance sensitivity.

Turning to the largest publicly listed firms on the Stockholm stock exchange, around half of the companies pay their members of the remuneration committee separately. A remuneration committee member that receives compensation earmarked for the alignment of executive and shareholder interests is motivated to more closely monitor and construct incentive structures to prevent moral hazard. Furthermore, if placing such emphasis on a committee that the board chooses to remunerate the committee members, the matter of executive compensation is taken more seriously within the firm. This leads to the second hypothesis:

H2: A paid remuneration committee will better align the CEO compensation with firm performance

The relation in H2 could be suggested to suffer from reversed causality, i.e. the remuneration committee pay may depend upon the firm’s emphasis on and thus previous establishment of pay-performance sensitivity. Arguing for the importance of corporate governance (Core et al, 1999) and the motivating force of payment (Baker et al, 1988; Jenkins et al, 1982; Locke et al, 1980; Locke et al, 1981; Skaggs et al, 1992), we believe the payment of remuneration committee members adds additional value to the pay-performance relationship. This establishes a direction between cause and effect and reduces the concern of reversed causality.

We acknowledge that the level of pay-performance sensitivity is likely to be relevant when mitigating the principal-agent problem (Jensen and Murphy, 1990a, 1990b). However, the hypotheses presented aims to identify the existence of pay-performance sensitivity rather than establishing the sufficient level, as the literary cover is ambiguous.

3.2. Data

The sample consists of 1140 observations from 114 firms over a time period of 10 years. The included firms consist of the largest publicly listed companies on OMX Stockholm Nasdaq, i.e. a market capitalization of at least 150 million euro (threshold for mid-cap companies) on the last day of trading 2016 (2016-12-30). The sample represents 8 different industries with industrials being the largest industry (33 included companies) and telecommunications the smallest (3 included companies). The industry categorization is presented in Table 6, appendix. Since there are no reliable and comprehensive sources for executive compensation and remuneration committee data, it has been collected from annual reports. Company data have been collected through Serrano (Swedish House of Finance), except for the total shareholder return collected through Reuter’s DataStream.

Included firms have been publicly listed for the entire time period, i.e. the sample is balanced. By sampling a balanced data set, we address the issue of buyout

processes and the concealment of previously public company data. Due to small movements in total number of listed companies over the specified time period, the IPOs and buyouts are assumed to counterweigh each other. Time specific noise arising from ownership activities and abnormal to the general trends are also excluded from the test results, e.g. remuneration practices focusing on executive retention rather than pay-performance sensitivity. To include the excluded companies would further have meant compromising with data source consistency. However, the balanced data sample is subject to concerns regarding sample selection bias and the inclusion of excluded firms could be argued to make general conclusions more reliable.

CEO compensation consists of several components that together add up to the total compensation package. Total compensation is defined as the sum of the annual base pay, short term incentives, long term incentives, pension and other benefits. Further explanation of the compensation components and categorization can be found in Table 5, appendix.

A paid remuneration committee is defined as a company paying a member of the remuneration committee an earmarked fee for holding the remuneration committee position. The decision of paying the remuneration committee member is decided upon by the annual general meeting. The sample suggest similar fees at a specific level between observations for remuneration committee members, thus enhancing the concept of paid or not paid. As past research suggests (Core et al, 1999), we treat the remuneration committee variable as exogenous. Although, it could be suggested that this variable is endogenous, i.e. the existence of remuneration committee pay is not random. We will address this issue in section 4, results.

Previous literature includes the use of several different measurements of performance, both accounting and market based indicators. The direct way of measuring wealth of shareholders however, is to look at the total shareholder return

with reinvestment of dividends. In terms of shareholder wealth, other indirect performance measures provide noisy estimates in some cases uncorrelated with the actual return to investors. Following the methodology of Hall and Liebman (1998), Jensen and Murphy (1990b) and Core et al (1999), we use stock return as measure for firm performance, more specifically total shareholder return. Alanis (2015) find strong statistical support for the use of total shareholder return as RPE-based performance measurement. Alanis (2015) argues that the total shareholder return provides a better estimation of the asset performance of the firm as it originates in the levered cash flow, thus controlled for capital structure and the exogenous shocks that affects the firm's operating cash flow.

However, the shareholder return is associated with a potential measurement error. Assuming the semi-strong efficient market hypothesis and that the stock market reacts only when information becomes public, the delay in Q4 and annual reports stimulate market movements in the subsequent period that refers to information from the previous period. Since these actions are private information prior to the release of reports, they are used as grounds for compensation by the board but not reflected in the stock return. By including an adjusted shareholder return one could assign the performance measurement to the referable period. This is of great difficulty though, as the delayed return is merged with the return for the following year and almost impossible to separate.

The theoretical underpinning of size, complexity and fixed effect on pay is extensive and to be included when one predicts the influences on executive remuneration (Schaefer, 1998; Core et al, 1999; Gabaix and Landier, 2008; Gao and Li, 2015). In order to contribute to the more general field of corporate governance and to ensure validity, our control variables are based on past research.

The control variables are consistent with Core et al (1999), with some modification due to differences in data. Total assets is our proxy for firm size based on the assumption that larger firms are associated with a more demanding CEO

position. Total assets are preferred over other firm size measures due to its consistency over time within a firm, supported by Gao and Li (2015). Size proxies such as net sales and number of employees are subject to internal categorization of revenue, and accounting and human resource principles, thus not consistent measures over time within firms.

In accordance with Core et al (1999) and Smith and Watts (1992), we perform additional controls for the average market-to-book ratio for the last 2 years as a proxy for investment opportunity. Core et al (1999) uses 5-year averages, whereas our data only support the use of 2-year averages. 5-year averages would have meant an undesired reduction in sample size. Investment opportunity is used to measure the CEO position complexity. According to Myers (1977) a firm's market value can be divided into the present value of current assets and the present value of future growth opportunities. A higher market-to-book value is therefore indicating higher expectations on company development resulting in more complex CEO position (Core et al 1999). This is also relevant in the theories of Himmelberg and Hubbard (2000), who argues for the relationship between executive compensation and the demand for competent CEOs.

Due to a panel data set of a non-random sample, we have defined year and company as fixed effect estimators. By using time fixed effects we control for unobserved variables that are equal across all firms in each year. Using fixed effects for companies, we control for unobserved variables that are specific for each firm and not time-varying. In comparison to Core et al (1999) who uses industry fixed effect instead of company, we find it more relevant to use company fixed effects due to large differences between firms in the same industry (see Table 7 for industry fixed effects).

3.3. Execution

Due to the aim of the studies and closely resembling hypotheses, we believe there are valuable methodology to be found in the test by Core et al (1999). The model used by Gao and Li (2015) will be used as reference point where Core et al (1999) is insufficient.

To test the hypotheses H1 and H2, we perform two fixed effect regressions on the panel data set. Similar to the approach used by Core et al. (1999) and Gao and Li (2015), we estimate the following equations to find the relationship between executive compensation and shareholder return in the sample;

$$\begin{aligned} \text{Total compensation} = & \alpha + \beta_1(\text{performance}) + \beta_2(\text{size effect}) + \\ & \beta_3(\text{complexity effect}) + \text{company FEs} + \text{time FEs} + \varepsilon_i \end{aligned} \quad (\text{A})$$

Under H1, the dependent variable is defined as the CEO total compensation. The independent variable is the firm performance, controlled for size and complexity effects and fixed for company and time effects. We further introduce the performance variable and size-, complexity- and fixed effects in sequences, so the final equation for H1 including all variables of interest resembles:

$$\begin{aligned} \ln(\text{total compensation}) = & \alpha + \beta_1(\text{tsr}) + \beta_2 \ln(\text{total assets}) + \\ & \beta_3(\text{investment opportunities}) + \text{company FEs} + \text{time FEs} + \varepsilon_i \end{aligned} \quad (\text{B})$$

where the dependent variable is the natural logarithm of the total compensation and the size effect is the natural logarithm of total assets. The use of natural logarithms transforms the leptokurtic distributions of compensation and total assets into forms that are more approximately normal (see Table 12, appendix). To transform the dependent variable and size effect via the natural logarithm is supported by Core et al. (1999) and acknowledge as a viable method. It has the the main advantage of measuring the proportionate effect rather than in unit value effect. The total

shareholder return (tsr) is the stock return including reinvested dividends, and investment opportunities is the 2-year average market-to-book ratio.

In the H2 analysis, we add the paid remuneration committee effect to equation (B). This is carried out by adding a dummy variable that return the value 1 in the observations where a company pays its remuneration committee, otherwise 0. Moreover, we add a variable that interacts the paid remuneration committee dummy variable with the total shareholder return, to find the connection between the paid remuneration committee and the pay-performance sensitivity. We estimate the following equation;

$$\begin{aligned} \ln(\text{total compensation}) = & \alpha + \beta_1(\text{tsr}) + \beta_2(\text{remuneration committee}) + \\ & \beta_3(\text{remuneration committee} * \text{tsr}) + \beta_4 \ln(\text{total assets}) + \\ & \beta_5(\text{investment opportunities}) + \text{company FEs} + \text{time FEs} + \varepsilon_i \end{aligned} \quad (C)$$

where *remuneration committee*tsr* is the interaction variable. The remuneration committee coefficient describes the differences in compensation levels between companies with unpaid and paid remuneration committees that cannot be accounted for in size, complexity or fixed effects. The interaction term coefficient measures the incremental difference in pay-performance sensitivity between the firms with paid and unpaid remuneration committees.

We perform robustness tests with clustered standard errors for establishing the consistency of the results. Additional sensitivity tests are performed to establish the generality of the model using the same equation as in (C), with modifications. We study the regression reliability by dividing the sample into the largest and smallest halves in terms of total assets, looking to particular categories of compensation and adding potential omitted bias.

We assume one-tailed tests for the performance measurement due to the informed assumption that firm performance and shareholder return do not negatively affect CEO compensation.

4. Empirical results

This section contains the results and findings from the hypotheses tests. The regressions are based on the equations (B) and (C) with variables added in sequences. Additional tables for the sensitivity tests of the results can be found in appendix. It is important to understand that the following tests and hypotheses address the proportionate pay-performance sensitivity rather than the actual pay levels.

4.1. Descriptive statistics

By using descriptive statistics, we find overall trends and the characteristics of our data. Table 1 show descriptive statistics for the compensation, performance and size measures of the firms in the data sample.

Table 1: CEO compensation and firm descriptives

Total cash compensation is the sum of base pay and STI. Total compensation is the sum of base pay, STI, LTI, pension, and other benefits. See Table 5, appendix, for definitions. All compensation components are for the same year, i.e. all components have been awarded the same year as they are reported to. Total shareholder return is the stock return including reinvested dividends in decimals. Number of employees expressed as the full time equivalent number of employees. Compensation components reported in SEK and net sales and total assets reported in MSEK.

| | All companies | | | | Unpaid remuneration committee | | | | Paid remuneration committee | | | |
|--------------------------------|---------------|------------|-----------|------------|-------------------------------|-----------|-----------|-----------|-----------------------------|------------|------------|------------|
| | Obs | Mean | Median | SD | Obs | Mean | Median | SD | Obs | Mean | Median | SD |
| <i>Pay components</i> | | | | | | | | | | | | |
| Total compensation | 1140 | 10 680 759 | 7 020 500 | 10 345 118 | 605 | 6 491 917 | 4 700 000 | 6 130 648 | 535 | 15 417 673 | 12 162 000 | 11 975 013 |
| Base pay | 1140 | 5 242 969 | 3 966 500 | 3 736 281 | 605 | 3 711 606 | 2 800 000 | 2 935 445 | 535 | 6 974 697 | 6 254 400 | 3 790 503 |
| STI | 1140 | 2 050 307 | 974 000 | 3 274 868 | 605 | 1 020 307 | 333 000 | 1 660 348 | 535 | 3 215 074 | 1 800 000 | 4 146 825 |
| LTI | 1140 | 893 994 | 0 | 2 964 846 | 605 | 250 759 | 0 | 919 124 | 535 | 1 621 390 | 0 | 4 098 169 |
| Pension | 1140 | 2 155 520 | 1 203 500 | 4 118 730 | 605 | 1 295 065 | 735 000 | 3 038 389 | 535 | 3 128 559 | 2 200 000 | 4 894 284 |
| Other benefits | 1140 | 381 969 | 94 101 | 1 289 053 | 605 | 279 834 | 9 000 | 1 220 287 | 535 | 497 468 | 135 000 | 1 354 535 |
| <i>Company characteristics</i> | | | | | | | | | | | | |
| Total shareholder return | 1140 | 0.24 | 0.18 | 0.75 | 605 | 0.30 | 0.20 | 0.91 | 535 | 0.18 | 0.15 | 0.51 |
| Number of employees | 1140 | 13 392 | 2 277 | 31 371 | 605 | 3 928 | 546 | 10 799 | 535 | 24 094 | 8 406 | 41 845 |
| Net sales | 1140 | 26 417 | 5 189 | 50 351 | 605 | 8 891 | 1 756 | 21 096 | 535 | 46 235 | 20 911 | 64 519 |
| Total assets | 1140 | 135 372 | 9 762 | 596 419 | 605 | 48 325 | 3 903 | 283 487 | 535 | 233 808 | 29 679 | 805 938 |

As displayed in Table 1, the primary source of compensation to executives among Swedish large public firms is the annual base pay, to which the level of pension is closely connected. The short and long term incentives display great volatility between observations, although the average level of long term incentives among observations with unpaid remuneration committee is significantly lower.

When dividing the sample into paid and unpaid remuneration committees an overall trend displays that observations with a paid remuneration committee generally are larger firms with higher CEO compensation. The possible correlation between firm size and remuneration committee pay indicates endogeneity in the remuneration committee dummy variable. Observations with paid remuneration committees also display greater use of long term incentives, although with great volatility.

As Table 1 is insensitive to changes over year, Table 2 display the changes over time in remuneration committee characteristics and compensation components.

Table 2: Development over time for paid remuneration committees and CEO compensation

Number of paid remuneration committees is defined as the number of companies where members of the remuneration committee have received certain fees for being members of the remuneration committee, i.e. have they been given an extra fee outside of their ordinary board member fee. Changes to paid remuneration committee is defined as number of firms that go from not paying to paying their remuneration committee members. Compensation components are defined in Table 5 and the reported compensation is assignable to the indicated year even though some of the actual payments occur later, e.g. the STI reported for 2008 is often paid out in 2009. Compensation components reported in SEK.

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|--|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|
| Number of companies | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 |
| Number of paid remuneration committees | 44 | 46 | 52 | 52 | 54 | 55 | 54 | 58 | 59 | 61 |
| Changes to paid remuneration committee | 0 | 3 | 8 | 2 | 2 | 3 | 1 | 4 | 1 | 2 |
| <i>Mean</i> | | | | | | | | | | |
| Total compensation | 8 442 069 | 9 276 460 | 9 420 411 | 9 353 660 | 11 026 446 | 10 761 952 | 11 207 638 | 11 623 660 | 12 101 305 | 13 593 986 |
| Base pay | 4 201 951 | 4 461 998 | 4 729 470 | 4 921 569 | 5 248 795 | 5 185 857 | 5 497 980 | 5 795 252 | 6 108 265 | 6 278 552 |
| STI | 1 830 471 | 1 788 350 | 1 563 537 | 1 560 445 | 2 116 408 | 2 251 536 | 1 942 538 | 2 020 912 | 2 495 563 | 2 933 313 |
| LTI | 321 419 | 973 206 | 624 709 | 491 907 | 844 776 | 1 013 549 | 1 276 113 | 939 701 | 824 531 | 1 630 031 |
| Pension | 1 852 632 | 1 796 617 | 2 288 513 | 2 010 275 | 2 601 469 | 1 921 620 | 2 018 768 | 2 435 424 | 2 188 469 | 2 441 416 |
| Other benefits | 236 117 | 256 289 | 214 182 | 369 464 | 457 524 | 413 051 | 535 408 | 459 968 | 552 029 | 325 657 |

During the time period studied, the number of paid remuneration committees increased by approximately 40%. It suggests a trend towards paid remuneration committees in the sample even though some companies stop paying their remuneration committee.

Table 2 further indicate that the level of compensation has increased in all components of compensation, particularly in long term incentives. The connection between the increase in paid remuneration committees and long term incentives is further analysed upon when testing the second hypothesis.

4.2. Pay-performance sensitivity

To test the first hypothesis, Table 3 contain the test results from equation (B).

Table 3: CEO pay and company performance

The sample consist of 1140 resp. 1026 observations due to averaged variable. The regression is constructed with the natural logarithm of total compensation as the dependent variable. The independent variable of interest is the continuous variable total shareholder return. The control variables are the natural logarithm of total assets and the investment opportunity (2-year average market-to-book value). Company and year fixed effects are indicated at the bottom, as well as robust or clustered standard errors. Total shareholder return is subject to one-tailed test.

| | Dependent variable is CEO total compensation (ln) | | | | |
|--------------------------------|---|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Total shareholder return (TSR) | -0.0649** (0.0333) | -0.0211 (0.0247) | 0.0235* (0.0148) | 0.0214** (0.0129) | 0.0214* (0.0151) |
| Total assets (ln) | | 0.307*** (0.0115) | 0.303*** (0.0346) | 0.159*** (0.0347) | 0.159*** (0.0477) |
| Investment opportunity | | 0.104*** (0.0211) | 0.0238* (0.0124) | 0.0198* (0.0105) | 0.0198* (0.0111) |
| Constant | 15.82*** (0.0284) | 8.625*** (0.279) | 8.806*** (0.792) | 12.28*** (0.800) | 12.28*** (1.102) |
| Company FE | | | Yes | Yes | Yes |
| Year FE | | | | Yes | Yes |
| Observations | 1,140 | 1,026 | 1,026 | 1,026 | 1,026 |
| R-squared | 0.003 | 0.481 | 0.889 | 0.898 | 0.898 |
| Test | Robust | Robust | Robust | Robust | Cluster |

***p<0.01, **p<0.05, *p<0.1

In column (1) of Table 3 we run the simple robust regression without the size, complexity or fixed effects. The regression indicates that CEO compensation is negatively correlated with firm performance, although the explanatory value of the regression in this state is insufficient. When we add the control variables to regression (2) the pay-performance correlation becomes unreliable due to insignificant results. The coefficients of the firm size and complexity variables are significant and positive, supporting that CEO compensation is correlated with firm size and position complexity. The size and complexity effects are consistent with the results of earlier literature (Gabaix and Landier, 2008; Gao and Li, 2015; Core et al 1999). As we control for company fixed effects (3) the coefficient of total shareholder return takes on a positive and significant value, whereas the size and complexity effect decreases in nominal value. In column (4) we further control for time trends, and show that the total shareholder return remains positive and increasingly significant. The results suggest that 100% in total shareholder return leads to a 2.14% increase in CEO compensation. In (5) we perform a regression with clustered standard errors in company characteristics, where all variables remain significant at conventional levels. According to the performance measure controlled for size, complexity and fixed effects, the regression provides coefficients that imply there exists a positive relationship between performance and CEO compensation among large publicly listed Swedish firms.

The results presented in Table 3 demonstrate that the executive compensation is cross-sectionally related to total shareholder return, total assets and investment opportunities. The results resemble those of Core et al (1999), and provides us with the fundamental pay-performance relationship to further test the second hypothesis upon.

4.3. Remuneration committee influence

Table 4 examines the impact of a paid remuneration committee on the relationship between total shareholder return and CEO compensation, according to equation (C).

Table 4: Paid remuneration committee influence over CEO pay and company performance

The sample consist of 1140 resp. 1026 observations due to averaged variable. The regression is constructed with the natural logarithm of total compensation as the dependent variable. The independent variables of interest are the continuous variable total shareholder return, the binary variable taking on value when the remuneration committee is paid and the interaction term between total shareholder return and paid remuneration committee determining the remuneration committee influence. The control variables are the natural logarithm of total assets and the investment opportunity (2-year average market-to-book value). Company and year fixed effects are indicated at the bottom, as well as robust or clustered standard errors. Total shareholder return and interaction variable are subjects to one-tailed tests.

| | Dependent variable is CEO total compensation (ln) | | | | |
|---------------------------------|---|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Total shareholder return (TSR) | -0.00995 (0.0281) | -0.0232 (0.0253) | 0.0112 (0.0137) | 0.0145 (0.0122) | 0.0145 (0.0144) |
| Paid remuneration committee | 0.942*** (0.0487) | 0.517*** (0.0412) | 0.118* (0.0698) | 0.0934 (0.0671) | 0.0934 (0.0843) |
| TSR*Paid remuneration committee | -0.0180 (0.0703) | 0.0552 (0.0564) | 0.0596** (0.0338) | 0.0526** (0.0292) | 0.0526* (0.0330) |
| Total assets (ln) | | 0.260*** (0.0109) | 0.290*** (0.0359) | 0.151*** (0.0359) | 0.151*** (0.0520) |
| Investment opportunity | | 0.109*** (0.0204) | 0.0257** (0.0128) | 0.0201* (0.0105) | 0.0201* (0.0113) |
| Constant | 15.36*** (0.0353) | 9.453*** (0.262) | 9.054*** (0.811) | 12.42*** (0.818) | 12.42*** (1.184) |
| Company FE | | | Yes | Yes | Yes |
| Year FE | | | | Yes | Yes |
| Observations | 1,140 | 1,026 | 1,026 | 1,026 | 1,026 |
| R-squared | 0.268 | 0.551 | 0.890 | 0.899 | 0.899 |
| Test | Robust | Robust | Robust | Robust | Cluster |

***p<0.01, **p<0.05, *p<0.1

The regression in column (1) describes the relationship between performance and pay with the influence of the remuneration committee. The performance measures render no significance whereas the existence of a paid remuneration committee indicate an increase in total compensation. Column (2) add size and complexity effects to the regression and deduce a significant positive relationship between the dependent variable and both total assets and the investment opportunity of a firm. Further adding the company and year fixed effects to the

regression, (3) and (4), we establish a significant positive coefficient of the interaction term. While one cannot assume the underlying alignment of pay and performance, one can conclude that the firms that pay their remuneration committees has a positive pay-performance relationship. The regression with clustered standard errors in column (5) further strengthens the second hypothesis, as the coefficient of the interaction term remain significant. The results imply that when a shareholder receives a total return of 100%, the CEO receives an additional increase in compensation of 5.26% when the remuneration committee members are paid.

Table 4 also indicate the compensation dependency on the control variables. We find that by doubling total assets the CEO receives 15.1% increase in compensation, and that a one-unit increase in investment opportunities lead to an increase in CEO compensation of additionally 2.01%. The values of the control variable coefficients are consistent when adding the remuneration committee influence in Table 4 (compared to Table 3). This disproves the issue of endogeneity in the remuneration committee pay variable in terms of size and CEO position complexity.

The coefficient of the dummy variable in Table 4 provides little evidence for an increase in compensation due to the existence of a paid remuneration committee. Contradictive to the information in Table 1, this result gives no significant indication that the firms paying their remuneration committees also give their CEOs a higher compensation.

4.4. Sensitivity test

To test the sensitivity in the results of the interaction term in particular, we have analysed the sample in greater detail, categorized the total compensation and added potential omitted bias. The results of these tests are presented in Tables 8, 9 and 10 in the appendix.

The Table 8 findings indicate that the basic pay-performance sensitivity is more common among smaller than larger firms in the sample. Furthermore, the existence of a paid remuneration committee is associated with a higher executive compensation among smaller firms. The interaction term provides no significant findings when dividing the sample. Regarding the overall feasibility of the model when analysing a modified sample, it does not provide consistent levels of significance over adjusted data samples, indicating inadequate features for general interpretations.

By dismembering the total compensation, one can provide an insight into whether modifying the dependent variable will provide substantial changes to the results. Table 9 provide no significant support for paid remuneration committee influence in any of the compensation categories, except for total compensation. The coefficients indicate a significant positive relationship between the level of incentives and the shareholder return. Although, the LTI regression in Table 9 provide no significance for the performance or interaction variable (LTI valued at grant date). The deviations from the results of the original model in Table 9 indicate model insufficiency in describing the compensation components. When scrutinized, it can be argued that the paid remuneration committee focuses on aligning the total compensation with performance rather than the individual compensation components. Consequently, Table 1 exhibit large deviations in compensation components, thus the specific component's misrepresentation of the actual remuneration strategy.

Table 10 provide a comparison between results when including the lagged cash-to-asset ratio as a control variable, as recent studies suggest (Gao and Li, 2015; Cheng et al, 2016). The inclusion of lagged firm cash levels rather enhances the model reliability in its original state than provides extra value, indicating robustness in the original regression. In terms of endogeneity in the remuneration committee dummy variable with cash levels, we find no impact on the dummy variable when

adding cash levels. However, when creating a model of simple characteristics there is always a risk of additional omitted variable bias.

The relatively high R^2 value in all regressions could suggest multicollinearity among the independent and control variables. Running a simple regression on the independent and control variables separately, we can with variance inflation factors conclude that the control variables do not suffer from high multicollinearity (Table 11, appendix). The high R^2 of the original regression can instead be explained by the use of fixed effects on company and time.

The overall robustness test of the model provides vague indications that the model is insufficient for describing pay-performance sensitivity in a more general usage area, with the influence of remuneration committee payment.

5. Discussion and future research

We understand the deficiencies in the model for more general use in pay-performance theory. We encourage succeeding papers to identify required level of pay-performance sensitivity to mitigate principal-agent problems, as a positive pay-performance relation is not by default an effective incentive structure. Jensen and Murphy (1990a; 1990b) approaches this subject and rejects a positive but weak pay-performance sensitivity. They argue that the executive's marginal utility from pursuing one extra unit of performance is subject to increased risk-bearing negatively affecting the executive. Unless the marginal utility surpasses the increased risk-bearing, the executive will not be motivated to commit to the extra performance, i.e. the motivational force of the pay-performance relationship is not functional. Such analysis lies beyond the scope of this thesis, but is crucial for principal-agent theory.

Another subject of interest not approached in this thesis is the actual measures of the overachieving remuneration committee. Assuming the pay of the remuneration committee increases the devotion of time and effort to the cause, it could (contrary to our expectations) be assumed that the paid remuneration committee favours a more fine-tuned managerial success factor than the stock return. Even though we provide findings indicating the importance of financial return, it is argued that several other measurements of managerial success are to be included (Holmström, 1979; Jensen and Murphy, 1990a). More qualitative research in terms of contract design is suggested to further explore possibilities to mitigate the risk of moral hazard.

Looking past the standard quantitative model used in our analysis, it could be useful to engage in case studies regarding how to qualitatively determine the critical procedures in contract theory. By collecting input on required sensitivities of pay-performance and managerial success triggers one could further explore the principal-agent relationship.

6. Conclusion

In this thesis, we have developed a model of simple characteristic for analysing the pay-performance sensitivity with the influence of remuneration committee payment. By using a unique data sample of the largest publicly listed firms in Sweden from 2006 to 2015, we find it relevant to establish payment policies for the remuneration committee when striving towards pay-performance sensitivity.

When comparing our results to those of Core et al (1999), we can determine that our findings of pay-performance sensitivity resembles their conclusions. In comparison to Hall and Liebman (1998), who relates the pay-performance sensitivity almost entirely to the stock and stock options, we find a pay-performance relationship in the absence of dominating LTI plans (Table 1 and 9). The results further indicate that the observations with paid remuneration committees has a higher level of pay-performance sensitivity, i.e. the well performing CEO receives greater compensation if the remuneration committee is paid, *ceteris paribus*. An implication of this finding is that the well-performing and utility maximizing manager will benefit from improving corporate governance. By influencing the board to pay the remuneration committee members the well-performing manager receives increased, but hidden, compensation (Bebchuk and Fried, 2004).

We can further conclude that the pay-performance sensitivity among the largest Swedish publicly listed firms is indicated to be driven by those companies that pay their remuneration committee. We come to this conclusion based on the change in significance between the performance variable and the interaction term when adding the paid remuneration committee influence in Table 4.

By providing a model of simple characteristics, based on previous literature, this thesis manages to present findings from the Swedish business landscape that are first of its kind. We hope our findings can provide future value by highlighting the role of the remuneration committee in corporate governance research.

7. References

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Regulatory environment

Commission Recommendation 2005/162/EC of February 15 2005 on the role of non-executive or supervisory directors of listed companies and on the committees of the (supervisory) board.

Commission Recommendation 2009/385/EC of April 30 2009 complementing Recommendations 2004/913/EC and 2005/162/EC as regards the regime for the remuneration of directors of listed companies.

The Swedish Corporate Governance Code, 2016, (Issued by the Swedish Corporate Governance Board), Stockholm.

8. Appendix

Table 5: Variable definitions

Definitions of compensation variables. When a change in CEO has taken place during the year, the CEO with more than 6 months of employment has been included, with compensation recalculated to 12 months.

| Variable | Definition |
|------------------------|---|
| Total pay | The sum of base pay, STI, LTI, pension and other benefits. |
| Total cash | The sum of base pay and STI. |
| Incentives | The sum of STI and LTI |
| Pension and benefits | The sum of pension and other benefitss |
| Base pay | Annual cash compensation, paid out monthly. |
| STI | Short term incentive, performance based. Typically, a yearly bonus earned in t0 and paid out in t1. |
| LTI | Long term incentives or deferred pay, often awarded in share or share rights. LTI only considers LTI plans taxed as income. LTI is valued at grant date according to expected pay off and there is no mechanical correlation between reported value of LTI and the total shareholder return. |
| Pension | The annual pension cost depends on the type of pension plan (defined benefit plan or defined contribution plan). Defined benefit plan is described as a promise of future payment that is predetermined. Delayed amendments in the presumptions of defined benefit plans can lead to large time specific lump sums. Defined contribution plan is described as a plan where the employer makes contributions at a regular basis. |
| Other benefits | Other benefits are non-monetary benefits, typically consist of car benefits and health insurance. |
| Remuneration committee | A variable that takes the value of one if the company pays a certain fee to their remuneration committee and zero otherwise. |

Table 6: Industry categorization of sample

The sample consists of 114 companies active in 8 different industries and 15 different supersectors. Total assets are expressed as average and standard deviation in MSEK. Industry Classification Benchmark (ICB) used as the industry classification taxonomy, with sector (in bold) and supersectors.

| | Number of companies | Mean total assets, MSEK | Standard deviation total assets, MSEK |
|-----------------------------|------------------------|-------------------------|--|
| Basic Materials | 8 | 41 569 | 38 138 |
| Basic Resources | 8 | 41 569 | 38 138 |
| Consumer Goods | 10 | 29 544 | 44 175 |
| Automobiles & Parts | 4 | 9 040 | 11 401 |
| Food & Beverage | 1 | 10 082 | 2 004 |
| Personal & Household Goods | 5 | 49 840 | 54 751 |
| Consumer Services | 10 | 16 692 | 21 302 |
| Media | 1 | 13 580 | 2 930 |
| Retail | 5 | 20 918 | 25 679 |
| Travel & Leisure | 4 | 12 188 | 16 590 |
| Financials | 29 | 424 527 | 1 128 396 |
| Banks | 4 | 2 878 580 | 1 501 926 |
| Financial Services | 13 | 42 934 | 63 107 |
| Real Estate | 12 | 19 903 | 11 820 |
| Health Care | 12 | 35 643 | 105 397 |
| Health Care | 12 | 35 643 | 105 397 |
| Industrials | 33 | 37 067 | 74 795 |
| Construction & Materials | 7 | 31 096 | 29 088 |
| Industrial Goods & Services | 26 | 38 675 | 82 878 |
| Technology | 9 | 36 287 | 84 490 |
| Technology | 9 | 36 287 | 84 490 |
| Telecommunications | 3 | 116 228 | 97 499 |
| Telecommunications | 3 | 116 228 | 97 499 |

Table 7: CEO pay and company performance, controlled for industry effects

The sample consist of 1140 resp. 1026 observations due to averaged variable. The regression is constructed with the natural logarithm of total compensation as the dependent variable. The independent variables of interest are the continuous variable total shareholder return, the binary variable taking on value when the remuneration committee is paid and the interaction term between total shareholder return and paid remuneration committee determining the remuneration committee influence. The control variables are the natural logarithm of total assets and the investment opportunity (2-year average market-to-book value). Industry (sector) and year fixed effects are indicated at the bottom, as well as robust standard errors.

| | Dependent variable is CEO total compensation (ln) | | | |
|---------------------------------|---|----------------------|-----------------------|-----------------------|
| | (1) | (2) | (3) | (4) |
| Total shareholder return (TSR) | -0.00995 (0.0281) | -0.0232 (0.0253) | -0.0127 (0.0223) | -0.0255 (0.0201) |
| Paid remuneration committee | 0.942*** (0.0487) | 0.517*** (0.0412) | 0.293*** (0.0422) | 0.287*** (0.0427) |
| TSR*Paid remuneration committee | -0.0180 (0.0703) | 0.0552 (0.0564) | 0.0566 (0.0494) | 0.0532 (0.0529) |
| Total assets (ln) | | 0.260*** (0.0109) | 0.308*** (0.0105) | 0.305*** (0.0105) |
| Investment opportunity | | 0.109*** (0.0204) | 0.0651*** (0.0162) | 0.0645*** (0.0157) |
| Constant | 15.36*** (0.0353) | 9.453*** (0.262) | 8.501*** (0.242) | 8.655*** (0.255) |
| Industry FE | | | Yes | Yes |
| Year FE | | | | Yes |
| Observations | 1,140 | 1,026 | 1,026 | 1,026 |
| R-squared | 0.268 | 0.551 | 0.620 | 0.625 |
| Test | Robust | Robust | Robust | Robust |

***p<0.01, **p<0.05, *p<0.1

Table 8: CEO pay and company performance by firm size

The sample consist of 1026 observations due to averaged variable. The regression is constructed with the natural logarithm of total compensation as the dependent variable. The sample is divided into two halves according to size in terms of total assets. The independent variables of interest are the continuous variable total shareholder return, the binary variable taking on value when the remuneration committee is paid and the interaction term between total shareholder return and paid remuneration committee determining the remuneration committee influence. The control variables are the natural logarithm of total assets and the investment opportunity (2-year average market-to-book value). Company and year fixed effects are indicated at the bottom, as well as robust standard errors. Total shareholder return and interaction variable are subjects to one-tailed tests.

| | Dependent variable is CEO total compensation (ln) | | |
|---------------------------------|---|----------------------|----------------------|
| | All firms | Largest half | Smallest half |
| Total shareholder return (TSR) | 0.0145 (0.0122) | 0.0229 (0.0442) | 0.0208** (0.0121) |
| Paid remuneration committee | 0.0934 (0.0671) | -0.0420 (0.255) | 0.138*** (0.0459) |
| TSR*Paid remuneration committee | 0.0526** (0.0292) | 0.0583 (0.0572) | 0.0245 (0.0317) |
| Total assets (ln) | 0.151*** (0.0359) | 0.286*** (0.0970) | 0.116*** (0.0409) |
| Investment opportunity | 0.0201* (0.0105) | 0.0676* (0.0368) | 0.0139 (0.00970) |
| Constant | 12.42*** (0.818) | 9.349*** (2.400) | 12.90*** (0.873) |
| Company FE | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes |
| Observations | 1,026 | 513 | 513 |
| R-squared | 0.899 | 0.800 | 0.905 |
| Test | Robust | Robust | Robust |

***p<0.01, **p<0.05, *p<0.1

Table 9: CEO pay and company performance per compensation category

Dependent variable is the natural logarithm of each pay category as defined in Table 5. The sample consist of 1026 observations due to averaged variable. The independent variables of interest are the continuous variable total shareholder return, the binary variable taking on value when the remuneration committee is paid and the interaction term between total shareholder return and paid remuneration committee determining the remuneration committee influence. The control variables are the natural logarithm of total assets and the investment opportunity (2-year average market-to-book value). Company and year fixed effects are indicated at the bottom, as well as robust standard errors. Total shareholder return and interaction variable are subjects to one-tailed tests.

| | Dependent variable is CEO total compensation (ln) | Dependent variable is CEO total cash (ln) | Dependent variable is CEO incentives (ln) | Dependent variable is CEO long term incentives (ln) | Dependent variable is CEO pension and benefits (ln) |
|------------------------------------|---|---|---|--|--|
| Total shareholder return (TSR) | 0.0145 (0.0122) | 0.0150 (0.0122) | 0.479** (0.225) | -0.0384 (0.207) | 0.00849 (0.0686) |
| Paid remuneration committee | 0.0934 (0.0671) | 0.0528 (0.0674) | 1.131 (0.727) | 0.564 (0.907) | -0.192 (0.236) |
| TSR*Paid remuneration committee | 0.0526** (0.0292) | 0.0369 (0.0358) | 0.113 (0.625) | -0.0353 (0.467) | -0.0301 (0.171) |
| Total assets (ln) | 0.151*** (0.0359) | 0.156*** (0.0435) | 0.715 (0.495) | -0.294 (0.476) | 0.681*** (0.263) |
| Investment opportunity | 0.0201* (0.0105) | 0.0175* (0.00981) | -0.0507 (0.159) | 0.149 (0.144) | -0.122 (0.0802) |
| Constant | 12.42*** (0.818) | 12.02*** (0.993) | -5.489 (11.47) | 11.83 (10.92) | -1.527 (6.045) |
| Company FE | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,026 | 1,026 | 1,026 | 1,026 | 1,026 |
| R-squared | 0.899 | 0.883 | 0.653 | 0.638 | 0.642 |
| Test | Robust | Robust | Robust | Robust | Robust |

***p<0.01, **p<0.05, *p<0.1

Table 10: CEO pay and company performance adding cash variable

The sample consist of 1026 observations due to averaged variable. The regression is constructed with the natural logarithm of total compensation as the dependent variable. The independent variables of interest are the continuous variable total shareholder return, the binary variable taking on value when the remuneration committee is paid and the interaction term between total shareholder return and paid remuneration committee determining the remuneration committee influence. The control variables are the natural logarithm of total assets, the investment opportunity (2-year average market-to-book value) and for the regression in (2) also the lagged cash-asset ratio. The lagged cash variable is the previous year's cash-asset ratio. We use previous year's cash-asset ratio since the compensation policy is determined in the beginning of the year, at the annual general meeting. Company and year fixed effects are indicated at the bottom, as well as robust standard errors. Total shareholder return and interaction variable are subjects to one-tailed tests.

| | Dependent variable is CEO total compensation (ln) | |
|---------------------------------------|---|----------------------|
| | (1) | (2) |
| Total shareholder return (TSR) | 0.0145 (0.0122) | 0.0147 (0.0124) |
| Paid remuneration committee | 0.0934 (0.0671) | 0.0940 (0.0672) |
| TSR*Paid remuneration committee | 0.0526** (0.0292) | 0.0526** (0.0291) |
| Total assets (ln) | 0.151*** (0.0359) | 0.151*** (0.0361) |
| Investment opportunity | 0.0201* (0.0105) | 0.0197* (0.0106) |
| Cash through total assets (%), lagged | | 0.0274 (0.159) |
| Constant | 12.42*** (0.818) | 12.42*** (0.821) |
| Company FE | Yes | Yes |
| Year FE | Yes | Yes |
| Observations | 1,026 | 1,026 |
| R-squared | 0.899 | 0.899 |
| Test | Robust | Robust |

***p<0.01, **p<0.05, *p<0.1

Table 11: Multicollinearity test, using variance inflation factors

The sample consist of 1026 observations due to averaged variable. The variables of interest are the continuous variable total shareholder return, the natural logarithm of total assets and the investment opportunity (2-year average market-to-book value). The regression is constructed with each of the independent and control variables in equation (C) as the dependent variable. The number of interest is the VIF;

$$VIF_i = \frac{1}{1 - R_i^2}$$

indicating collinearity between the dependent variable and the regressors. VIF-value indicated in the bottom of the table, if greater than 10 implies multicollinearity. Robust standard errors indicated at the bottom.

| | Dependent variable is TSR | Dependent variable is Total assets (ln) | Dependent variable is Investment opportunity |
|--------------------------------|------------------------------|--|---|
| | (1) | (2) | (3) |
| Total shareholder return (TSR) | | 0.00604 (0.133) | 0.425*** (0.120) |
| Total assets (ln) | 0.000856 (0.0190) | | -0.322*** (0.0239) |
| Investment opportunity | 0.108 (0.0674) | -0.578*** (0.0909) | |
| Constant | 0.0666 (0.509) | 23.79*** (0.120) | 8.645*** (0.577) |
| Observations | 1,026 | 1,026 | 1,026 |
| R-squared | 0.056 | 0.195 | 0.232 |
| VIF | 1.06 | 1.24 | 1.30 |
| Test | Robust | Robust | Robust |

***p<0.01, **p<0.05, *p<0.1

Table 12: Variable skewness and kurtosis

Each variable's skewness and kurtosis measurement indicated below. A right skewed variable is implied by a skewness value greater than 0. A leptokurtic distribution implies that the variable holds more or larger outliers than if the variable would have been normally distributed. This is indicated by a kurtosis measurement greater than 3.

| | Skewness | Kurtosis |
|--------------------------------|----------|----------|
| <i>Pay components</i> | | |
| Total compensation | 2.72 | 14.77 |
| Base pay | 1.44 | 6.03 |
| STI | 3.24 | 17.06 |
| LTI | 6.69 | 61.04 |
| Pension | 11.41* | 192.96* |
| Other benefits | 6.90 | 58.67 |
| <i>Company characteristics</i> | | |
| Total shareholder return | 9.38** | 175.64** |
| Number of employees | 4.96 | 34.50 |
| Net sales | 3.22 | 14.55 |
| Total assets | 7.11 | 60.43 |

*High values primarily due to amendments in presumptions of defined benefit plans

**High values due to one large outlier in total shareholder return (Fingerprint Cards, 2015)