
CEO-Compensation and the Incentives Created:

A Study Comparing Swedish PE-Backed and Public Companies

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Abstract

This thesis investigates possible significant differences in CEO-compensation between Swedish PE-backed and public companies, using both qualitative and quantitative data where paired t-tests, rank-sum tests and regression models are applied. The qualitative research – based on a survey among Swedish PE-firms – indicates that the overall structure of the CEO-compensation package in public companies is similar to that in PE-backed companies. The quantitative data – containing a sample of 58 Swedish public companies which have been size- and industry matched to a unique data sample containing CEO-compensation statistics from 40 Swedish PE-backed companies and 18 IPO prospectuses – show that (1) the total cash compensation is higher for CEOs in public companies than in PE-backed companies, (2) the ratio of variable salary to total cash compensation received by the CEO is higher in public companies than in PE-backed companies and that (3) CEO-ownership is higher in PE-backed companies than in public companies. The implications for CEO-incentives are ambiguous and further research on the topic is needed.

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Delimitations

Our focus in this thesis is solely on CEO-compensation in PE-backed companies in relation to CEO-compensation in public companies. Nevertheless, we find it useful to state some delimitation in order to eliminate any confusion regarding our topic. We do not engage in any discussion of the optimal *level* of executive compensation, nor do we discuss the increasing wedge between CEO-compensation and worker compensation (Randøy and Nielsen, 2002). Moreover, we do not discuss the link between pay and performance, even though that would have been highly interesting. The reason for omitting this discussion is the difficulties to collect performance measuring data for PE-backed companies.

1. Introduction and Contribution

“It has become fashionable at public companies to describe almost every compensation plan as aligning the interests of management with those of shareholders. In our book, alignment means being a partner in both directions, not just on the upside. Many ‘alignment’ plans flunk this basic test, being artful forms of ‘heads I win, tails you lose.’”

Warren Buffett

In this thesis we investigate executive compensation in general and CEO-compensation in Sweden in particular. The topic of executive compensation is interesting to investigate further since it is commonly debated in media and by researchers in the field, often focusing on the pay levels observed rather than the composition of the compensation. Bebchuk and Fried (2004) are two of the heaviest critics of how executive compensation today is set, whereas for example Steven Kaplan of the University of Chicago argues that CEOs in fact deserve a higher salary than they actually receive (Granström, 2007). The latter statement is perhaps especially true for Swedish companies, where total CEO-compensation is notably lower than that observed in the United States (Randøy and Nielsen, 2002).

Furthermore, both media and academic attention has been directed towards CEO-compensation in public companies, whereas less is known about how compensation is set in private companies. Among the private companies in the market, an increasing number are today owned by PE-firms¹ and they are particularly secretive about their methods, including the design of the compensation package. We therefore find it highly relevant to study CEO-compensation in PE-backed companies in more detail.

Some of the defining characteristics of PE-backed companies are majority ownership, less transparency and aggressive use of leverage, which combined lead to overall stronger corporate governance (Jensen, 1989). Accordingly, we expect the compensation in PE-backed companies to be more efficient, thus better in aligning CEO and shareholder interest than in public companies. This leads to the purpose of this thesis, where we try to determine whether there are any significant differences in CEO-compensation between PE-backed companies and their public equivalents, which in turn would explain differences in CEO-incentives. The research question is consequently:

Are there significant differences in CEO-compensation and the incentives created between PE-backed companies and their public equivalents?

¹ For explanations to the abbreviations and notation used throughout the thesis, we refer to Appendix I.

We add to the existing knowledge within the field by comparing CEO-compensation in public companies to CEO-compensation in PE-backed companies, using a unique data sample obtained directly from a number of Swedish PE-firms. The emphasis in the thesis is on describing the methods employed by the Swedish PE-firms and less effort is spent on describing the practices in public companies, given the extensive information available on this subject. Our contribution is thus to shed more light on how executive compensation is set in PE-backed companies. To our knowledge no previous studies have been performed in this area, in Sweden or elsewhere.

Previous studies in the field of executive compensation include Garen (1994) who concludes that principal-agency theory do play a role in setting executive compensation and Bebchuk and Fried (2004) who argue that boards fail to align CEO and shareholder interest. Moreover, Harvey and Shrieves (2001) among other things find that the presence of outside directors facilitates the use of incentive compensation and that incentive compensation is inversely related to use of leverage, whereas Murphy (1998) find that pay-performance sensitivities primarily are driven by stock options and stock ownership. Finally, Jensen and Meckling (1976) theoretically show that managerial effort is positively correlated to ownership and Ofek and Yermack (2000) empirically find that an increase in CEO-ownership does not impose new incentives after a certain level of CEO-ownership is reached.

Our qualitative research shows that the components of the compensation package are the same in PE-backed and public companies, where both groups use fixed cash salary, variable cash salary and ownership in order to create CEO-incentives. Investigating the compensation package more closely in the quantitative section, our results suggest that (1) the total cash compensation is higher for CEOs in public companies than in PE-backed companies, (2) the ratio of variable salary to total cash compensation received by the CEO is higher in public companies than in PE-backed companies and that (3) CEO-ownership is higher in PE-backed companies than in public companies.

Our results indicate that PE-backed companies offer their CEOs lower total cash compensation as well as variable cash salary. The fact that a larger fraction of total cash compensation is variable in public companies would imply that CEO-incentives are better aligned with shareholder interest in public companies than in PE-backed companies, given the extensive support by researchers in the field of variable salary in creating CEO incentives. The larger fraction of variable salary to total cash compensation could alternatively be explained by the fact that the bonus is not necessarily contingent upon reaching certain goals, but more like a guaranteed salary. If

this is the case, we would expect that the variable cash salary does not create incentives to the same extent.

Even though our results suggest that the total cash compensation is lower in PE-backed companies than in public companies, previous research shows that PE-backed companies attract highly competent managers and this implies that there are other factors that play an important role when it comes to attract CEOs and create incentives. Factors specific to PE-backed companies that could be attractive for CEOs include the possibility to entirely focus on operations without any requirements to communicate with external stakeholders and the discipline imposed by high leverage and active owners (Morgan Stanley Roundtable, 2006, and Fenn, Liang and Prowse, 1995). We are unable however, to draw any conclusions regarding whether these factors are superior to monetary compensation when it comes to creating incentives that best align CEO and shareholder interest.

Another possible, and likely, explanation to why CEOs are attracted to private equity is that the CEO-ownership is higher in PE-backed companies, as suggested by our results in this thesis. This means that if the company is successful, the return on the investment can be considerably higher in PE-backed companies than in public companies. This potentially leads to a higher total compensation to the CEO in PE-backed companies. In addition, since PE-backed companies are generally more aggressively leveraged, the return is further enhanced for CEOs in PE-backed companies in relation to CEOs in public companies. Given the extensive support of a positive correlation between CEO-ownership and managerial effort, we believe that the implication of our result regarding CEO-ownership is that CEO-incentives are closer aligned with shareholder interest in PE-backed companies than in public companies.

In proceeding, Section 2 outlines a summary of existing theories as an introduction to the field of executive compensation. In Section 3 we describe the PE-market and summarize some important differences between PE-backed and public companies and in Section 4 we outline our hypotheses. In Section 5 we present qualitative data in order to gain some insight into the compensation package in PE-backed companies and also to establish whether the structure is different from that of public companies. In Section 6 we continue by presenting the quantitative dataset used to test our hypotheses. Section 7 contains our methodology and empirical findings and in Section 8 we analyse our results and draw conclusions. Finally, we present suggestions for future research on the subject in Section 9.

2. Theoretical Background

In this section we present the main theoretical framework which we combined with the theories presented in Section 3 later base our hypotheses on.

2.1 Principal-agency theory – explaining the manager-owner conflict

We start by introducing the principal-agency theory which captures the fundamental problem of many companies, namely the separation between ownership and control. Put simply, this separation leaves the manager of the company (the agent) with significant discretion to influence shareholder (the principal) value. However, if the manager's incentives are not fully aligned with shareholder interest, the manager will make decisions that benefit him at the expense of the owners (Berle and Means, 1932). The problem is twofold and derives partly from the fact that a manager without 100 percent ownership is not fully compensated for his effort – leading to inadequate effort – and partly from the fact that the manager does not bear the full cost of his actions – leading to inefficient consumption of perks. This has been shown theoretically by for example Jensen and Meckling (1976), who find that CEO-effort is correlated with managerial ownership. Their finding is that the more the CEO owns of the company, the more he enjoys the benefits from his effort, and thus he will exert more effort.

The principal-agency problem is further aggravated by the fact that managers and owners have different time horizons and different risk preferences (Byrd, Parrino and Pritsch, 1998). Shareholders generally have a longer time horizon than managers and favour all projects with positive net present value, regardless of when the cash flow occurs in time. The manager, on the other hand, prefers projects that generate positive cash flows in the short term, so that he can enjoy the benefits during his tenure. If the manager consistently undertakes projects that maximize his own wealth rather than company value, he benefits at the expense of shareholders. Moreover, shareholders generally hold a diversified portfolio consisting of a multitude of companies, whereas the manager tend to be less diversified and more exposed to the success or failure of only one company (his employer), from which he receives salary and in which he might hold stocks and options. Consequently, theory predicts that the manager will be more restrictive to undertake risky projects, even though they have a positive net present value in expectance. Also, this problem could potentially reduce shareholder value.

2.2 CEO-compensation – mitigating the problem

One of the most intuitive and efficient ways to align CEO and shareholder interest is to tie CEO-compensation to company performance. If this is done correctly, the CEO enjoys a higher compensation whenever he increases shareholder value, and is penalized for any actions that destroy shareholder value. In order for this to be efficient, all factors outside the managers control must be eliminated from the equation (Holmström, 1979) and the manager should not be able to manipulate company performance (Shleifer and Vishny, 1997).

One common way to align CEO and shareholder interest is to pay variable cash salary (bonus) to the CEO. This part of the total cash compensation is often contingent upon reaching one or several targets, which can either be accounting measures, market measures or a combination of the two. It is also common that a maximum level which the bonus cannot exceed is imposed. We exemplify with quoting Skanska's Annual report for 2006:

For the President and CEO, the target has been [operating income]. The president has also had non-financial targets [including health and safety, the environment, business ethics, management of loss-making projects and management development]. The 50 percent maximum flexible salary of the President and CEO [...] was earned in full, based on financial targets, but was reduced by 11 percentage points because two non-financial targets were not met and one non-financial target was only partially met.

When determining the variable compensation researchers in the executive compensation field generally argue that external (market) measures in many ways are superior to internal (accounting) measures. This is since accounting data is backward looking, short-term and fairly easy to manipulate, and therefore an inappropriate determinant of CEO-compensation (Murphy, 1998). However, when using external measures it is important that the pay is related to factors within the CEO's control, but most importantly also correlated with shareholder value (Baker, Jensen and Murphy, 1987).

Despite this theoretical framework, many studies find only a weak link between pay and performance, suggesting that contracts are not optimally designed. Jensen and Murphy (1990) argue that CEO-compensation ultimately is determined by CEO-power relative to the board and therefore independent of performance. This view is also supported by Bebchuk and Fried (2004) who question the functioning of arm's length contracting. The arm's-length contracting view of executive compensation is based on the idea that corporate boards operate at arm's-length from the executives whose pay they set. Their decision is, according to this theory, based exclusively on the interest of

the shareholders. Bebchuk and Fried (2004) challenge the independence of the board based on several grounds, including (1) the board members' incentives to be re-elected, (2) the CEO's influence over pay and other benefits to board directors, (3) friendship with and loyalty to the CEO, (4) collegiality and authority within the board and (5) the small costs of favouring executives.

Part of the solution to align CEO-incentives with shareholder interest could therefore be more diligent, independent boards, as well as more optimally designed contracts. The ultimate question is perhaps whether the weak link between pay and performance is caused by weak owners or poor managers. Possibly, it could also be that monetary compensation is not a strong enough tool in order to create CEO-incentives, something we discuss later.

2.3 Benefits and drawbacks with stock options

The use of stock options and equity-based compensation has increased tremendously over the last decades; from zero percent of total compensation in 1984 to about two thirds in 2001 (Hall, 2003). If stock option programs are designed well they serve the purpose of reducing the problem of the differences in time horizon and risk preference between managers and owners discussed above. The underlying intuition, as explained by Hirshleifer and Suh (1992), is that stock option value increases with the stock market value of the company as the manager undertakes projects with positive net present value. This means that the CEO is compensated for his effort even if the value is realized after he has resigned and he will therefore undertake all positive net present value projects, regardless of when the value is realized. Moreover, option value increases with volatility which has the effect that the CEO is more willing to undertake risky projects, given that he has acquired stock options in the company.

Despite the popularity of stock options, there are several flaws with equity-based compensation. Firstly, managers can be tempted to manipulate earnings in order to improve today's share price and this problem can be especially severe when managers are close to retirement. One solution to the problem discussed by Hall (2003) is to have longer vesting periods for the options. This view is also supported by Michael Jensen at the Harvard Business School (Morgan Stanley Roundtable, 2006), who argues that one of the greatest advantages of PE-backed companies compared to public companies is that the former generally have longer and stricter lock-up periods than the latter.

This can further be linked to Holden's (2005) paper on the original management incentive schemes implemented by Du Pont and GM in the 1920's. These programs involved the companies lending money to the managers so that they could buy company stocks. These stock option plans were significantly longer than what is observed today and involved real risk for the executives. Holden (2005) writes:

"In fact, the Du Pont and GM schemes have more in common with management incentive schemes provided by many of today's private equity funds. Their incentive packages often have a time horizon of five years or more and require management to purchase a nontrivial amount of equity out of their own pockets. The private equity funds often also provide upside incentives through stock options where the exercise price is set well above the current market price, so that they will only pay off if the firm shows genuine growth in the long run."

Another problem associated with stock options discussed in the literature is the cost-value wedge (Hall, 2003 and Bebchuk and Fried, 2004). The disparity between the cost associated with stock option programs for the shareholders and the value for the manager is a result of the manager's risk preferences. When the manager is forced to hold more company stock than justified from the portfolio-diversification standpoint, the value of this holding is discounted to account for the increased risk. Moreover, Ofek and Yermack (2000) show that when CEO-ownership reaches a certain level, equity-based compensation do not increase incentives further, but instead result in the CEO selling off stock in order to diversify his holdings and decrease his exposure to the company stock.

An additional problem with option-based remuneration is that factors outside the manager's control affect the value of the options (Hall and Murphy, 2003 and Bebchuk and Fried, 2004). Simply put, this means that if the options are not indexed so that they capture only relative performance, the options could appreciate in value due to general optimistic market conditions, even if the specific company underperforms compared to its competitors. The opposite may also be true, meaning that the manager is punished for a general market decline, even if his own company outperforms the market. The implication of this is that options become less efficient in aligning CEO-incentives.

A final problem with the use of options in order to align CEO and shareholder interest is that they are an unstable tool. This is since the incentive effect is lost as soon as the options are sufficiently out of the money and in order to impose new incentives a new option program must be

issued, perhaps at significant costs for the shareholders (Hall and Knox, 2003). However, Acharya, John and Sundaram (2000) show that resetting can be value-enhancing under certain circumstances.

2.4 How to best align CEO-incentives

Given the theories presented above, we conclude that CEO and shareholder interests are best aligned if a portion of total cash compensation is variable and CEO-ownership is high. How large the portion of variable cash salary should be varies between industries and depends among other things on the idiosyncratic risk of the business. If CEO-ownership consists of options, these should be indexed, do not have too short vesting periods and have selling restrictions. Moreover, none of the compensation components should be possible to manipulate and should be shareholder value relevant.

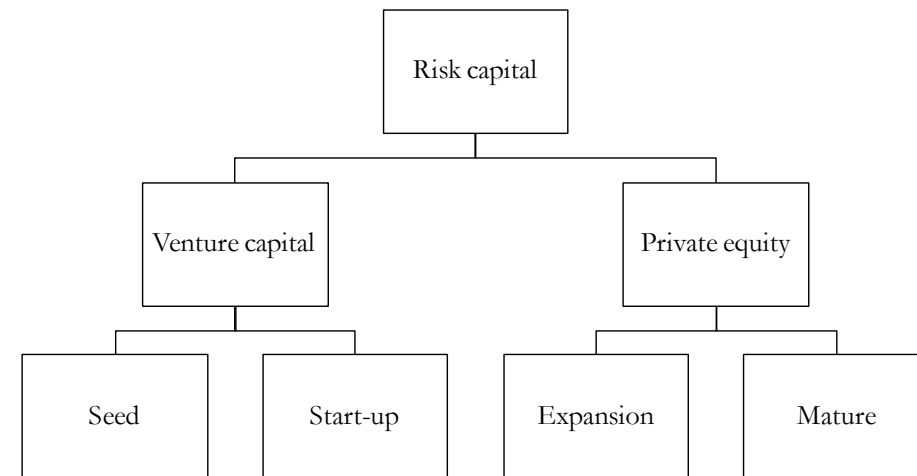
3. PE-backed Companies vs. Public Companies

In this section we provide a description of the differences between PE-backed and public companies in general, in order to obtain a deeper understanding for and background to the subject. More information specific to the PE-firms in our sample is presented in Section 5 containing qualitative data.

3.1 Some history and characteristics of the private equity market

The private equity market is fairly young and from 1980 it has been a fast growing market where PE-firms seized the opportunity to profit from inefficient and undervalued corporate assets (Fitzgerald and Engwall, 2004). The market is an important source of funds for start-ups, private middle-market companies as well as companies in financial distress. Also public companies seeking buyout financing turn to the private equity market. In Figure 1 below, we notice that the risk capital² market can be divided into stages of maturity, where the term ‘venture capital’ is generally associated with the earlier stages and ‘private equity’ to more mature stages.

Figure 1: Overview of the risk capital market



Sources: Sjätte AP-fonden.

The private equity market consists of professionally managed equity investments in the unregistered securities of both private and public companies and money is raised from institutional investors, endowments, pension plans and wealthy individuals (Fenn, Liang and Prowse, 1995). The major intermediary is the limited partnership; where institutional investors are the limited partners and professional investment managers are the general partners (Kaplan and Schoar, 2003). One of the

² In order to avoid confusion, we use the notation ‘risk capital’ rather than ‘venture capital’ as the umbrella term incorporating all venture capital, private equity and LBO-firms.

key ideas with the structure of PE-funds is that the fund is tax-exempt. Moreover, the financial risk lies in each individual investment, implying that the risk at the fund level is minimized if any portfolio company fails to repay its debt (European Private Equity and Venture Capital Association, EVCA). Another reason for the limited partnership is according to Jensen (1989) to avoid the extreme information asymmetries and incentive problems that arise in the private equity market.

3.2 The most important differences

There are several defining differences between PE-backed companies and publically traded companies and a few of them are discussed below. Advantages³ for PE-backed companies compared to public companies often brought forward include (1) less transparency and attention from the stock market, (2) faster and more efficient decision processes, (3) a specified time horizon for an illiquid investment, (4) active owners, (5) aggressive use of leverage and (6) highly competent board and management. Moreover, it has been argued that PE-backed companies use better developed incentive schemes, which is the focus of this thesis.

First, PE-backed companies are relieved from the transparency and to some extent also accountability required from publically listed companies. Private companies do not need to provide reports for the market on a regular basis and the companies are taken away from the public scene of action. Back in 1934, the SEC Act had the effect of driving companies out of the public and corporate governance arena in the United States, resulting in a market that was uncontrollable and unmonitored by outside investors (Morgan Stanley Roundtable, 2006). Today, the same pattern is observed in the United States, where the regulations for public companies are increasing. The Sarbanes Oxley Act has led to increased costs of auditing and legal fees, causing companies to go private (Michaels, 2004). In a study by Fenn, Liang and Prowse (1995) there is also evidence that companies go private because of the higher fixed costs that are associated with the public market.

Second, most public companies have multiple stakeholders, and to protect them there are strict regulations regarding how and when certain decisions can be made (e.g. certain decisions must be made at the annual general meeting). PE-backed companies, on the other hand, have a more liberal structure when it comes to decision-making and this creates more freedom to act fast. This

³ We think that it might be worthwhile to point out that our own standpoint in this thesis is not necessarily that private equity in general is superior to public companies. Rather, our aim is to try to establish whether the claimed benefits of private equity over public companies when it comes to solving the principal-agency problem do exist. Thus, when we speak of 'advantages' and 'benefits' of private equity, those are benefits as defined by previous literature, theory or the PE-firms themselves.

freedom, combined with the fact that the PE-firm is a majority owner, leads to more effective decision-making (Morgan Stanley Roundtable, 2006).

Third, another important difference between PE-backed companies and public companies is the time horizon of the investment. The holding period for a typical buyout is three to seven years (British Private Equity and Venture Capital Association, BVCA), but from an investors point of view the investment is on the fund level where the holding period is closer to ten years (Fenn, Liang and Prowse, 1995). This implies a commitment for the investor, since the shares are illiquid unlike those in public companies (Ljungqvist and Richardson, 2003). Bhidé (1993) in fact argues that market liquidity has a cost in the form of weaker corporate governance.

Fourth, most PE-firms hold a majority stake in their portfolio companies, which is a precondition for the PE-firm to be an active owner able to exercise control. The majority stake enables the PE-firm to monitor and advise the portfolio company, and perhaps most importantly control the point of exit (Jensen, 1989). In contrast, public companies often have less concentrated ownership, resulting in more passive owners (Wright and Robbie, 1998 and Burkart, Gromb and Panunzi, 1997). However, ownership is more concentrated in Europe than in the United States (Pagano and Röell, 1998). This is in line with Swedish data where a concentrated ownership is more likely than in the United States (Agnblad, Berglöf, Högfeldt and Svancar, 2002).

Fifth, leverage is another defining difference between portfolio and public companies. For example Rajan and Zingales (1995) show that debt comprise around 20-30 percent of total capital in public companies, whereas the ratio of debt to equity is the reverse in private equity buyouts (i.e. debt can be up to 80 percent of total capital). This is since an important strategy in private equity is to use leverage both at the PE-fund level and at the portfolio company level in order to maximize return. The use of high leverage at the fund-level enables PE-firms to undertake a greater number of investments since a smaller amount of equity is required for each investment (Krantz, 2006). Moreover, using high leverage at the portfolio company level minimizes the free cash flow available to management. This is in line with the theories of Jensen (1986), who discusses the role of debt in increasing corporate efficiency by preventing management from empire building and consumption of perks. The underlying intuition is that taking on more debt sends a positive signal to shareholders and puts a pressure on management to generate sufficient cash flow to amortize debt. The drawback of high leverage is that the management could be tempted to take on extremely risky projects to be able to pay down the debt at a faster pace. The remedy to such behaviour is debt covenants that

restrict the use of value reducing methods (Baker and Wruck, 1989). Furthermore, in line with classical Miller-Modigliani (1958) theory, the use of leverage is efficient as it increases the tax shield and consequently decreases the tax burden. This is also shown by Axelson, Jenkinson, Strömberg and Weisbach (2007) in their article on leverage in buyouts.

Sixth, it has been argued that the boards and managers in private equity are seen as active and highly competent. *The boards* in the PE-backed companies are often more involved in the company in comparison to the boards in public companies, and *the managers* in PE-backed companies are generally experienced and have a relevant industry background (Kaplan and Strömberg, 2001). Today, the private equity market attracts talented members of the business, political and cultural establishment, including many of the world's top managers (Tuck School of Business at Dartmouth). The question is if there is a difference with regard to public companies as we doubt that boards and managers in public companies generally should lack experience and competency. However, according to for example Wahlin (2007), PE-backed companies attract more successful managers because they are private, and hence the managers can focus on the operations and do not need to spend time on answering questions from media, shareholders and analysts.

Furthermore, the compensation package might be a reason that managers are attracted to the private equity market (Wahlin, 2007). In the US, PE-firms often offer employee stock options and this allows companies to attract highly motivated and entrepreneurial employees (Hall and Murphy, 2003). This implies that the managers of the PE-backed companies often have a significant equity stake in the company, and this stake has historically been larger than those of public companies. Moreover, public companies generally do not have the same restrictions for holding period of stocks and options, making stock options a less efficient tool to create incentives. In the private equity market the manager receives an equity stake, but he is unable to sell the share or exercise the stock until value is potentially created (Nyman, 2002). However, there are indications that the construction of CEO-compensation in public companies is becoming more similar to the compensation package of PE-backed companies (Kaplan, 1997). For example, options are used to a larger extent today than before in public companies (Hall, 2003). In order to investigate if there are still differences in Sweden, we continue the next section by outlining the hypotheses.

4. Hypotheses

In this section we combine the theories presented in Section 2 with the most significant differences between PE-backed companies and public companies outlined in Section 3 to formulate our hypotheses.

4.1 Hypothesis 1a-b – Total cash compensation

First, in hypothesis 1a, we investigate what implications corporate governance has for the total cash compensation, where ownership concentration is used as a proxy for corporate governance. The reason for using concentrated ownership as a proxy for corporate governance is that a shareholder with a sufficiently large ownership stake can exert control through his voting power and consequently control the CEO. We anticipate a negative correlation between ownership concentration and total cash compensation received by the CEO. The intuition is that if the owner can exert enough control simply from holding a majority stake in the company, it is likely that it is not necessary to reward the CEO excessively in order to align CEO and shareholder interest further. Consequently,

Hypothesis 1a: *There is a negative correlation between ownership concentration and total cash compensation received by the CEO in both PE-backed and public companies.*

Second, in hypothesis 1b, we consider the total cash compensation received by the CEO, including fixed and variable cash salary. We expect PE-backed companies to have stronger corporate governance than public companies due to their majority stakes. This implies lower total cash compensation in PE-backed companies than in public companies given that hypothesis 1a is confirmed. According to the theories of Bebchuk and Fried (2004), as discussed in detail in Section 2, CEOs in public companies develop a close relationship to the board and compensation committee over time. The underlying critique is that this friendship causes board directors to benefit from paying the CEO generously. PE-firms, in contrast, have a specified investment horizon and thus less incentive and less time to build up such close relationship. Moreover, many board directors of public companies hold no or little owner stake in the company they represent, which further increases the directors' incentives to favour the management rather than the shareholders. PE-firms, on the other hand, are often majority owners in their portfolio companies and thus have the incentives to maximize shareholder value before anything else. In this context, however, our results may not reflect all the problems associated with companies with dispersed ownership (Burkart,

Gromb and Panunzi, 1997), given that a large part of Swedish public companies have a concentrated ownership (Agnblad, Berglöf, Högfeldt and Svancar, 2002). In hypothesis 1b we consequently expect that the total CEO-compensation is higher in public companies than in PE-backed companies.

Hypothesis 1b: *The total cash compensation received by the CEO is higher in public companies than in PE-backed companies.*

4.2 Hypothesis 2 – Variable salary to total cash compensation

Our second hypothesis concerns the variable part of CEO cash compensation. As previously discussed, PE-backed companies do not have to provide private information or business plans to the stock market, as opposed to their public equivalents. In line with new accounting regulations, the information provided to the market must also contain data on executive compensation, which has lead to a heated debate, both internationally and in Sweden. It has been argued that CEO-compensation is high, and particular attention has been paid to the variable cash salary and the moral aspects of high compensation (Ollevik, 2007). We believe that this criticism to some extent could lead to public companies avoiding granting their executives high bonuses, but instead compensate them with a higher fixed salary. If this is correct, it leads to a lower proportion of variable salary in relation to total cash compensation. At the same time, we believe that the lack of transparency in the PE-market facilitates for the board to decide on an optimal compensation package without outside pressure, which means that the board does not have to take into consideration opinions from outside stakeholders when determining executive pay. This means that they can have a higher proportion of variable salary in relation to total cash compensation, in line with the theories of for example Jensen and Murphy (1990) presented in Section 2. Consequently, given a more optimal pay-setting environment prevailing in the portfolio companies of the PE-firms we expect a more optimal compensation contract in these companies. Thus, our second hypothesis is that the variable salary in relation to the total cash compensation is higher in PE-backed companies than in public companies.

Hypothesis 2: *The variable salary in relation to total cash compensation for the CEO is higher in PE-backed companies than in public companies.*

4.3 Hypothesis 3 – CEO-ownership

Finally, our third hypothesis concerns CEO-ownership. As argued by Jensen and Meckling (1976), CEO-ownership results in a better alignment of managers' and owners' interests, and therefore mitigates the principal-agency problem discussed in Section 2. This idea was incorporated by the first LBO-firms developing in the 1980's, and since then it has been customary to let the CEO of portfolio companies hold an owner stake. The practice is now widespread and today CEO-ownership in the form of stock options is higher than ever (Hall, 2003). Even though CEO-ownership now is common also in public companies, we suspect that the design of the option programs might not be optimal. As discussed in Section 3, public companies do not have the same restrictions for vesting periods, causing stock options to be less effective as an incentive method. Moreover, the understanding of the exact mechanics of stock options and the costs associated with the option programs is potentially limited in some public companies, either leading to less use of options as an incentive creating method or a method that does not create as powerful incentives as it could when designed optimally (Ollevik, 2007).

Furthermore, many public companies in Sweden exhibit concentrated ownership and it has been shown empirically that CEO equity-based compensation is negatively related to the fraction of the company held by the largest external shareholder (Cyert, Kang and Kumar, 2002). This is consistent with the view that a large shareholder in public companies can exert control over the CEO through voting power, whereas a company with dispersed owners instead controls the CEO by aligned incentives through CEO-ownership. This leads us to our third hypothesis, where we expect CEO-ownership to be higher in PE-backed companies than in public companies.

Hypothesis 3: *CEO-ownership is higher in PE-backed companies than in public companies.*

5. Qualitative Data

This section presents a broader picture of Swedish PE-firms' view of executive compensation and how incentives best should be created. The emphasis is on PE-firms and their portfolio companies, whereas data from public companies is included in the quantitative part of the next section. We first present some qualitative data obtained from one direct interview with a representative from one of the larger Swedish PE-firms and responses to our survey from other PE-firms.⁴ In total, this section is based on answers from three of the larger PE-firms and three smaller PE-firms. All information and examples are received from the PE-firms unless otherwise stated. We then present information collected from 18 IPO prospectuses from 2001-2007 in order to investigate if the compensation package differs at a later stage of the investment.

5.1 Different types of portfolio companies

Let us start by exemplifying how PE-firms operate and different ways they can act to create value in their portfolio companies. We do this by describing three hypothetical scenarios, as explained by one of the PE-firms. We present the scenarios in order of maturity, starting with early stage investment.

Scenario 1: Company A is a company without any clear strategy and hopelessly inappropriate office premises and location (imagine a high profile law firm located in a distant suburb far away from any clients and thus sending all the wrong signals). The first steps for the PE-firm could be to change the management, find new appropriate office premises and implement a new strategy.

Scenario 2: Company B is an entrepreneurial company with plenty of ideas but less experience of running a company and growing to new markets. In this case the PE-firm could add new people to the management, preferably with appropriate industry knowledge and the right network. Moreover, the founder may wish to sell large parts of his shareholding in order to retire from the company. The PE-firm then helps to find a successor so that the founder can be phased out.

Scenario 3: Company C has a good management in place but an owner who is not engaged and has lost interest in the operations. The key for the PE-firm in this scenario involves investing new resources and creating the right incentives for the management.

Even though these are three fundamentally different situations, one of the PE-firms points out that the compensation packages to the management do not differ very much between the three cases.

⁴ For confidentiality reasons, we do not reveal which funds have participated in the study.

5.2 The compensation package

A typical compensation package consists of two components. The first part is ongoing cash remuneration received on a monthly and/or annual basis and usually is made up of fixed salary, variable cash salary and pension. Several PE-firms confirm that the fixed salary is dependent on the size of the portfolio company, the industry in which the company operates and also the degree of internationalization. It is also stressed that it should be a market salary, but how this market rate is determined varies. One PE-firm uses compensation consultants or head hunters, whereas another lets the executives negotiate for their own salaries. We have no information regarding any differences in the pay-setting for internal and external CEOs.

The variable cash salary is almost always a function of the fixed salary (often 50-100 percent, i.e. 6-12 months of fixed salary), and could also be contingent on reaching certain goals. These goals could be either financial key targets such as earnings before interest, taxes, depreciation and amortization (EBITDA) or more subjective “soft” goals, such as successful integration of an acquisition, or a combination of both. The purpose of the bonus is to motivate the executives to reach ongoing goals in the business, as one of the PE-firms states that the long-run investment in options or stocks in the company is insufficient for this purpose. This is since the value of the portfolio company would not be maximized if the only objective of the executives was to maximize option value. Instead, the highest value is achieved using a combination of short-term and long-term objectives.

The second part of the compensation package received by executives in PE-backed companies is the financial investment in the company. This investment is usually done at the same terms as the PE-firm is investing, and the final value of the investment is contingent on the financial development of the company over the life of the investment. One of the PE-firms describes that also external board members are allowed to invest in the portfolio companies at favourable terms (in addition to the board compensation they receive). The external board members are often managers from companies in the same industry, sometimes still active and sometimes retired.

In order to get a better view of the mechanics of the investment done by the management, we present two different hypothetical examples provided by two different PE-firms below:

Example 1: The management invests up to about five percent of the share capital at the same terms as other investors. In addition, management invests in three series of stock options which each give the right to acquire five percent of the share capital at a predetermined price which is re-calculated on an annual basis, conditional

on the IRR to the fund exceeding for example 15, 20 and 25 percent, respectively. The stock options are acquired at a market price determined by the Black & Scholes-model.

Example 2: The PE-firm invests capital consisting of both equity and shareholder loan (ex 100 MSEK). The management is offered to invest at the same terms as the PE-firm, but with a lower proportion of loan to equity. The offer includes both shares in the company and acquiring part of the shareholder loan. One share is priced at 20 SEK and with every share 30 SEK of shareholder loan is also acquired. To this loan is attached an annual interest rate of 15 percent which is rolled over. The shareholder loan is junior to all other credits and is amortization free. The total investment for acquiring 1 000 shares is thus 50 000 SEK. Every individual in the program is responsible for his or her own tax consequences.⁵

The purpose of the options in the compensation package is to create a potential value increase for the CEO and other management which is higher than the value obtained by the PE-firm, as explained by several of the PE-firms. As an example, one PE-firm explains that the management could get ten times their investment when the PE-firm gets three times their investment. When we ask one of the PE-firms what the normal investment by a CEO is, the answer is somewhere in the range of 1-4 MSEK. Often the CEO has to borrow this money, which further contributes in making it a risky investment.

As discussed in Section 2 options become less efficient in aligning CEO-incentives when they award absolute performance rather than relative performance and we would thus expect that options issued by the PE-firms should be indexed. This is not the case in our data, however, as the options are plain stock options. The reason, one of the PE-firms explains, is that it is too complicated to adjust the options to a series of different purposes.

Even though the management is investing at the same terms as the PE-firms, most PE-firms point out the importance of a majority stake, both when it comes to the number of shares and seats on the board. The primary purpose of being a majority owner is to be able to determine the point of exit. At the same time, the shares held by the management are restricted so that they do not vest until exit. The investment alongside the PE-firm is supposed to be a risky investment for the management, and it is supposed to be illiquid over the life of the investment so that it is difficult to get out. This can be linked to the theory presented above, where Steven Kaplan (Morgan Stanley Roundtable, 2006) argues that one of the greatest advantages of investments in private companies is that they are illiquid compared to public companies. One of the PE-firms explains that if a situation

⁵ We interpret this structure as a safer investment for management than a pure equity investment would be. This is since the loan will always generate the 15 percent annual return, regardless of the outcome of the investment.

where one member of the management wants to leave or is fired emerges, this person is allowed to sell to a market value as calculated in a Black & Scholes-framework. This is merely for tax reasons, since a fallback option where the options are sold at cost is regarded as salary by the tax authorities.

5.3 Determinants of investment return

One PE-firm lists the following factors as determinants of the return of any given investment: the development of the operations, the strategic position of the company and external factors. In the end, however, much of the return to the management is determined by the compensation package and the investment. Therefore, we below present a numerical example given to us by one of the PE-firms, which is a continuation of example 2 above:

Example 2 continued: Assume the return is based on EBITA year 2010, amounting to 100 MSEK and a sales price of the portfolio company corresponding to an EV/EBITA multiple of 8.0x and a four year holding period. The value per share 2010 is 300 SEK. The calculated profit for an investment of 1 000 shares is then $1\,000 \times (300 - 20) = 280$ KSEK from the sale of the shares and $30\,000 \times (1 + 0.15)^4 - 30\,000 = 22$ KSEK from selling the shareholder loan, which equals a total profit of 302 KSEK, which is the same as 7.0x the initial investment.

As mentioned above, the program is designed so that the management benefit more than the PE-firm if the investment turns out successful. Should the company develop in a negative direction and the return go below the interest rate of the shareholder loan (15 percent), the management investment yields a lower return than that earned by the PE-firm.

In line with our discussion above, the single most important feature is that the return can be realized only at the time of exit. For that reason, the PE-firms set clear rules for the exit-situation. One of the PE-firms reveals components of their service agreement with the participants in the investment in the portfolio company. The agreement includes tag-along and drag-along clauses, meaning that the PE-firm can force management to sell their shares and corporate debt together with the PE-firm, at the same terms as the PE-firm. Moreover, the service agreement gives the PE-firm the right to negotiate with third parties both for other shareholders' and their account. What is also vital in order for the PE-firm to retain control is the right to acquire other shareholders' shares at all times, in line with the regulations specified by European Private Equity and Venture Capital Association (EVCA).

5.4 Other perceived benefits with PE-firms

In Section 3 the benefits of private equity was discussed and the PE-firms confirm several of these advantages. One factor that creates value for the management in the portfolio company is a strong owner with a lot of time, resources and competency to help develop the company and reach new levels. One of the PE-firms believes that the greatest advantage with the PE-firms is that they can afford to be long-term in their investment in the portfolio companies, something that is not possible for public companies. This view is also supported by Strömberg (2007) in his paper “The new demography of the private equity market”, where he concludes that LBO-firms are more long-term in their investments than previously thought. Furthermore, the view of one PE-firm is that the strong focus on quarterly reports prevailing in the market in the long run is damaging and reduces company value. This is also consistent with the general view of many researchers in the area (Lerner, Sørensen and Strömberg, 2007). In addition, it can be beneficial for a company undergoing change to be private, since the attention and legal requirements are not the same in the private equity market, and the company can instead focus on implementing changes that the market would misinterpret.

Moreover, one of the PE-firms underlines that it lies in all Swedish PE-firms’ interest to avoid the tendencies observed in other parts of Europe, such as France and UK, where managers generally are greedier and want to keep all profit for themselves. In these companies, it is significantly more difficult to implement any incentive schemes, since the management wants free upside without any risk. The same problem partly emerges when a PE-firm sells a portfolio company to another PE-firm, since the management of this company has already participated in one investment round and made some money. In such cases, the management is required to invest more in order to have at least some “skin in the game”.

5.5 Small vs. large PE-firms

In the above sections, much of the data presented is representative of the larger Swedish PE-firms, who tend to be more sophisticated and bear more resemblance to their American counterparts. In this study, however, we also include data from smaller PE-firms, and we therefore find it appropriate to make some distinctions between the smaller and larger PE-firms. One of the smaller PE-firms we have been in contact with admits that they have no general policy when it comes to compensation packages and incentive structures, but they always try to make sure that the management has the same agenda as the PE-firm. If the CEO has any money to invest, he is allowed

to invest along with the fund; otherwise he is encouraged to invest in options in order to align incentives. The options are acquired at the lowest price accepted by the tax authorities. One of the PE-firms indeed states that one of the primary reasons for using stock options is because of the favourable tax treatment. One of the PE-firms has options that vest after two year, and if the CEO should leave prior to that the options are returned on a pro rata basis.

Also in the case of the smaller PE-firms, variable cash salary is a function of reaching financial goals such as turnover and EBITA, and the compensation is determined in negotiation between the PE-firm and the CEO. When it comes to broad base option programs, these exist only in rare cases. One of the PE-firms in the survey believes that it costs more than it is worth and do not want to risk that the personnel ends up in a situation where the options are worthless and the personal economy is threatened. The view is that only people who can afford to lose the investment should invest.

5.6 IPO-companies

The IPO-companies⁶ collected from the prospectuses are included in order to gain an insight into how the compensation package is constructed at a later stage of the PE-firms investments. The IPO-companies represent formerly PE-backed companies where the exit strategy is an IPO.

In accordance with the information presented above, there is a fixed and a variable part of the CEO cash compensation package in the IPO-companies. The variable cash salary is linked to financial goals in all the companies, where the most common means is to link the variable cash salary not only to company results but also to individual (“soft”) goals. Company results include earnings, cash flow or ratios like return on capital employed (ROCE). The individual goals are agreed upon together with each manager.

The terms for the options differ between the companies. In Active Biotech, Aerocrine and Orexo the manager is granted options free of charge. In BE Group, Biovitrum, Gant and Hemtex the CEO pays an estimated market price for the options (often using Black & Scholes). Aspiro and Nederman did not use options at the time of the IPO. Aspiro, however, believes that a stock-based incentive program is necessary in order to recruit, maintain and motivate employees, management as well as the board and will thus implement such a program in the future. Generally, there are no

⁶ The following PE-backed IPO-companies are included in our sample: Active Biotech, Aerocrine, Altima, Aspiro, BE Group, Biovitrum, Bisnode, Duni, Gant, Hemtex, HMS Networks, Lindab, Meda, Nederman, Nobia, Nordic Camping, Orexo and Studsvik.

restrictions for the options. However, the lock up-period of 180 days after the IPO serves as some restriction.

5.7 Concluding remarks

As our qualitative research confirms, the compensation package is built up using a fixed cash salary without any dependence on performance and a variable cash salary which is predominantly dependent on some kind of performance measure, often with an upper limit attached to it. The variable cash salary is an incentive for reaching short-term goals, whereas stock options and ownership stakes are used in order to reach long-term goals.

When studying annual reports, we notice that public companies also try to create incentives using variable cash salary, options and CEO-ownership. The components of the compensation package in PE-backed companies are thus similar to those in public companies. We believe that this could be explained by the fact that public companies over time have become conscious that PE-firms have been able to increase corporate governance. Consequently, as the public companies have implemented the same compensation packages, the difference of the components in the compensation package is not as large as before. However, we question if the components themselves can erase possible differences in incentives created since there are other factors that need to be considered. First, as outlined in Section 3, there are still many differences between PE-backed and public companies that could possibly affect incentives, such as transparency and liquidity. Second, although the compensation package is constructed in the same manner, the absolute compensation and ownership may still differ. Finally, we have not taken into consideration whether the CEO-ownership is through stocks or options, what has been paid for potential options, if there are any restrictions for the options and the magnitude of the realised return. Therefore no conclusions regarding more specific differences in the compensation package can be drawn at this stage, only that the general structure is similar.

6. Quantitative Data

In this section we present the quantitative data we use to test our hypotheses. By performing a quantitative analysis we are able to see if the PE-firms live as they learn, but most importantly we are able to test our hypotheses about the potential differences between PE-backed companies and public companies.

6.1 Data description

In order to test the hypotheses presented in Section 4, we have collected data from Swedish PE-firms. The variables we have collected are industry classification, turnover and CEO-compensation variables including fixed salary, variable cash salary (actual and/or maximum), other benefits, severance, pension pay and ownership in the form of stocks and stock options. We have been able to collect data for 40 PE-backed companies, but in order to increase our sample further we have also collected the same data from 18 IPO prospectuses from 2001-2007. The reasons behind including these companies in our sample are several. Firstly, the inclusion increases the average size of the companies in our sample, given that the companies ready for an IPO are often larger. Secondly, by including the IPO-companies, a greater number of the Swedish PE-firms are represented in the study⁷. Thirdly, it enriches the sample in that we also have companies at a later stage in the investment cycle, which enable us to see if there are any significant differences between PE-backed companies at an early and a late stage. Lastly, the prospectuses are very detailed and increase our understanding of how the PE-firms reasons when it comes to executive compensation. From now on, **Dataset 1** (presented in Table 1 in Appendix II) refers to data received directly from the PE-firms, whereas **Dataset 2** (presented in Table 3 in Appendix II) refers to combination of data received from the PE-firms and from the prospectuses.

In order to test the differences between PE-backed companies and public companies, we have also collected the same information for 58 public companies. The companies are traded either at the First North Stock Exchange, OMX Small cap or OMX Mid cap (see Table 2 and 4 in Appendix II for more information on which companies we have included). The public companies are selected to match our PE-sample when it comes to industry, year and size, as measured by

⁷ The PE-firms represented in the sample containing 18 IPO prospectuses are 3i, CapMan, EQT, Euroventures Management, HealthCap, Industrikapital, Ledstiernan, Nordic Capital, Nordstjernan, Priveq, Ratos, Segulah, Traction and Volati.

turnover. The industries represented in our datasets are presented in detail in Table 5 in Appendix II.

Furthermore, it can be worth to point out that we do not believe that selection bias is a major problem in our data collection. Firstly, the PE-firms are not likely to provide information on their most successful portfolio companies, since we do not measure any form of performance or success in this study. Moreover, the PE-firms that have contributed with data to the study have provided most of their portfolio companies, so we do not suspect that they have left out important information. It could be a concern that the largest PE-firms have not been willing to participate in the study, but we believe that including the IPO-companies mitigates this problem somewhat. One potential problem that could bias our results, however, is the fact that some of the public companies selected might have been PE-backed at some point in time.

6.2 Descriptive statistics

In this section we briefly describe our data (for more detailed information, see Table 1-4 in Appendix II). We start by describing the dataset with the observations obtained directly from the PE-firms, as well as the sample of 40 public companies. The summary statistics are presented in Figure 2 below.

Figure 2: Comparing PE-backed companies and public companies, dataset 1

Variable	PE-backed companies		Public companies	
	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>
Turnover (MSEK)	329	200	382	200
CEO monthly fixed salary (SEK)	84 850	74 000	107 640	100 042
CEO actual variable salary (SEK)	8 571	0	232 255	104 350
CEO actual total cash compensation (SEK)	910 286	888 000	1 550 413	1 312 000
CEO actual variable/total cash compensation	1.7%	0.0%	11.5%	5.7%
CEO-ownership (stocks and options)	11.7%	8.5%	6.3%	1.7%

Sources: PE-firms, company annual reports.

* Total cash compensation = yearly fixed salary + yearly variable salary. We have eliminated other benefits and pension payment due to few observations and severance since that is only relevant in the event of a quitting CEO.

CEO-ownership is not separated into stocks and options, respectively, since this would result in too few observations for each variable.

Firstly, we notice that the median consistently is below the mean, suggesting that we have high outliers in our sample. Further, we notice that all CEO cash compensation components for public companies exceed those for the PE-backed companies. Given that the company sizes in the two

samples are matched, the compensation disparity should not be result of public companies being larger. When it comes to the mean fixed salary, CEOs of public companies earn almost 27 percent more per month and receives an actual variable cash salary which is about 2 600 percent of the PE-backed company CEO. This is partly explained by the fact that many of the PE-backed companies do not have any variable cash salary at all, as indicated by the median of zero. Moving on, we notice that the mean total cash compensation received by a public company CEO is approximately 70 percent greater than the total cash compensation received by the CEOs of the PE-backed companies. Using the median value, the public CEO earns about 48 percent more per year.

When investigating what percentage of CEO-compensation is variable, we arrive at a mean of 1.7 percent for the PE-backed companies and 11.5 percent for the public companies. The difference is less when using the median value. This suggests is that a relatively small fraction of total cash compensation is variable and thus contingent on reaching certain goals, indicating that bonus is not used to create CEO-incentives to any great extent, especially for the PE-backed companies.

Lastly, we observe a mean CEO-ownership of 11.7 percent for the PE-backed companies and an equivalent of 6.3 percent for public companies. The difference increases when using the median variable. The implication of these figures is that CEOs in PE-backed companies to a larger extent seems to be motivated by their ownership in the company, whereas public CEOs to a greater extent seem to be motivated by the variable cash salary. However, it remains to be seen if these conclusions are robust when performing the quantitative tests in the next section.

Next, we continue by presenting additional information gathered from the 18 IPO prospectuses (see Figure 3 below for descriptive statistics). This data should not be mistaken for Dataset 2 (which includes data from received both directly from PE-firms and from IPO-prospectuses) and the primary reason for presenting these statistics separately is to be able to detect any material differences between the IPO-companies and the PE-backed companies presented above.

Firstly, we notice that the mean size of the IPO-companies is roughly 450 percent larger than the PE-backed companies in Dataset 1. This confirms that the companies undergoing an IPO are in fact much larger than the other companies in our sample of PE-backed companies. This does not affect the comparison between PE-backed and public companies, however, since the sample is size matched.

Figure 3: Descriptive statistics for the IPO-companies

Variable	IPO companies	
	Mean	Median
Turnover (MSEK)	1 828	849
CEO monthly fixed salary (SEK)	161 836	133 216
CEO actual variable salary (SEK)	824 488	481 500
CEO actual total cash compensation (SEK)	2 891 065	2 061 086
CEO actual variable/total cash compensation	23.6%	24.1%
CEO-ownership (stocks and options)	3.5%	1.0%

Sources: Company annual reports.

* Total cash compensation = yearly fixed salary + yearly variable salary. We have eliminated other benefits and pension payment due to few observations and severance since that is only relevant in the event of a quitting CEO.

CEO-ownership is not separated into stocks and options, respectively, since this would result in too few observations for each variable. The CEO-ownership in this figure is *before* the IPO, except for two companies (BE Group and Bisnode) where the only information provided was *after* the completion of the IPO.

Moreover, we notice that the monthly fixed salary in the IPO-companies is more than 90 percent higher than in the regular PE-backed companies. Also the actual variable cash salary is remarkably higher, but it is difficult to compare since the median actual variable cash salary in Dataset 1 is zero.

When it comes to the ratio of actual variable to total cash compensation, we notice that the mean is 23.6 percent for the IPO-companies, compared to 1.7 percent in Dataset 1. This suggests that a larger part of the CEO-compensation in the IPO-companies is contingent on reaching certain targets. We cannot say whether these targets are actually reached to a larger extent in the IPO-companies or if the bonus has become more of a guaranteed salary. A possible explanation for the large variable cash salary could also be that the CEO receives an extraordinary bonus at the event of the IPO.⁸

Finally, we observe that the mean CEO-ownership in the IPO-companies is 3.5 percent, which is to be compared with 11.7 percent in the PE-backed companies in Dataset 1. This indicates that the CEO-ownership decreases dramatically sometime before the IPO. This could be a result of many options vesting right before the IPO, leading to a lower CEO-ownership. This is intuitive, if the IPO involves the sale of existing shares rather than the issuance of new shares.

⁸ We have not been able to verify this possible explanation since the prospectuses lack such information.

7. Method and Empirical Results

In this section we present the variables used to test our hypotheses. The hypotheses, as previously stated, test: (1) the *total CEO-compensation* in PE-backed companies and public companies, respectively, (2) the *ratio of variable salary to total cash compensation* received by the CEO in PE-backed companies and public companies, respectively and (3) the *CEO-ownership* as measured by total holding of stocks and options in the own company, for PE-backed companies and public companies, respectively.

7.1 Variables

In **Hypothesis 1** we first perform a regression to see how the *total cash compensation* depends on *ownership concentration*, used as a proxy for corporate governance. Concentrated ownership is constructed as a dummy variable that takes the value one if the single largest shareholder holds ≥ 25 percent of the votes in the company and zero otherwise. The reason that we use a 25 percent threshold is that this captures all shareholders that for strategic reasons hold just under the mandatory bid rule level of 30 percent, but still exert significant control from their position (Näringslivets Börskommitté, 2003). According to this definition, 27 companies or 46 percent of our total sample of public companies have concentrated ownership⁹ (see Table 6 in Appendix II for more details). We find no need to control for dual-class share systems since all companies in our sample with dual-class share systems also have a controlling shareholder. We collect data on the ownership structure from the same annual reports as the other variables are gathered. When using total cash compensation as our dependent variable, we use it in its logarithmic form in line with Jensen and Murphy (1990).

Apart from the variables stated above, we also use control variables in order to correct for relevant differences among the companies investigated. Most importantly, we control for company size in our regression, where *turnover*¹⁰ is used as a proxy. As theory has previously established, there is a positive and significant relationship between the size of a company and the compensation to the CEO (Himmelberg, Hubbard and Palia 1999). In the regression, we also include the variables *CEO-ownership* and *founder-CEO*. Including both CEO-ownership and ownership concentration in the same regression might result in multicollinearity problems, however, and we thus also run the regression

⁹ Since we do not have any data, we have assumed that all PE-firms hold a majority stake in their portfolio companies, which means that 100 percent of the PE-backed companies are judged to have concentrated ownership.

¹⁰ For a few of the companies in our sample we only know a range for the turnover, e.g. 500 – 1 000 MSEK. In such instances, we have used the average turnover as indicated by the range (in this example 750 MSEK).

excluding the CEO-ownership variable in order to investigate the effects. The founder-CEO variable is constructed as a dummy, taking the value one if the CEO is also the founder of the company and zero otherwise. The reason that we include this variable is to be able to test whether there is any correlation between total CEO-compensation and the CEO being the founder of the company. The founder-CEO dummy is only applied to the public companies, since we do not have any information for the majority of our PE-backed companies. In the public companies, 12 percent have a CEO which is also a founder of the company. We do not control for year, however, given that the majority of our observations are for 2006 and 2007 and thus we do not expect to find any significant time trend. Lastly, we construct a dummy to control for firm type, i.e. whether it is a PE-backed company or a public company. The dummy is constructed to take the value one if the company is PE-backed and zero otherwise. Finally, we have chosen not to control for PE-firm, since we have too few portfolio companies for each PE-firm.

Moreover, in **Hypothesis 1 and 2** the total cash compensation is defined as the sum of the yearly fixed salary and variable cash salary, i.e. *total cash compensation = (yearly fixed salary + yearly variable salary)*. We have decided to exclude other benefits¹¹, pension pay and severance in the calculation for two main reasons. Firstly, we lack observations on other benefits and pension pay for many of our PE-backed companies. We believe that the PE-backed companies generally have lower benefits and pension payments than public companies, and the exclusion of these variables therefore bias the data so that the difference between PE-backed companies and public companies seems less than it actually is. Secondly, including the severance pay would only be relevant in the event of the CEO leaving the company and we thus feel that it would not add to the analysis by including this variable. We believe that severance is generally less important in the PE-backed companies as the CEO has strong incentives to stay during the investment period, but that the bias would be in the same direction as excluding other benefits and pension payment (given that the average months of severance is 12 months in the PE-backed companies and 13.5 months in the public companies in our sample).

Furthermore, when testing **Hypothesis 1 and 2** we use both actual and maximum variable cash salary. Using the maximum variable cash salary is a useful measure, as it shows the upper boundary on the part of the compensation that the CEO can influence. The difference between

¹¹ 'Other benefits' almost exclusively tend to be a car paid by the company.

actual compensation received and the upper limit gives an indication on whether the bonus is actually contingent on performance or if it is rather a guaranteed salary.

In **Hypothesis 3** we test CEO-ownership. The CEO-ownership is the sum of the total holding of shares and all types of options in the own company. We have decided not to separate ownership into stocks and options, respectively, since we have too few observations for each category. When calculating the percentage ownership, we have consistently used the total number of shares outstanding before dilution.

7.2 Methodology and results

We test our hypotheses by running t-tests, rank-sum tests and regression models in STATA. T-tests compare the *means* of two samples, where the variables may or may not be independent. The test relies on the assumption that the population distribution of the differences is a normal distribution.

The test statistic ($t_{\bar{d}}$) used is

$$t_{\bar{d}} = \frac{\bar{d} - 0}{s_{\bar{d}}} \sim t(n-1) \text{ where } d_i = y_{1i} - y_{2i}, \bar{d} = \frac{\sum d_i}{n}, s_d^2 = \frac{\sum (d_i - \bar{d})^2}{n-1} \text{ and } s_{\bar{d}} = \frac{s_d}{\sqrt{n}}$$

where d_i = the pairwise difference in values of matched observations of two samples

$\bar{d}$ = the mean of the variable to be tested

s_d^2 = the variance of d

$s_{\bar{d}}$ = the standard error of $\bar{d}$

n = the number of observations

The t-statistic follows a Student's t distribution with n-1 degrees of freedom. The null hypothesis is that the population mean of individual differences of paired observations is zero. All the tests performed are two-tailed and the p-values reported are to be interpreted as the smallest significance level at which the null hypothesis can be rejected (Newbold, Carlson and Thorne, 2003).

We also perform non-parametric rank-sum tests (commonly known as Wilcoxon or Mann-Whitney test) which compare the *medians* of two independent samples. When the samples are sufficiently large (both containing at least ten observations) the distribution of the random variable Z can be approximated by the normal distribution. Suppose that we have n_1 observations from the first sample and n_2 observations from the second and let T denote the sum of the ranks of the

observations from the first population. The test statistic then has the mean $\mu_T = \frac{n_1(n_1 + n_2 + 1)}{2}$ and variance $\sigma_T^2 = \frac{n_1 n_2 (n_1 + n_2 + 1)}{12}$. Z is approximated to $\frac{T - \mu_T}{\sigma_T}$ (Newbold, Carlson and Thorne, 2003).

The rank-sum test is applicable when the population is non-normal, and for small samples. This test is thus appropriate when one suspects that the mean of a sample is affected by large outliers, something that the descriptive statistics suggest is present in our data. This suspicion is confirmed when performing graphical as well as numeral tests of normality.¹² Both the Shapiro-Wilk (suitable for samples containing $7 \leq N \leq 2\,000$ observations) and Shapiro-Franca (suitable for samples containing $5 \leq N \leq 5\,000$ observations) tests of normality indicate that our variables may not be normally distributed. This is especially true for the ownership variables. The graphical box plot test indicates that the sample indeed contains a few outliers and these cause the distribution to be skewed. We choose, however, not to exclude the outliers, given our already small sample. We present the results from both the t-tests and the rank-sum tests, as we cannot be positive about the true underlying distribution of our sample. Summary results of the t-tests and rank-sum tests are presented in Table 8a-b in Appendix III.

7.2.1 Hypothesis 1a-b – Total cash compensation

The regression to test the impact of ownership concentration on total cash compensation in **hypothesis 1a** is constructed accordingly:

$$\ln(\text{total comp})_i = \alpha_i + \beta_{1,i} D_{\text{firmtype}} + \beta_{2,i} \text{turnover} + \beta_{3,i} D_{\text{conrown}} + \beta_{4,i} \text{CEO}_{\text{own}} + \beta_{5,i} D_{\text{founderCEO}} + \varepsilon_i$$

where total comp = total cash compensation

conrown = concentrated ownership

CEO_{own} = CEO-ownership

ε_{it} = a white noise error term and i denote firm.

When testing **hypothesis 1b**, the null hypothesis for the t-test is that the difference in mean total cash compensation received by the CEO in PE-backed companies and public companies, respectively, is zero. The alternative hypothesis is that the difference is not zero. Formally,

$$H_0: \mu_0 = 0 \text{ and } H_1: \mu_0 \neq 0$$

The decision rule is to reject the null hypothesis when the observed t-value is greater than the critical value or the p-value is 0.10 or below.

¹² The results from the normality tests are not included in this thesis, except for the results for the ownership variables which are presented in Table 7 in Appendix II.

The test is consequently constructed in the following way:

$$(total\ compensation)_{PE_i} - (total\ compensation)_{pub_i} = 0$$

Dataset 1

We start to test the impact of concentrated ownership on actual total cash compensation, where concentrated ownership is used as a proxy for corporate governance. For more details, see Table 9a in Appendix IV. We notice that the model as specified above has a fairly high explanatory power with an adjusted R-squared = 0.3276. However, not all of the variables are significant and we suspect that the results suffer from multicollinearity induced by including both concentrated ownership and CEO-ownership as explanatory variables. Firstly, we notice that the PE-dummy is not significant at any reasonable level, but it suggests a positive correlation between total cash compensation and being PE-backed rather than public. Turnover is significant on a ten percent level and is positively correlated with total cash compensation. Concentrated ownership, however, is not significant at any reasonable level, and the regression indicates a positive correlation between concentrated ownership and total cash compensation. This might be counterintuitive, but could be explained by the theory by Bebchuk and Fried (2004) where they argue that CEO-compensation ultimately is determined by the friendship between the CEO and the board and malfunctioning of the arm's length contracting view. Another reason why the compensation is higher when there is a concentrated ownership might be the fact that the largest shareholder is also CEO which results in lack of restrictions when setting the compensation. However, this explanation is contradicted by the fact that we observe a negative correlation between total cash compensation and CEO-ownership, significant at a five percent level. Lastly, we notice that the founder-CEO dummy is not significant at any reasonable level and indicates a positive relation with total cash compensation.

In order to correct for the multicollinearity problems, we perform two more regressions, where the first excludes CEO-ownership and the other concentrated ownership. The results are presented in Table 9b-c in Appendix IV. We notice that the regression without CEO-ownership has a fairly low explanatory power (adjusted R-squared = 0.1112) and none of the variables are significant at any reasonable level. The sign of concentrated ownership, although highly insignificant, is negative which is in line with our hypothesis. Given these results, we cannot draw any conclusions regarding the effect of stronger corporate governance on total cash compensation. However, we notice that CEO-ownership is highly significant when running the regression where concentrated

ownership is excluded. The sign is negative, which indicates that when CEO-ownership is high, total cash compensation tends to be lower.

We continue by testing the difference in actual total cash compensation received by the CEO in portfolio and public companies, respectively. The results are presented in Table 10a in Appendix IV. Using actual compensation data we obtain a t-value of -2.2544 and we reject the null hypothesis on a five percent level (p-value = 0.0436). We also test the hypothesis using maximum total cash compensation received by the CEO (see Table 10b in Appendix IV). The observed t-value is -2.3361 and we reject the null hypothesis on a five percent level (p-value = 0.0394). Interpreting our results, they suggest that there is a significant difference in the total cash compensation received by the CEO in PE-backed and public companies. The results show that the total cash compensation is higher for CEOs in public companies, which is in line with our hypothesis. It is noteworthy that public company CEOs receive a higher total cash compensation both in theory and in practice given that the results in the two tests are consistent.

The Mann-Whitney test arrives at a different result when it comes to the maximum total cash compensation, where the null hypothesis cannot be rejected at any reasonable level. This suggests that outliers cause some of the observed differences between PE-backed and public companies.

Dataset 2

When testing the correlation between total cash compensation and ownership concentration using dataset 2, we again notice a fairly high explanatory power with an adjusted R-squared = 0.3788. This time all variables except the PE-dummy and the founder-CEO dummy are significant at a ten percent level. For ownership concentration we observe a positive correlation to total cash compensation and for CEO-ownership a strong negative correlation (see Table 11a in Appendix IV). As we suspect multicollinearity problems, we run the regression again, first excluding CEO-ownership and then excluding concentrated ownership. The results are presented in Table 11b-c in Appendix IV. Excluding CEO-ownership reduces the explanatory power (adjusted R-squared = 0.1999) and none of the variables are significant at any reasonable level, except the turnover. Concentrated ownership has a positive sign, but is highly insignificant. Consequently, we are unable to draw any conclusions regarding the effect of strong corporate governance on total CEO-compensation. One conclusion, however, might be that concentrated ownership is not an appropriate proxy for corporate governance.

When using our extended dataset for hypothesis 1b the results differ from those found using Dataset 1. When testing the actual total cash compensation we obtain a t-value of -0.3394 and thus we cannot reject the null hypothesis at any reasonable level (p-value = 0.7374) (see Table 12a in Appendix IV). However, when using maximum total cash compensation we observe a t-value of -2.0866 (see Table 12b in Appendix IV) and consequently we reject the null hypothesis on a ten percent level (p-value = 0.0514). We arrive at a different conclusion using Dataset 2 because the actual compensation received by CEOs in the IPO-companies is remarkably higher than in the regular PE-backed companies (the former having a mean actual total cash compensation of 2 585 074 SEK and the latter 934 154 SEK). Further, we notice that the actual total cash compensation in the PE-backed companies is in fact higher than the maximum total cash compensation. This might be explained by extraordinary payouts to the CEO associated with the IPO. Running the Mann-Whitney test based on the median values confirms the above results.

7.2.2 Hypothesis 2 – Variable salary to total cash compensation

For **hypothesis 2**, our null hypothesis for the t-test is that the difference in the mean variable salary in relation to total cash compensation for CEOs of PE-backed companies and public companies is zero, against the alternative hypothesis that it is different from zero. Formally,

$$H_0: \mu_0 = 0 \text{ and } H_1: \mu_0 \neq 0$$

The decision rule is to reject the null hypothesis when the observed t-value is greater than the critical value or the p-value is equal to or smaller than 0.10.

Formally, the test is constructed accordingly:

$$\frac{(CEO \text{ variable salary})_{PE_i}}{(total \text{ cash compensation})_{PE_i}} - \frac{(CEO \text{ variable salary})_{pu_i}}{(total \text{ cash compensation})_{pu_i}} = 0$$

where PE = PE-backed company

pu = public company

and i denotes firm and the variable cash salary is either actual or maximum.

Dataset 1

We investigate whether there is a significant difference in the actual variable to total cash compensation in PE-backed and public companies (see Table 13a in Appendix V). The observed t-value is -2.2702 and consequently we reject the null hypothesis at a five percent level (p-value: 0.0424). Not only is the actual variable to total cash compensation interesting to test, but also the theoretical maximum variable to total cash compensation (see Table 13b in Appendix V). Here the

observed t-value is 0.0442 and hence we cannot reject the null hypothesis at any reasonable level (p-value: 0.9655). Our results indicate that there is a significant difference in the ratio of variable to total cash compensation received by the CEO in PE-backed and public companies when it comes to actual variable cash salary received. However, the results may be affected by the fact that we have only a few observations. The Mann-Whitney test based on the median values confirms the results above.

Ideally, we would have liked to perform a t-test with a test variable defined as $\frac{CEO \text{ actual variable salary}}{CEO \text{ maximum variable salary}}$ for PE-backed and public companies, respectively, and compare the means. Since we only have a few overlapping observations, however, it is not meaningful to include this test since we would be unable to draw any conclusions.

Dataset 2

When testing the same hypothesis using our extended dataset which contains data from 18 IPO-companies we arrive at a different conclusion. When first testing for the actual variable to total cash compensation in PE-backed and public companies the observed t-value is -0.7792 and therefore we cannot reject the null hypothesis at any reasonable level (p-value: 0.4438) (see Table 14a in Appendix V for more details). For the maximum variable to total cash compensation the observed t-value is 0.0382 and consequently the null hypothesis cannot be rejected at any reasonable level (p-value: 0.9699) (see Table 14b in Appendix V). This implies that our conclusion is changed by the extended dataset. This suggests that the differences between PE-backed companies and public companies are reduced by including the IPO-companies, indicating that the IPO-companies are more similar to public companies. Again, the Mann-Whitney test gives the same results as the t-tests.

7.2.3 Hypothesis 3 – CEO-ownership

When testing **hypothesis 3**, the null hypothesis for the t-test is a zero mean difference between the two test variables, this time the CEO-ownership in PE-backed companies and public companies respectively. The alternative hypothesis is that the difference is not zero. Formally,

$$H_0: \mu_0 = 0 \text{ and } H_1: \mu_0 \neq 0$$

The test is constructed accordingly:

$$(CEOownership)_{PEi} - (CEOownership)_{pu_i} = 0$$

where i denote firm.

As mentioned above, we suspect that the ownership variables are not normally distributed due to outliers. This is confirmed by both the Shapiro-Wilk and Shapiro-Francia tests, as seen in Table 7 in Appendix II. Due to the nature of the sample we put more emphasis on the results obtained using the non-parametric test. We are cautious in making any far-reaching conclusions, however, given the contradictory results obtained in the t-test and non-parametric test, respectively.

Dataset 1

Using the t-test, the observed t-value is 1.1032 and we fail to establish a significant difference at any reasonable level ($p\text{-value} = 0.2800$) as can be seen in Table 15 in Appendix VI. When comparing the median CEO-ownership using the Mann-Whitney test, however, we arrive at the opposite result. In line with our hypothesis, we find that CEO-ownership is higher in PE-backed companies than in public companies, at a one percent significance level.

Dataset 2

Using the extended dataset, we arrive at the same conclusion using the t-test (see Table 16 in Appendix VI). The observed t-value is 0.7796 and we cannot reject the null hypothesis at any reasonable level ($p\text{-value} = 0.4400$).

Once more, we arrive at a different result using the Mann-Whitney test where the median CEO-ownership is used as test variable. We find that CEO-ownership is higher in PE-backed companies than in public companies on a five percent significance level, which is in line with our hypothesis. As explained above, we believe that the results obtained using the Mann-Whitney test are more reliable than the ones obtained in the t-tests.

Figure 4: Summary of test results

Dataset 1			Dataset 2	
Summary of test results				
Hypothesis 1a				
Ownership concentration	No significant correlation		No significant correlation	
	T-test	Rank sum	T-test	Rank sum
Hypothesis 1b				
Actual total compensation	H_0 rejected (pu>PE)	H_0 rejected (pu>PE)	H_0 not rejected	H_0 not rejected
Maximum total compensation	H_0 rejected (pu>PE)	H_0 not rejected	H_0 rejected (pu>PE)	H_0 rejected (pu>PE)
Hypothesis 2				
Actual variable/total compensation	H_0 rejected (pu>PE)	H_0 rejected (pu>PE)	H_0 not rejected	H_0 not rejected
Maximum variable/total compensation	H_0 not rejected	H_0 not rejected	H_0 not rejected	H_0 not rejected
Hypothesis 3				
CEO-ownership	H_0 not rejected	H_0 rejected (PE>pu)	H_0 not rejected	H_0 rejected (PE>pu)

Sources: PE-firms, company annual reports.

8. Discussion and Conclusions

In this section we discuss the results presented in the previous section and try to draw conclusions based on this analysis. We first present the conclusions based on the results obtained using dataset 1, i.e. the data received directly from the PE-firms, and then we comment on any material differences between dataset 1 and 2. Thereafter we discuss the implications of our quantitative as well as qualitative results.

8.1 CEO-compensation...

In Section 5 we concluded that there are seemingly few differences when it comes to the composition of the CEO-compensation package in PE-backed and public companies. However, we were not able to draw any conclusions regarding the absolute compensation and we have thus performed tests to investigate this further. Our **first result** is that the total CEO cash compensation is higher in public companies than in PE-backed companies. This might be derived only from the fact that the variable cash salary component is higher for public CEOs. As previously discussed, a high compensation package could also be the result of a friendship between the board and management, where the board directors benefit from granting the CEO a high compensation. On the other hand, lower cash compensation in PE-backed companies could potentially be explained by strong and active owners and hence strong corporate governance. Given the conflicting results between the t-test and the Mann-Whitney test, we believe that it might be difficult to draw any far-reaching conclusions when it comes to total maximum compensation.

Our **second result** is that CEOs in public companies receive a higher variable salary in relation to total cash compensation than do CEOs in PE-backed companies. Since we notice that the mean maximum variable salary as a percentage of total cash compensation is roughly 25 percent both for PE-backed companies and public companies, we can think of several possible explanations for the observed disparity. Firstly, it could be that public companies do not have as high targets for the variable cash salary and that the target might be re-negotiable. This might also be combined with a reluctance to punish the CEO for not reaching the target by paying a lower bonus or no bonus at all, in line with theories of bonuses being sticky downwards. Secondly, it could be explained by the fact that the PE-backed companies do not reach their targets and thus the CEO is not entitled to a bonus payment. Thirdly, another possible explanation is that the bonus is rather a guaranteed salary in public companies, whereas bonus indeed is variable cash salary dependent on reaching certain

goals in PE-backed companies. Finally, our second result could potentially be explained by the CEO-power relative the board in line with Bebchuk and Fried (2004), where higher bonuses in public companies would be a result of close ties between the management and the board. Furthermore, the lower variable cash salary in PE-backed companies could also be a result of higher CEO-ownership, meaning that the more the CEO owns, the less cash salary he requires. This is in line with what we find in our regression model under hypothesis 1a.

Our **third result** when using the Mann-Whitney rank-sum test is that there is a significant difference in CEO-ownership between PE-backed companies and public companies, where CEO-ownership is higher in PE-backed companies than public companies. This is in line with our hypothesis. There might also be other differences when it comes to the design of the ownership structure that have not been taken into consideration. Firstly, we have not taken into account the effect of personal loans, i.e. whether the CEO has been able to borrow to buy stocks and/or options. Secondly, the return on the investment will be different given different levels of leverage in PE-backed and public companies. As established in Section 3, leverage is used more aggressively in PE-backed companies (debt often accounting for about 80 percent of invested capital) and this implies that the return on equity per definition will be higher in PE-backed companies than in public companies¹³. Thirdly, there still might be differences when it comes to liquidity, restrictions and vesting.

We continue by outlining the most material differences between the results obtained using dataset 1 and 2. For the first hypothesis we arrive at a different conclusion using dataset 2, where the actual total cash compensation in PE-backed companies does not significantly differ from that in public companies. This indicates that the actual total CEO-compensation is higher in the IPO-companies than in regular PE-backed companies, and also higher than in public companies (see Figure 2-3 for details). As mentioned in Section 7.2.1., the difference between regular PE-backed companies and IPO-companies could potentially be explained by the fact that the CEOs in the IPO companies receive extraordinary payouts associated with the IPO. Unfortunately, we have not been able to verify this using the information in the prospectuses. For the maximum total compensation, the results are unchanged.

¹³ Given that Total return = $r_E \times \frac{E}{E+D} + r_D \times \frac{D}{E+D}$, where r_E =return on equity and r_D =return on debt

For the second hypothesis we find that there is no longer any significant difference between the actual variable salary in relation to total cash compensation for PE-backed companies and public companies, respectively, when including the IPO-companies. This result suggests that the bonus payment to CEOs in the IPO-companies might be triggered by the IPO event, increasing the variable cash salary. Another possible explanation is that the companies ready for an IPO do reach their targets (which should be a qualification for being listed), which in turn entitles the CEO to a bonus payment. For the regression and the third hypothesis, the results are unchanged.

8.2 ...and the incentives created

Above we discuss our results when it comes to CEO-compensation and we now continue by discussing what implications our results might have on CEO-incentives, using the theories in Section 2 of how executive incentives best are created.

According to Murphy (1998), variable cash salary is one important tool in order to create incentives. We find that the variable cash salary is higher in public companies, but it is unclear whether this implies that public companies are better at creating incentives using bonus. Both PE-backed and public companies use variable cash salary to a large extent and it is not obvious that a higher ratio of variable cash salary automatically leads to a closer alignment of CEO and shareholder interest. A larger fraction of variable cash salary does not necessarily lead to increased motivation since the CEO may already be at the profit maximizing level (Abowd and Kaplan, 1999). Another important aspect to discuss is how easy it is for the CEO to fulfil the criteria to earn a full bonus. Our results suggest that CEOs in public companies consistently receive a variable cash salary that is closer to the upper boundary, indicating that the bonus is rather a guaranteed salary than something that creates incentives.

Another important tool when it comes to creating CEO-incentives is CEO-ownership. Our results indicate that there is a significant difference in CEO-ownership between PE-backed and public companies. As mentioned above, there might be other differences when it comes to liquidity, restrictions, vesting and investment size that have impact on CEO-incentives which we have not been able to test. If there are selling restrictions imposed on the stocks and/or options held by the CEO, incentives will be stronger. Given the theory presented in Section 3.2, we expect restrictions to be stricter in PE-backed companies and this leads us to believe that the incentives created in PE-backed companies are more efficient. In addition, the size of the investment in relation to CEO wealth has a great impact on the incentives created. A CEO who has the majority of his personal

wealth invested in his company is likely to be more motivated than a CEO who has only a few percent of his wealth at risk.

Moreover, ownership can consist of both stocks and options and we have not yet distinguished between the two different owner forms. Murrill and Caputo (2004) argue that direct stock ownership is superior to options in that they are more powerful in order to change executive behaviour. On the other hand, stock options are more useful since they can provide a greater upside in case of superior performance due to their higher volatility.

In Figure 5 below, we present the type of CEO-ownership in our sample. CEOs in both public and PE-backed companies tend to own more in stocks than in options, but for public companies a larger fraction is owned through stocks than in PE-backed companies. 27 percent of the CEOs in public companies and 23 percent of the CEOs in PE-backed companies own a combination of stocks and options. Since the theories are contradictory, we cannot draw any conclusions regarding whether stocks, options or a combination of the two are more efficient in creating incentives.

Figure 5: Ownership form in PE-backed companies and public companies

Company type	Stocks only		Options only		Stocks and options		Not stated
PE-backed companies	11	58%	4	21%	4	21%	21
IPO companies	8	50%	4	25%	4	25%	2
Combined	19	54%	8	23%	8	23%	23
Public companies	28	62%	5	11%	12	27%	13

Sources: PE-firms, company annual reports.

Even though we think that our results regarding the incentives created by CEO-ownership are inconclusive, we argue that it in fact might be impossible to create the same incentives using CEO-ownership in public companies. This is because the underlying asset in PE-backed companies is illiquid, as opposed to the shares in public companies. This implies that the incentives created in PE-backed companies by construction are more long term and more risky. In addition, as already mentioned, incentives can possibly be stronger for CEOs in PE-backed companies due to the higher return resulting from higher leverage.

However, incentives are not only contingent on monetary compensation. Baker, Jensen and Murphy (1987) argue that monetary remuneration reduce motivation since it decrease the “intrinsic reward” that the CEO receives from his job. Thus, even though the main focus in this thesis is on monetary compensation, there are other factors that may be equally, or in fact more, important such

as recognition, self fulfilment and perhaps, in the case of public companies where much attention constantly is directed towards the CEO, fear of public failure. Or, in the words of Alfie Kohn in his article “Incentives Can Be Bad for Business” in Inc. Magazine 1988: *“Getting people to chase money... produces nothing but people chasing money.”*

9. Further Research

We are aware of that our analysis and our ability to draw any conclusions suffer from a small data sample. For that reason, one obvious suggestion for future research is to expand the dataset to include more observations. This would hopefully confirm our results, and make them more robust. Furthermore, an extended dataset would make it possible to test some of the hypotheses that we have not been able to do. This includes the separation of CEO-ownership into stocks and options, as well as the hypothesis of guaranteed salary where the test variable would be actual variable cash salary in relation to maximum variable cash salary.

Another suggestion is to investigate the dynamics of CEO-compensation over time. One possible way to undertake such a study is to compare the development of CEO-compensation over time in PE-backed and public companies, respectively. In PE-backed companies, the relevant time horizon would be to investigate the development of CEO-pay, as a function of performance, from the point in time when the CEO is hired to the exit of the investment (or simply from the beginning to the end of the investment period). In a public company, the time horizon could be from the point in time when the CEO is hired and a number of years onwards, preferably the average length of PE-investments.

Lastly, we encourage more future research in the area of CEO-ownership, where possible topics could be what restrictions options have in PE-backed companies and public companies, respectively. Moreover, it is of interest whether the CEO pays for the options or not. Our qualitative data section suggests that CEOs in the PE-backed companies often pay a market price for their options, whereas the IPO prospectuses show a mixed picture. Finally, we would find it interesting to further investigate what proportion of CEO-wealth is invested in the own company, in order to be able to draw conclusions regarding the correlation between wealth at risk and incentives created.

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11. Appendices

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Appendix I – Notation and Abbreviations

We believe that it is helpful to explain some of the notation and abbreviations used throughout this thesis. We do not explain all concepts used, however, but refer to a dictionary or www.investopedia.com for concepts not fully clear to the reader.

CEO: chief executive officer, used interchangeably with the terms ‘executive’ and ‘manager’

Concentrated ownership: refers to all ownership stakes exceeding 25 percent of the votes held by the largest shareholder of a company (not to be confused with ‘CEO-ownership’)

Corporate governance: refers the process used to manage the business affairs of a company towards enhancing business prosperity and corporate accountability with the objective of realising long term shareholder value, while taking into account the interests of the other shareholders, where ‘stronger corporate governance’ means a process which better accomplishes this goal

EV: enterprise value

Equity-based compensation: compensation awarded to the CEO in the form of stocks, options and other instruments which constitutes the CEO-ownership

Incentives: the term ‘incentive’ should be understood as the CEO motivation that is best aligned with shareholder interest, which in turn implies that actions that are ‘incentive creating’ or leads to ‘higher’ or ‘better’ incentives are activities that affects the CEO-actions and decisions to benefit shareholders, i.e. to maximize shareholder value

IPO: initial public offering

IRR: internal rate of return

LBO: leveraged buyout

PE: private equity, refers to all LBO-firms and private equity firms as well as venture capital firms

PE-backed company: refers to a private company partly or fully owned by PE-firms (also known as portfolio companies)

Portfolio company: used interchangeably with the term ‘PE-backed company’

Total compensation: refers to the total cash compensation

Variable salary: refers to the annual variable cash compensation, popularly known as bonus

It can moreover be noticed that we consistently refer to the CEO as a ‘he’, which is not saying that all CEOs are males but only avoiding the awkward notation ‘he/she’ throughout the text. Hence, in this context ‘he’ should be seen as a gender-neutral notation for the CEO.

Appendix II – Descriptive Statistics

Table 1: Compensation statistics for PE-backed companies obtained directly from PE-firms (dataset 1)

The table shows the mean, median, minimum and maximum compensation components received by the CEOs in our sample PE-backed companies. We also show the standard deviation for all variables, as well as the number of observations for all variables. In total, we have collected data for 40 PE-backed companies, provided by six different PE-firms of different size. Turnover is a measure of size and given in MSEK, all other figures are shown in SEK. Monthly fixed salary is the salary received by the CEO in each sample company, whereas the variable salary is the bonus component of the CEO-pay. The maximum variable salary is the upper boundary of the bonus each year, and is calculated as the number of months of salary multiplied by the monthly fixed salary. The actual variable salary is the bonus actually paid out to the CEO. The total cash compensation = (monthly fixed salary x twelve + yearly variable salary). We have eliminated other benefits and pension payment from this calculation due to few observation, as well as severance which is only relevant in the event of a retiring or terminating CEO. When calculating maximum total cash compensation we add the yearly fixed salary and the maximum variable salary, and when calculating actual total cash compensation we add yearly fixed salary and the actual variable salary. When calculating the ratio variable to total cash compensation we use the maximum total cash compensation as the denominator when maximum variable salary is the nominator and actual total cash compensation as the denominator when actual variable salary is the nominator. CEO-severance is calculated by multiplying the number of months of severance by the monthly fixed salary, and pension payment is obtained by multiplying the percent of the yearly fixed salary by the yearly fixed salary. When calculating what fraction other benefits, severance and pension is of total cash compensation, we use the actual total cash compensation as the denominator. Finally, CEO-ownership is calculated as the percentage of the total number of shares outstanding before dilution is held by the CEO.

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
Turnover (MSEK)	39	329	200	417	1	2 250
CEO monthly fixed salary (SEK)	40	84 850	74 000	46 538	25 000	265 000
CEO maximum variable salary (SEK)	25	374 440	219 000	435 171	0	1 590 000
CEO actual variable salary (SEK)	14	8 571	0	15 495	0	50 000
CEO maximum total cash compensation (SEK)	25	1 569 640	1 056 000	914 992	576 000	4 770 000
CEO actual total cash compensation (SEK)	14	910 286	888 000	517 042	325 000	2 316 000
Maximum variable/total cash compensation	25	18.4%	20.0%	17.5%	0.0%	50.0%
Actual variable/total cash compensation	14	1.7%	0.0%	3.0%	0.0%	7.7%
Other CEO benefits	0	-	-	-	-	-
CEO-severance (SEK)	38	908 526	750 000	622 787	0	3 180 000
Yearly CEO pension payment (SEK)	4	334 850	315 700	275 952	72 000	636 000
<i>as % of total cash compensation</i>		<i>137%</i>	<i>120%</i>	<i>174%</i>	<i>22%</i>	<i>165%</i>
CEO-ownership (stocks and options)	27	11.7%	8.5%	11.7%	1.0%	49.0%

Source: Data provided by a number of Swedish private equity firms

Table 2: Compensation statistics for public companies obtained from annual reports (dataset 1)

The table shows the mean, median, minimum and maximum compensation components received by the CEOs in public companies selected to match our PE-backed company sample when it comes to size and industry classification. We also show the standard deviation for all variables, as well as the number of observations for all variables. In total, we have collected data for 40 companies, listed on First North Stock Exchange, OMX Small cap or OMX Mid cap. Turnover is a measure of size and given in MSEK, all other figures are shown in SEK. Monthly fixed salary is the salary received by the CEO in each sample company, whereas the variable salary is the bonus component of the CEO-pay. The maximum variable salary is the upper boundary of the bonus each year, and is calculated as the number of months of salary multiplied by the monthly fixed salary. The actual variable salary is the bonus actually paid out to the CEO. The total cash compensation = (monthly fixed salary x twelve + yearly variable salary). We have eliminated other benefits and pension payment from this calculation, as well as severance which is only relevant in the event of a retiring or terminating CEO. When calculating maximum total cash compensation we add the yearly fixed salary and the maximum variable salary, and when calculating actual total cash compensation we add yearly fixed salary and the actual variable salary. When calculating the ratio variable to total cash compensation we use the maximum total cash compensation as the denominator when maximum variable salary is the nominator and actual total cash compensation as the denominator when actual variable salary is the nominator. CEO-severance is calculated by multiplying the number of months of severance by the monthly fixed salary, and pension payment is obtained by multiplying the percent of the yearly fixed salary by the yearly fixed salary. When calculating what fraction other benefits, severance and pension is of total cash compensation, we use the actual total cash compensation as the denominator. Finally, CEO-ownership is calculated as the percentage of the total number of shares outstanding before dilution is held by the CEO. In this sample five out of 40, or 12.5 percent, of the CEOs are also the founder of their company.

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
Turnover (MSEK)	40	382	200	508	2	2 162
CEO monthly fixed salary (SEK)	40	107 640	100 042	54 756	20 000	279 800
CEO maximum variable salary (SEK)	19	582 905	364 000	709 335	0	2 800 000
CEO actual variable salary (SEK)	38	232 255	104 350	343 509	0	1 700 000
CEO maximum total cash compensation (SEK)	19	1 978 536	1 220 500	1 169 962	460 000	4 800 004
CEO actual total cash compensation (SEK)	38	1 550 413	1 312 000	848 900	240 000	3 700 004
Maximum variable/total cash compensation	19	21.7%	27.8%	19.1%	0.0%	58.3%
Actual variable/total cash compensation	38	11.5%	5.7%	14.2%	0.0%	45.9%
Other CEO benefits	26	148 285	41 650	494 029	0	2 553 000
CEO-severance (SEK)	38	1 447 724	1 276 000	1 095 282	150 000	4 444 000
Yearly CEO pension payment (SEK)	37	327 595	307 000	218 304	0	777 000
<i>as % of total cash compensation</i>		<i>124%</i>	<i>124%</i>	<i>213%</i>	<i>63%</i>	<i>210%</i>
CEO-ownership (stocks and options)	40	6.3%	1.7%	12.5%	0.0%	70.9%

Source: Company annual reports. The companies selected are 2Entertain, Avensia Innovation, Axlon Group, Biotage, Bong Ljungdahl, Borås Wäferi, Boss Media, Consilium, CTT Systems, Digital Vision, Drillcon, Duroc, Effnet, Ellen, Expanda, Fagerhult, Intellecta, Malmbergs Elektriska, MediaProvider, MSC Konsult, MultiQ, Netrevelation, Nilörngruppen, Opcon, Ortivus, Probi, Rasta Group, Rejlerkoncernen, Semcon, Sky Communcation in Sweden, Smarteq, Svedbergs, Svithoid Tankers, TagMaster, Tricorona, Vitrolife, Värmekyl Grossisten, Xano Industrier and Zodiak Television.

Table 3: Compensation statistics for PE-backed companies obtained both directly from PE-firms and from IPO prospectuses 2001-2007 (dataset 2)

The table shows the mean, median, minimum and maximum compensation components received by the CEOs in our sample PE-backed companies, as well as information collected from 18 IPO prospectuses from 2001-2007. We also show the standard deviation for all variables, as well as the number of observations for all variables. In total, we have collected data for 58 companies, representing 18 different PE-firms. Turnover is a measure of size and given in MSEK, all other figures are shown in SEK. Monthly fixed salary is the salary received by the CEO in each sample company, whereas the variable salary is the bonus component of the CEO-pay. The maximum variable salary is the upper boundary of the bonus each year, and is calculated as the number of months of salary multiplied by the monthly fixed salary. The actual variable salary is the bonus actually paid out to the CEO. The total cash compensation = (monthly fixed salary x twelve + yearly variable salary). We have eliminated other benefits and pension payment from this calculation due to few observation, as well as severance which is only relevant in the event of a retiring or terminating CEO. When calculating maximum total cash compensation we add the yearly fixed salary and the maximum variable salary, and when calculating actual total cash compensation we add yearly fixed salary and the actual variable salary. When calculating the ratio variable to total cash compensation we use the maximum total cash compensation as the denominator when maximum variable salary is the nominator and actual total cash compensation as the denominator when actual variable salary is the nominator. CEO-severance is calculated by multiplying the number of months of severance by the monthly fixed salary, and pension payment is obtained by multiplying the percent of the yearly fixed salary by the yearly fixed salary. When calculating what fraction other benefits, severance and pension is of total cash compensation, we use the actual total cash compensation as the denominator. Finally, CEO-ownership is calculated as the percentage of the total number of shares outstanding before dilution is held by the CEO. The CEO-ownership is before the IPO for all companies except in two cases (BE Group and Bisnode), where we were not able to find ownership before the IPO.

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
Turnover (MSEK)	57	802	250	1 453	1	6 283
CEO monthly fixed salary (SEK)	58	108 742	88 000	74 441	22 500	360 917
CEO maximum variable salary (SEK)	35	489 041	360 000	635 419	0	3 248 250
CEO actual variable salary (SEK)	28	416 530	25 000	888 901	0	3 870 000
CEO maximum total cash compensation (SEK)	35	1 809 895	1 200 750	1 347 120	360 000	7 579 250
CEO actual total cash compensation (SEK)	28	1 900 675	1 056 000	1 735 518	325 000	7 004 000
Maximum variable/total cash compensation	35	20.5%	23.1%	16.6%	0.0%	50.0%
Actual variable/total cash compensation	28	12.6%	4.2%	17.7%	0.0%	63.5%
Other CEO benefits	2	902 011	902 011	1 269 948	4 022	1 800 000
CEO-severance (SEK)	55	1 382 022	960 000	1 263 363	0	6 648 000
Yearly CEO pension payment (SEK)	20	621 294	345 500	732 376	0	2 797 000
<i>as % of total cash compensation</i>		<i>153%</i>	<i>209%</i>	<i>188%</i>	<i>1%</i>	<i>161%</i>
CEO-ownership (stocks and options)	43	8.7%	5.0%	10.9%	0.0%	49.0%

Source: A number of Swedish private equity firms, IPO prospectuses publicised 2001-2007 for the following PE-backed companies: Active Biotech, Aerocrine, Altima, Aspiro, BE Group, Biovitrum, Bisnode, Duni, Gant, Hemtex, HMS Networks, Lindab, Meda, Nederman, Nobia, Nordic Camping, Orexo and Studsvik.

Table 4: Compensation statistics for public companies obtained from annual reports (dataset 2)

The table shows the mean, median, minimum and maximum compensation components received by the CEOs in public companies selected to match our PE-backed company sample for dataset 2 when it comes to size and industry classification. We also show the standard deviation for all variables, as well as the number of observations for all variables. In total, we have collected data for 58 companies, listed on First North Stock Exchange, OMX Small cap or OMX Mid cap. Turnover is a measure of size and given in MSEK, all other figures are shown in SEK. Monthly fixed salary is the salary received by the CEO in each sample company, whereas the variable salary is the bonus component of the CEO-pay. The maximum variable salary is the upper boundary of the bonus each year, and is calculated as the number of months of salary multiplied by the monthly fixed salary. The actual variable salary is the bonus actually paid out to the CEO. The total cash compensation = (monthly fixed salary x twelve + yearly variable salary). We have eliminated other benefits and pension payment from this calculation, as well as severance which is only relevant in the event of a retiring or terminating CEO. When calculating maximum total cash compensation we add the yearly fixed salary and the maximum variable salary, and when calculating actual total cash compensation we add yearly fixed salary and the actual variable salary. When calculating the ratio variable to total cash compensation we use the maximum total cash compensation as the denominator when maximum variable salary is the nominator and actual total cash compensation as the denominator when actual variable salary is the nominator. CEO-severance is calculated by multiplying the number of months of severance by the monthly fixed salary, and pension payment is obtained by multiplying the percent of the yearly fixed salary by the yearly fixed salary. When calculating what fraction other benefits, severance and pension is of total cash compensation, we use the actual total cash compensation as the denominator. Finally, CEO-ownership is calculated as the percentage of the total number of shares outstanding before dilution is held by the CEO. In this sample seven out of 59, or 12 percent, of the CEOs are also the founder of their company.

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
Turnover (MSEK)	58	885	265	1 652	2	8 872
CEO monthly fixed salary (SEK)	58	125 569	109 500	71 841	20 000	341 667
CEO maximum variable salary (SEK)	29	878 885	600 000	999 502	0	3 820 000
CEO actual variable salary (SEK)	52	337 514	112 500	613 949	0	3 414 000
CEO maximum total cash compensation (SEK)	29	2 651 534	1 493 698	1 858 570	460 000	7 640 000
CEO actual total cash compensation (SEK)	52	1 869 952	1 502 350	1 329 411	240 000	7 234 000
Maximum variable/total cash compensation	29	25.5%	28.7%	17.6%	0.0%	58.3%
Actual variable/total cash compensation	52	12.6%	6.7%	14.9%	0.0%	47.2%
Other CEO benefits	37	118 981	40 301	415 367	0	2 553 000
CEO-severance (SEK)	56	1 950 252	1 343 500	1 878 949	0	8 200 000
Yearly CEO pension payment (SEK)	52	426 574	362 000	345 828	0	1 900 000
<i>as % of total cash compensation</i>		<i>133%</i>	<i>116%</i>	<i>199%</i>	<i>0%</i>	<i>175%</i>
CEO-ownership (stocks and options)	58	6.0%	1.8%	10.9%	0.0%	70.9%

Source: Company annual reports. In addition to the companies presented in Table 2, we have included Beijer Alma, BioGaia, Biolin, Biophausia, Clas Ohlson, Fingerprint Cards, G&L Beijer, HL Display, Intrum Justitia, JM, Midway, Munters, Nextlink, PA Resources, Retail and Brands, Sectra, Securitas systems, Softronic and VLT in this sample.

Table 5: Industry representation in our complete datasets

The table shows the industry representation for the full samples of PE-backed companies and public companies, respectively. We have followed the classification used by OMX Group as closely as possible.

Industry	No. of PE-backed companies	No. of public companies
Consumer discretionary	13	12
Energy	0	1
Financials	0	3
Health care	5	8
Industrials	13	18
Information technology	13	15
Materials	1	1
Unknown	13	0
Total	58	58

Source: Avanza, OMX Group.

Table 6: The ownership structure in our sample of public companies

The table shows the ownership concentration in the public companies in our sample. We consider a company to have concentrated ownership if the single largest shareholder holds ≥ 25 percent of the votes in the company. The reason that we use a 25 percent threshold is that this captures all shareholders that for strategic reasons hold just under the mandatory bid rule level of 30 percent, but still exert significant control from their position.

Percentage held by largest shareholder	Capital	% of sample	Votes	% of sample
$\geq 10\%$	50	85%	54	92%
$\geq 20\%$	26	44%	35	59%
$\geq 25\%$	20	34%	27	46%
$\geq 30\%$	13	22%	20	34%
$\geq 50\%$	2	3%	8	14%

(number of firms)

(number of firms)

Source: Company annual reports.

Table 7: Summary of normality tests for the CEO-ownership variables

The table shows the results from the normality test of the CEO-ownership variables in our data. A W (or W') test statistic close to one indicates normality.

Summary of normality tests	Dataset 1				Dataset 2			
	Obs	W	Z	Prob > z	Obs	W	Z	Prob > z
Shapiro-Wilk								
PE: CEO-ownership	27	0.79344	3.705	0.00011	43	0.76258	4.851	0.00000
Public: CEO-ownership	40	0.52499	6.171	0.00000	58	0.55215	6.809	0.00000
Summary of normality tests	Obs	W'	Z	Prob > z	Obs	W'	Z	Prob > z
	Obs	W'	Z	Prob > z	Obs	W'	Z	Prob > z
Shapiro-Francia								
PE: CEO-ownership	27	0.81065	3.266	0.00055	43	0.75826	4.357	0.00001
Public: CEO-ownership	40	0.50544	5.449	0.00001	58	0.54578	5.880	0.00001

Sources: PE-firms, company annual reports.

Appendix III – Summary of Test Results

Table 8a: Summary of results from t- tests

The table shows the results from the t- test, where the means of two populations are compared. The two first columns under the two datasets show the mean for each firm observation. The T-columns show the observed test statistic and the last column show the p-value. We consider all p-values below 0.10 to be significant.

Summary of test results	Dataset 1				Dataset 2			
	PE	Public	T	Prob > t	PE	Public	T	Prob > t
Hypothesis 1b	<i>(mean)</i>				<i>(mean)</i>			
Actual total cash compensation	934 154	1 379 000	-2.2544	0.0436	1 817 934	1 919 158	-0.3394	0.7374
Maximum total cash compensation	1 531 167	2 380 683	-2.3361	0.0394	2 023 516	2 928 762	-2.0866	0.0514
Hypothesis 2								
Actual variable/total cash compensation	0.0183	0.1150	-2.2702	0.0424	0.1063	0.1355	-0.7792	0.4438
Maximum variable/total cash compensation	0.2430	0.2403	0.0442	0.9655	0.2690	0.2674	0.0382	0.9699
Hypothesis 3								
CEO-ownership	0.1175	0.0790	1.1032	0.2800	0.0871	0.0690	0.7769	0.4400

Table 8b: Summary of results from Mann-Whitney rank-sum tests

The table shows the results from the Mann-Whitney rank-sum test, where the medians of two populations are compared. The data is order by firm type, where our two types are PE-backed companies (PE) and public companies (Public). The two first columns under the two datasets show the number of observations for each firm type. The Z-columns show the observed test statistic and the last column show the p-value. We consider all p-values below 0.10 to be significant.

Summary of test results	Dataset 1				Dataset 2			
	PE	Public	Z	Prob > z	PE	Public	Z	Prob > z
Hypothesis 1b	<i>(ranksum)</i>				<i>(ranksum)</i>			
Actual total compensation	246	1 133	3.07	0.0021	997	2 164	1.266	0.2056
Maximum total compensation	508	483	1.303	0.1925	990	1 091	1.996	0.0459
Hypothesis 2								
Actual variable/total compensation	290	1 089	2.374	0.0176	1 070	2 090	0.536	0.5918
Maximum variable/total compensation	544	447	0.467	0.6407	1 073	1 007	0.888	0.3744
Hypothesis 3								
CEO-ownership	1 248	1 030	-3.764	0.0002	2 530	2 521	-2.493	0.0127

Appendix IV – Results from Hypothesis 1a-b

Table 9a: Testing hypothesis 1a (dataset 1)

The table shows the results from the regression testing the correlation between total cash compensation and concentrated ownership. We control for firm type (PE-backed or public company) using a dummy variable taking the value one if the company is PE-backed and zero otherwise. Moreover, we control for size using turnover as a proxy. We also include CEO-ownership and founder-CEO in the regression. Founder-CEO is constructed as a dummy taking the value one if the CEO of the company is also the founder, and zero otherwise.

ln(actual total compensation)	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
PE-dummy	0.593942	0.596603	1	0.327	-0.6212985 1.809183
Turnover	0.0003236	0.0001824	1.77	0.086	-0.0000479 0.000695
Concentrated ownership (dummy)	0.1572225	0.1864916	0.84	0.405	-0.2226484 0.5370935
CEO-ownership	-2.581237	0.7572302	-3.41	0.002	-4.123664 -1.038809
Founder-CEO	0.3768933	0.2808381	1.34	0.189	-0.1951553 0.9489418
Constant	13.40624	0.6218155	21.56	0.000	12.13964 14.67284

Number of observations = 38

F (5.32) = 4.26

Prob > F = 0.0028

R-squared = 0.4184

Adjusted R-squared = 0.3276

Root MSE = 0.52098

Table 9b: Testing hypothesis 1a, excluding CEO-ownership (dataset 1)

The table shows the results from the regression testing the correlation between total cash compensation and concentrated ownership, this time excluding CEO-ownership since this might cause multicollinearity problems. We control for firm type (PE-backed or public company) using a dummy variable taking the value one if the company is PE-backed and zero otherwise. Moreover, we control for size using turnover as a proxy. We also include founder-CEO in the regression, which is constructed as a dummy taking the value one if the CEO of the company is also the founder, and zero otherwise.

ln(actual total compensation)	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
PE-dummy	0.7873885	0.6828051	1.15	0.257	-0.601789 2.176566
Turnover	0.0005003	0.000201	2.49	0.018	0.0000913 0.0009093
Concentrated ownership (dummy)	-0.0200555	0.205904	-0.1	0.923	-0.4389703 0.3988593
Founder-CEO	0.2033807	0.3175322	0.64	0.526	-0.4426434 0.8494048
Constant	13.10387	0.7075907	18.52	0.000	11.66427 14.54347

Number of observations = 38

F (4.33) = 2.16

Prob > F = 0.0957

R-squared = 0.2073

Adjusted R-squared = 0.1112

Root MSE = 0.59897

Table 9c: Testing hypothesis 1a, excluding concentrated ownership (dataset 1)

The table shows the results from the regression testing the correlation between total cash compensation and CEO-ownership. We control for firm type (PE-backed or public company) using a dummy variable taking the value one if the company is PE-backed and zero otherwise. Moreover, we control for size using turnover as a proxy. We also include founder-CEO in the regression, which is constructed as a dummy taking the value one if the CEO of the company is also the founder, and zero otherwise.

ln(actual total compensation)	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
PE-dummy	0.5225325	0.5879655	0.89	0.381	-0.6736923	1.718757
Turnover	0.0003769	0.0001703	2.21	0.034	0.0000304	0.0007234
CEO-ownership	-2.403212	0.7239967	-3.32	0.002	-3.876195	-0.9302297
Founder-CEO	0.3661837	0.2793184	1.31	0.199	-0.2020938	0.9344613
Constant	13.52769	0.6022418	22.46	0.000	12.30242	14.75296

Number of observations = 38

F (4.33) = 5.63

Prob > F = 0.0014

R-squared = 0.4055

Adjusted R-squared = 0.3335

Root MSE = 0.51869

Table 10a: Testing hypothesis 1b, using actual total cash compensation (dataset 1)

The table show the results from the paired t-test of hypothesis 1b where the means of actual total cash compensation in PE-backed companies and public companies, respectively, are compared.

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
CEO_PE: Actual total compensation	13	934153.8	147013.9	530066.2	613838.1	1254470
CEO_pu: Actual total compensation	13	1379000	193403.1	697324.6	957610.9	1800389
diff	13	-444846.2	197319.4	711445.1	-874768.1	-14924.18
mean(diff) = mean(pe_atotcomp - pu_atotcomp)					t = -2.2544	
Ho: mean(diff) = 0					Degrees of freedom = 12	
Ha: mean(diff) < 0			Ha: mean(diff) != 0		Ha: mean(diff) > 0	
Pr(T < t) = 0.0218			Pr(T > t) = 0.0436		Pr(T > t) = 0.9782	

Table 10b: Testing hypothesis 1b, using maximum total cash compensation (dataset 1)

The table show the results from the paired t-test of hypothesis 1b where the means of maximum total cash compensation in PE-backed companies and public companies, respectively, are compared.

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
CEO_PE: Maximum total compensation	12	1531167	202619.4	701894.2	1085204	1977129
CEO_pu: Maximum total compensation	12	2380683	350833.7	1215324	1608503	3152862
diff	12	-849515.9	363648.1	1259714	-1649900	-49131.8
mean(diff) = mean(pe_mtocomp - pu_mtocomp)					t = -2.3361	
Ho: mean(diff) = 0					Degrees of freedom = 11	
Ha: mean(diff) < 0			Ha: mean(diff) != 0		Ha: mean(diff) > 0	
Pr(T < t) = 0.0197			Pr(T > t) = 0.0394		Pr(T > t) = 0.9803	

Table 11a: Testing hypothesis 1a (dataset 2)

The table shows the results from the regression testing the correlation between total cash compensation and concentrated ownership. We control for firm type (PE-backed or public company) using a dummy variable taking the value one if the company is PE-backed and zero otherwise. Moreover, we control for size using turnover as a proxy. We also include CEO-ownership and founder-CEO in the regression. Founder-CEO is constructed as a dummy taking the value one if the CEO of the company is also the founder, and zero otherwise.

ln(actual total compensation)	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
PE-dummy	0.6719925	0.5746391	1.17	0.248	-0.4846959 1.828681
Turnover	0.0002045	0.0000572	3.57	0.001	0.0000893 0.0003198
Concentrated ownership (dummy)	0.253511	0.1505676	1.68	0.099	-0.0495659 0.5565879
CEO-ownership	-2.725267	0.7148912	-3.81	0.000	-4.164269 -1.286266
Founder-CEO	0.325972	0.2374025	1.37	0.176	-0.1518945 0.8038386
Constant	13.40114	0.5963367	22.47	0.000	12.20077 14.6015

Number of observations = 52

F (5.46) = 7.22

Prob > F = 0.0000

R-squared = 0.4397

Adjusted R-squared = 0.3788

Table 11b: Testing hypothesis 1a, excluding CEO-ownership (dataset 2)

The table shows the results from the regression testing the correlation between total cash compensation and concentrated ownership, this time excluding CEO-ownership since this might cause multicollinearity problems. We control for firm type (PE-backed or public company) using a dummy variable taking the value one if the company is PE-backed and zero otherwise. Moreover, we control for size using turnover as a proxy. We also include founder-CEO in the regression, which is constructed as a dummy taking the value one if the CEO of the company is also the founder, and zero otherwise.

ln(actual total compensation)	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
PE-dummy	0.9611849	0.6464315	1.49	0.144	-0.3392674 2.261637
Turnover	0.0002383	0.0000642	3.71	0.001	0.0001091 0.0003674
Concentrated ownership (dummy)	0.1571836	0.1684508	0.93	0.356	-0.1816958 0.4960629
Founder-CEO	0.1346684	0.2633324	0.51	0.611	-0.3950881 0.664425
Constant	13.0045	0.6663829	19.52	0.000	11.66391 14.34509

Number of observations = 52

F (4.47) = 4.19

Prob > F = 0.0056

R-squared = 0.2626

Adjusted R-squared = 0.1999

Root MSE = 0.59613

Table 11c: Testing hypothesis 1a, excluding concentrated ownership (dataset 2)

The table shows the results from the regression testing the correlation between total cash compensation and CEO-ownership. We control for firm type (PE-backed or public company) using a dummy variable taking the value one if the company is PE-backed and zero otherwise. Moreover, we control for size using turnover as a proxy. We also include founder-CEO in the regression, which is constructed as a dummy taking the value one if the CEO of the company is also the founder, and zero otherwise.

ln(actual total compensation)	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
PE-dummy	0.6127715	0.5846502	1.05	0.300	-0.5633929	1.788936
Turnover	0.0002009	0.0000583	3.44	0.001	0.0000836	0.0003182
CEO-ownership	-2.523266	0.7183769	-3.51	0.001	-3.968454	-1.078078
Founder-CEO	0.3519144	0.241482	1.46	0.152	-0.1338847	0.8377135
Constant	13.5782	0.5983388	22.69	0.000	12.3745	14.7819

Number of observations = 52

F (4.47) = 8.00

Prob > F = 0.0001

R-squared = 0.4051

Adjusted R-squared = 0.3545

Root MSE = 0.53544

Table 12a: Testing hypothesis 1b, using actual total cash compensation (dataset 2)

The table shows the results of the paired t-test for hypothesis 1b, using actual total cash compensation and the extended dataset (dataset 2).

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]
CEO_PE: Actual total compensation	24	1817934	348999.1	1709739	1095974 2539893
CEO_pu: Actual total compensation	24	1919158	297364.3	1456782	1304013 2534303
diff	24	-101224.8	298284	1461287	-718272.2 515822.6

mean(diff) = mean(pe_atotcomp - pu_atotcomp)

t = -0.3394

Ho: mean(diff) = 0

Degrees of freedom = 23

Ha: mean(diff) < 0

Ha: mean(diff) != 0

Ha: mean(diff) > 0

Pr(T < t) = 0.3687

Pr(|T| > |t|) = 0.7374

Pr(T > t) = 0.6313

Table 12b: Testing hypothesis 1b, using maximum total cash compensation (dataset 2)

The table shows the results of the paired t-test for hypothesis 1b, using maximum total cash compensation and the extended dataset (dataset 2).

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]
CEO_PE: Maximum total compensation	19	2023516	356202.4	1552650	1275163 2771870
CEO_pu: Maximum total compensation	19	2928762	428118.2	1866124	2029319 3828205
diff	19	-905245.3	433845.5	1891089	-1816721 6230.327

mean(diff) = mean(pe_mtocomp - pu_mtocomp)

t = -2.0866

Ho: mean(diff) = 0

Degrees of freedom = 18

Ha: mean(diff) < 0

Ha: mean(diff) != 0

Ha: mean(diff) > 0

Pr(T < t) = 0.0257

Pr(|T| > |t|) = 0.0514

Pr(T > t) = 0.9743

Appendix V – Results from Hypothesis 2

Table 13a: Testing hypothesis 2, using actual compensation statistics (dataset 1)

The table shows the results from the paired t-test testing hypothesis 2, comparing the means of actual variable to total cash compensation for CEOs in PE-backed companies and public companies.

Paired t test						
Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
CEO_PE: Actual variable/total compensation	13	0.0183149	0.0084092	0.0303198	-7.18E-06	0.036637
CEO_pu: Actual variable/total compensation	13	0.1150372	0.0408389	0.1472469	0.0260568	0.2040176
diff	13	-0.0967223	0.0426049	0.1536141	-0.1895504	-0.0038942
mean(diff) = mean(pe_avar2tot - pu_avar2tot)					t = -2.2702	
Ho: mean(diff) = 0					Degrees of freedom = 12	
Ha: mean(diff) < 0			Ha: mean(diff) != 0		Ha: mean(diff) > 0	
Pr(T < t) = 0.0212			Pr(T > t) = 0.0424		Pr(T > t) = 0.9788	

Table 13b: Testing hypothesis 2, using maximum compensation statistics (dataset 1)

The table shows the results from the paired t-test testing hypothesis 2, this time comparing the means of maximum variable to total cash compensation for CEOs in PE-backed companies and public companies.

Paired t test						
Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
CEO_PE: Maximum variable/total compensation	12	0.2429586	0.0523405	0.1813129	0.1277579	0.3581593
CEO_pu: Maximum variable/total compensation	12	0.240347	0.0565599	0.1959292	0.1158595	0.3648345
diff	12	0.0026116	0.059076	0.2046453	-0.1274138	0.132637
mean(diff) = mean(pe_mvar2tot - pu_mvar2tot)					t = 0.0442	
Ho: mean(diff) = 0					Degrees of freedom = 11	
Ha: mean(diff) < 0			Ha: mean(diff) != 0		Ha: mean(diff) > 0	
Pr(T < t) = 0.5172			Pr(T > t) = 0.9655		Pr(T > t) = 0.4828	

Table 14a: Testing hypothesis 2, using actual compensation statistics (dataset 2)

The table shows the results from the paired t-test testing hypothesis 2, comparing the means of actual variable to total cash compensation for CEOs in PE-backed companies and public companies, but this time using the extended dataset.

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]
CEO_PE: Actual variable/total compensation	24	0.1062818	0.0307394	0.1505918	0.0426925 0.1698711
CEO_pu: Actual variable/total compensation	24	0.135489	0.0322702	0.1580909	0.068733 0.2022449
diff	24	-0.0292072	0.0374844	0.1836354	-0.1067496 0.0483353

mean(diff) = mean(pe_avar2tot - pu_avar2tot)

t = -0.7792

Ho: mean(diff) = 0

Degrees of freedom = 23

Ha: mean(diff) < 0

Ha: mean(diff) != 0

Ha: mean(diff) > 0

Pr(T < t) = 0.2219

Pr(|T| > |t|) = 0.4438

Pr(T > t) = 0.7781

Table 14b: Testing hypothesis 2, using maximum compensation statistics (dataset 2)

The table shows the results from the paired t-test testing hypothesis 2, comparing the means of maximum variable to total cash compensation for CEOs in PE-backed companies and public companies, using the extended dataset.

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]
CEO_PE: Maximum variable/total compensation	19	0.269049	0.0360858	0.1572946	0.1932355 0.3448626
CEO_pu: Maximum variable/total compensation	19	0.2674475	0.039707	0.1730789	0.1840261 0.3508688
diff	19	0.0016016	0.0418744	0.1825264	-0.0863733 0.0895765

mean(diff) = mean(pe_mvar2tot - pu_mvar2tot)

t = 0.0382

Ho: mean(diff) = 0

Degrees of freedom = 18

Ha: mean(diff) < 0

Ha: mean(diff) != 0

Ha: mean(diff) > 0

Pr(T < t) = 0.5150

Pr(|T| > |t|) = 0.9699

Pr(T > t) = 0.4850

Appendix VI – Results from Hypothesis 3

Table 15: Testing hypothesis 3 (dataset 1)

The table shows the results from the paired t-test for hypothesis 3, using dataset 1, where we test the difference in mean CEO-ownership between PE-backed and public companies, respectively.

Paired t test						
Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
PE: CEO-ownership	27	0.117463	0.0225429	0.1171361	0.0711255	0.1638005
pu: CEO-ownership	27	0.0790302	0.0283577	0.1473508	0.0207401	0.1373202
diff	27	0.0384328	0.034837	0.1810181	-0.0331756	0.1100412
mean(diff) = mean(pe_own - pu_own)					t = 1.1032	
Ho: mean(diff) = 0					Degrees of freedom = 26	
Ha: mean(diff) < 0			Ha: mean(diff) != 0		Ha: mean(diff) > 0	
Pr(T < t) = 0.8600			Pr(T > t) = 0.2800		Pr(T > t) = 0.1400	

Table 16: Testing hypothesis 3 (dataset 2)

The table shows the results from the paired t-test for hypothesis 3, using dataset 2, where we test the difference in mean CEO-ownership between PE-backed and public companies, respectively.

Paired t test						
Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
PE: CEO-ownership	43	0.0871296	0.0166086	0.1089097	0.0536121	0.120647
pu: CEO-ownership	43	0.0689772	0.0188042	0.1233074	0.0310288	0.1069257
diff	43	0.0181523	0.0232839	0.1526829	-0.0288365	0.0651412
mean(diff) = mean(pe_own - pu_own)					t = 0.7796	
Ho: mean(diff) = 0					Degrees of freedom = 42	
Ha: mean(diff) < 0			Ha: mean(diff) != 0		Ha: mean(diff) > 0	
Pr(T < t) = 0.7800			Pr(T > t) = 0.4400		Pr(T > t) = 0.2200	