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AND MANAGEMENT  
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# Do CEOs Get Paid for Performance?

- Or do they expropriate shareholders wealth?

Authors:  
Christian Andersson  
Jonas Andersson

Tutor:  
Göran Andersson

## **Abstract**

Agency theory describes the conflict of interest between the principal (stockholders) and the agent (CEO). Aligning the incentives of executives with those of the owners is the most direct way to mitigate the agency problem. If there is no meaningful link between CEO compensation and company performance, it is doubtful that the large sums of assets in public corporations are being managed efficiently. In theory the solution is simple reward the CEO when shareholders wealth increases.

The purpose of this paper is to investigate if there is a relationship between company performance and CEO compensation among Swedish companies, in materials and information technology industry. Also investigate if bonus programs to managers have a positive influence on company performance and therefore are in the best interest of the shareholders. To be able to contribute with an objective view of the compensation phenomenon to Swedish CEOs.

After having done a number of regressions we can say that we know to about 50 % what variables that explain total compensation for a CEO. However as the purpose of this study was to try and find a relationship between CEO compensation and company performance. We then draw the conclusion that if we have some variables that explain total compensation rather well those variables should also to some degree explain company performance, if a relationship between them should exist. After having run regressions with both ROE and return on stock as measurement for company performance and only ending up with models that explains about 2 % and 6 % of company performance, we then draw the conclusion that there do not exist any strong relationship between company performance and CEO compensation. Therefore all bonuses paid out to CEOs as an incentive to perform better are just a way to expropriate wealth from the shareholders, if there is no relationship between bonuses and company performance, then bonuses to CEOs are not in the shareholders best interest.

**Key words:** CEO Compensation, Company Performance, Incentive Contracts, Bonuses, Principal-Agency Problem

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## **1. Introduction**

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*The purpose of this chapter is to introduce the reader to the chosen subject. This is followed by a background about the bonus system, which will lead to our problem formulation and the objective of the study.*

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*“If executives can’t make money for the company and its shareholder, then they are not worth the disproportionately high salaries they receive”<sup>1</sup>.*

The former CEO of Svenskt Näringsliv<sup>2</sup> Ebba Lindsö says that there is no question that unreasonable high compensation has been paid to CEOs where compensation and result hasn't been in comparison<sup>3</sup>. If managers are only looking out for their best interest and there is no relationship between company performance and CEO compensation is the topic for a large number of studies. Attaway finds a weak support for agency theory in his study, the relationship between a company's performance and the CEO compensation. His result also suggests that there is a small but positive relationship between firm performance and CEO compensation.<sup>4</sup> Also researcher such as Jensen and Hall find a relationship between CEO compensation and company performance. Although it was a rather weak link, it shows that such a relationship does exist<sup>5</sup>. However there have also been a number of different researchers such as Eriksson and Weinberg that don't find any evidence that such a relationship exists<sup>6</sup>.

When researchers aren't in agreement over this topic we feel that it would be interesting to investigate this matter further. To see if we can find a relationship between Swedish company performance and CEO compensation and if that isn't the case, find out for what reason the CEO get the high salaries that they receive.

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<sup>1</sup> Leemaster, 2002, pg 73

<sup>2</sup> A Swedish company organisation

<sup>3</sup> <http://sn.svensknaringsliv.se/sn/debatt.nsf/wdebattall/8C33D4807B14F87DC1256E20004BC804>

<sup>4</sup> Attaway, 2000

<sup>5</sup> Jensen et al., 1990, Hall et al., 1998

<sup>6</sup> Weinberg, 1995, Eriksson et al., 2000

## 1.1 Background

Today the compensation to Swedish CEOs has become a big subject in newspapers and television. The reason for this is that the compensation often is constructed of one part that is fixed salary and one part that is variable salary, a so called bonus part. This is something that the journalist<sup>7</sup> Thomas Franzen agrees with. He says that “[the] bonus system has almost become a moral itself, CEO shall demand bonuses. They shall be motivated by getting as high personal gain as possible. Greed has become a moral”<sup>8</sup> This is strong words and it says a lot about the importance of the bonus part of a CEOs compensation.

The design of performance incentives for managers in large companies is an enormously important issue. Because, when designing an incentive program for managers they automatically becomes agents with their own interest. Aligning the incentives of executives with those of the owners is the most direct way to mitigate the agency problem. If there is no meaningful link between CEO compensation and company performance, it is doubtful that the large sums of assets in public corporations are being managed efficiently.<sup>9</sup>

The overall guiding objective for most corporations is to maximize shareholder value. However, this deceptively simple goal can be interpreted in many ways. For executive compensation, the challenge is to strike a balance to ensure:<sup>10</sup>

- That there is an appropriate balance between fixed and variable pay (performance versus retention)
- A suitable balance between short-term and long-term compensation (maximizing short-term profits versus investing for future profits)
- That an appropriate range of financial and non-financial performance measures are used that are associated with the business objectives of the organization (e.g., growth, efficiency, improvement, etc.),
- That company performance is measured at different levels in the organization, ensuring participants have an appropriate "line-of-sight" over the results that they will be held accountable for,
- That the level of performance required under incentive plans is corresponding with the level of pay generated,
- That performance measures are not manipulated to produce unwarranted compensation.

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<sup>7</sup> at Privata Affarer

<sup>8</sup> <http://www.privataaffarer.se/newsText.asp?s=kronika&a=5138>

<sup>9</sup> Hall et al, 1998

<sup>10</sup> Kozan et al, 2004.

A lot of the mass media attention has been on Chief Executive Officer (CEO) compensation, and its relationship to company performance. For example, Swedish television made a program about CEO compensation which was very critical of the high salaries and bonuses the CEOs receive<sup>11</sup>. These bonus programs originate from the US, where it's common to use this kind of incentive to motivate the management to perform better. This has led to a number of scandals, that media, has put in association with the bonus plans. Companies have systematically used bonus plans to divert money from the stockholders to the management. Some examples of scandals are Enron and WorldCom.<sup>12</sup> Even in Sweden we have had our share of scandals involving bonuses. Companies like Skandia used this incentive to divert money from shareholders to managers<sup>13</sup>, which can lead to that Lars-Eric Petersson, CEO, may face a long imprisonment.<sup>14</sup> However it is important to point out that when someone steals it is a crime, and if a suit is used, it is just a well dressed thief. It doesn't necessarily have to be a problem with the bonus program.

Even with these scandals in mind, there are no signals that the Swedish companies are giving up bonuses for their CEOs. It's the other way around, it has become more and more common for companies to use these kinds of compensation systems. Of the largest companies on the most traded list, only about 10 % don't use any kind of bonus programs<sup>15</sup>. Maybe it is problems with the humans, not the bonus program.

There are also risks with bonus program for managers, when they use different methods to try to exploit the fact that a company has bonus programs. One way that is used is called "window dressing" which means to make something look better than it really is. For example, keeping borrowed money as cash until the end of the year, so a balance sheet looks good is a way to use creative accounting methods. This is not forbidden, but it is morally questionable says Sven-Erik Sjöstrand professor at Handelshögskolan in Stockholm. He feels discomfort over this development, where CEOs are only thinking about the financials in the company and disgorge everything else. He calls this financial focus, "only the result matters. It's all about finding the values in a company and exploit them in short term thinking, and thereby getting the "quick" revenues and fulfilling the terms of their bonus".<sup>16</sup>

One example of short term thinking is what happened at Ericsson in 2001 when Kurt Hellström was CEO. He went to the board with a new proposal for his bonus program, where the focus wasn't on the profit but rather on the company cash flow. When the board approved this incentive Hellström started selling assets. The head office was sold for 1, 8 billions and 3 billions worth of

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<sup>11</sup> <http://svt.se/svt/jsp/Crosslink.jsp?d=46152&a=551710>

<sup>12</sup> <http://www.cato.org/pubs/handbook/hb108/hb108-22.pdf>

<sup>13</sup> <http://www.privataaffarer.se/newsText.asp?s=kronika&a=5006>

<sup>14</sup> <http://di.se/Avdelningar/ReadSentDIArticle.aspx?DIArtId>

<sup>15</sup> [http://svt.se/content/1/c6/55/22/44/060307\\_kartlaggning.pdf](http://svt.se/content/1/c6/55/22/44/060307_kartlaggning.pdf)

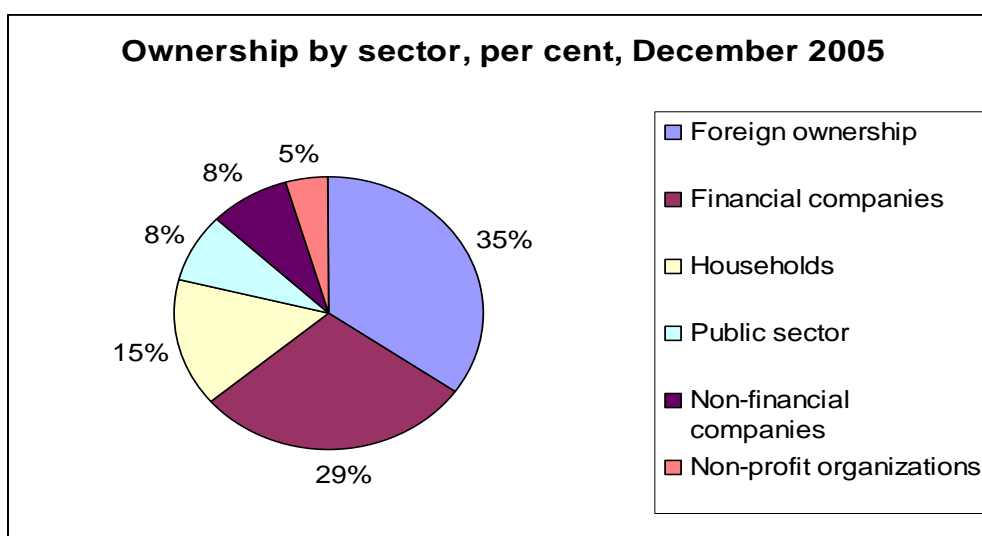
<sup>16</sup> <http://svt.se/svt/jsp/Crosslink.jsp?d=46152&a=556166>.



receivables was sold off in the market. The purpose was simple, the more assets he sold the higher the cash flow became and with the effect of a larger bonus to himself. With no regards to future costs for the company. This is a good example of how dangerous short term thinking can be when involving bonus programs.<sup>17</sup> Another version could be that the company's board was in need of short term cash flow and designed the incentive program in this way, to be able to meet a future. If so, then the bonus program actually was effective.

When discussing if managers have expropriated wealth from the stockholders or not, it can be interesting to know how the ownership on the stock market in Sweden looks like. Below is a diagram over the different owner groups on the Swedish stock market.<sup>18</sup>

**Figure 1: Ownership by sector**



Source: SCB

These are the once who are affected of the incentive programs. As the diagram shows, the largest owner group is foreign investors, closely followed by financial companies. The third largest group is households, which includes all private investors in Sweden. This group has increased during the last couple of years and represents 20.8 % of the population, with an average value of 225 thousand Swedish kronor.<sup>19</sup> The three smallest groups are the public sector, non-financial companies and non-profit organizations.

So far we have considered the risks and downsides of bonus program, but there are also positive effects with bonus programs for owners. One such is the possibility for shareholders to give the manager incentives to select and implement actions that increase shareholders wealth. Shareholders want CEOs to take certain actions, for example deciding which issue to work on, which project to pursue, and which project to terminate whenever the expected return on the

<sup>17</sup> Ibid.

<sup>18</sup> [http://www.scb.se/statistik/FM/FM0201/2005H01/FM0201\\_2005H01\\_SM\\_FM20SM0502.pdf](http://www.scb.se/statistik/FM/FM0201/2005H01/FM0201_2005H01_SM_FM20SM0502.pdf)

<sup>19</sup> Ibid

action exceeds the expected cost. All this can be handled with well implemented bonus programs.<sup>20</sup>

One other reason to use bonus programs is to attract the top CEOs to a certain company. It's a perk that can attract the better CEOs. Without it the company may have to settle with CEOs of poorer quality. This is something that can have a big influence on shareholders wealth, but the problem is to find the high-quality CEOs and give them better salary and stay away from those CEOs who are not in the company's best interest. This is a responsibility that falls on the board of directors. It's up to them to find the best CEO possible for a certain amount of money.<sup>21</sup>

## 1.2 Problem Discussion

On average a CEO at the Swedish stock exchange's bigger companies earns today between 6-7 millions SEK. With a pension cost of approximately 50 percent, which means that, a CEO during a ten year period costs their employer approximately 100 millions SEK.<sup>22</sup> That amount is for almost all citizens an indescribable big sum of money. During the same period an average industrial worker earns about 2.5 million SEK.<sup>23</sup> But most CEO in bigger companies thinks that it is self-evident that they are worth this compensation.

The broad interest groups and the trade union organizations have today accepted that the salary increase rate in Sweden should not exceed the one in other parts of Europe, approximately 3.5 percents. This is to meet the requirement of low inflation and in order to avoid interest increases which can result in higher unemployment.<sup>24</sup>

Why has management salaries increased so much? In Sweden, the compensations increased for the 50 biggest companies' CEOs from 9 to 31 times an average industrial workers salary between 1980 and 2003. This development followed an international standard, that an average CEO in one of the 500 companies in Standard and Poors index at the New York stock exchange had a salary that was 290 times higher than the average industrial worker's, this is a considerable increase from earlier levels.<sup>25</sup> The question is what causes this extreme increase? One explanation is that the shareholders have become weaker, from the point of view that the companies is in larger extent owned by institutions and that these, so far, has been a less active owner group. Another potential explanation is that key persons have become more important and thereby are paid much better.<sup>26</sup>

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<sup>20</sup> Jensen et al, 1990.

<sup>21</sup> Boyd, 1994

<sup>22</sup> <http://www.lo.se/home/lo/home.nsf/unidView/A2B069F1D1BCEA8FC1257013002FA826>

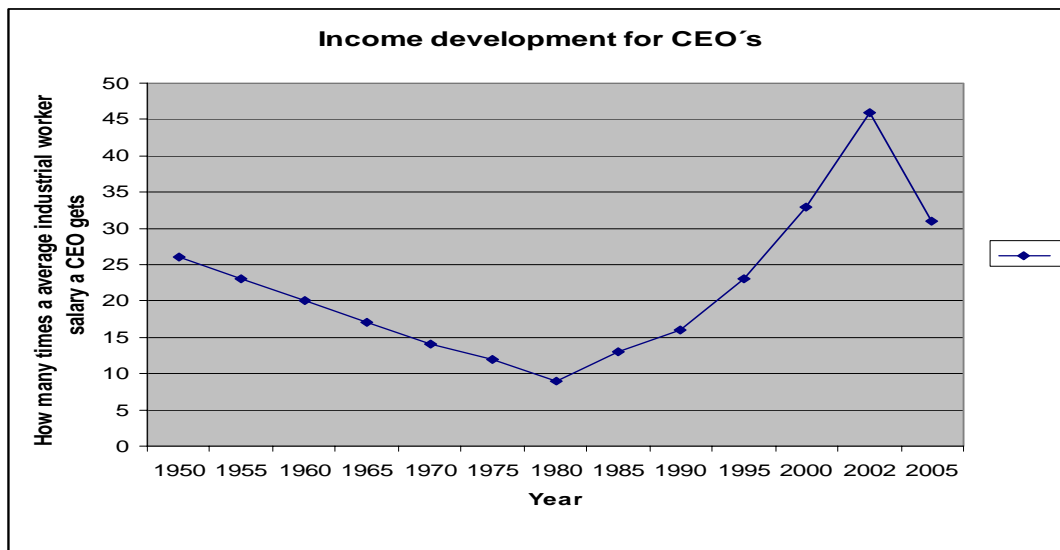
<sup>23</sup> [http://www.scb.se/statistik/FM/FM0201/2005H01/FM0201\\_2005H01\\_SM\\_FM20SM0502.pdf](http://www.scb.se/statistik/FM/FM0201/2005H01/FM0201_2005H01_SM_FM20SM0502.pdf)

<sup>24</sup> <http://www.lo.se/home/lo/home.nsf/unidView/A2B069F1D1BCEA8FC1257013002FA826>

<sup>25</sup> Ibid

<sup>26</sup> Ibid.

Figure 2: Income development for CEOs



Source: LO

Why does a company give bonuses to their executives? If bonuses can generate a higher return for the company, then bonuses are in everyone's best interest. However a lot of theory states that bonuses do not make a difference for the performance of a company. For example in a study by Weinberg we he concludes that there is no meaningful relationship between the CEOs annual incentive reward and company performance.<sup>27</sup> If this is true there is no reason for any company to reward their CEO with bonuses. However researchers are not in agreement. As Jensen shows when he finds a relationship between incentive systems and the performance of the company<sup>28</sup>. Not surprisingly almost every corporate leader in Sweden today thinks that bonuses are good for everyone, both shareholders and managers<sup>29</sup>. For example Stora Ensos chairman says in an article that managers needs to be motivated with bonus programs that help them to work harder even in bad times. He also thinks that these incentive programs are an effective way for the board to show the CEO what they think is important for the company.<sup>30</sup>

So who is right? That is something that we are going to investigate in this paper. If the corporate leaders and researchers such as Jensen are right and bonus programs are a necessary tool to steer a company, then this will be shown in the relation between total compensation and firms' performance, and it will be in the stockholders best interest. But if such a relationship does not exist it may be a way for managers to expropriate wealth from the shareholders.

<sup>27</sup> Weinberg et al, 1995

<sup>28</sup> Jensen et al., 1990

<sup>29</sup> <http://svt.se/svt/jsp/Crosslink.jsp?d=46152&a=551710>

<sup>30</sup> <http://di.se/Index/Nyheter/2006/04/20/184136.htm?src=xlink>

### **1.3 Problem Formulation**

Which variables (CEO and firm related) explain CEOs compensation in Sweden between the years 2000 to 2005?

To which extent can these variables also explain company performance?

Do bonus programs to managers increase shareholders wealth?

### **1.4 Purpose**

The purpose of this paper is to investigate if there is a relationship between company performance and CEO compensation among Swedish companies. The purpose is also to investigate if bonus programs to managers have a positive influence on company performance and are in the best interest of the shareholders. Last but important we will contribute with an objective view of the compensation phenomenon to Swedish CEOs.

## **2. Methodology**

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*The method used is controlled to high extent by our perspective, problem formulation and the purpose. This chapter's purpose is to give the reader a better idea of how we have chosen to deal with the data in this study. The content shall also give the readers a better opportunity to interpret the result from the study themselves.*

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In this study we will focus on compensation to managers and if they are playing an active roll when explaining company performance or if it's just a way for managers to expropriate shareholders wealth. We are going to found this paper on Attaways study about the relationship between company performance and CEO compensation.<sup>31</sup> Attaway uses variables such as CEO age, job tenure, stock ownership, education and return on stockholders equity (ROE) and his sample consists of companies from the computer and electronics industry when explaining total compensation. The findings from his study are that there exist a small, but positive, relationship between firm performance and CEO compensation with a degree of explanation at 29 %.<sup>32</sup> We are going to use the same variables that Attaway used in his study, but we will expand his study and add a number of variables that he didn't incorporate in his study. We will use Attaway's method to find variables that explain the total compensation to a CEO and add new variables to see if there is a new variable that explain the total compensation. After finding significant variables from this regression we will use these variables and see if there is a relationship between companies return on equity and stock return, the performance variables. Return on equity is used to check for a relation to the book value and the stock return is used to test for the market value.

We, however, do examine the Swedish market and Attaway examined the US market, and we are going to use a sample of firms from materials and information technology. We are also including a sample of companies that does not use bonus program in purpose to see if we can further strengthen or discard his findings.

### **2.1 Data and Data Collection**

The data we use in our quantitative study contains both primary - and secondary data, gathered from OMX home page, Data stream and annual reports. The information consists of company names, stock performance, salary, bonuses, information about the CEO and a number of different

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<sup>31</sup> Attaway, 2000

<sup>32</sup> Ibid

key ratios<sup>33</sup>. The primary data is the information about the firms compensation to the CEO; bonus or not, and the CEO specific information as age, tenure, stock ownership and education.

## 2.2 Delimitation

We are going to limit this study to involving companies from only two out of ten sectors on the AFGX index, materials and information technologies. To use just two sectors is in line with prior studies such as Attaway<sup>34</sup>. Another reason for using two sectors and not all is due to the accessibility to data and that these sectors contains companies that seems representative for the Swedish market. With a content of big and small companies, a wide variety of business strategies, different stages of business maturity and the sectors with highest dispersion<sup>35</sup> of companies with and without bonus programs in the compensation to their CEO. We chose not to incorporate companies from Nordic Growth Market (NGM) and the New market (NM). The reasons for not taking the firms from NGM and NM into account, is that there are few listed companies and they are in a development phase. If a company is in the development phase the compensation to the CEO may be based on intensives that are a lot different in compared to a “mature” company. We also believe that the two sectors chosen will be representative even in this field.

Another limitation is the time period. We are limited to use data from 2000 to 2005, because of the lack of information due to the access of annual reports on companies’ websites prior to 2000. This effect the study in the way that this time period had a IT-bubble, however it contains both bull and bear market. Which in this case can be good, to reflect potential changes in the compensation if there is a change in profitability.

We chose to only investigate if the CEOs have a variable compensation or not. Since the bonus programs can be constructed in many different ways and this information could be hard to get. However we assume that similar companies in similar sectors will have similar compensation program. From this point of view we believe that we can compare companies with a high similarity which will help a potential effect of the chosen variables to be observable.<sup>36</sup>

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<sup>33</sup> See; Variables 3.4

<sup>34</sup> Attaway, 2000

<sup>35</sup> See Metodology; 2.4 Sample Selecting Procedure KANSKE VISA EN FÖRDELNING AV DEM

<sup>36</sup> See Companies in Appendix 6

## 2.3 Reliability and Validity

When conducting a quantitative empirical study, we have to be concerned with the reliability and validity of our evidence. Validity is the extent to which the data are in some sense a “true” reflection of the real world.<sup>37</sup> There are two different ways to look on validity, internal and external. The internal validity is about the project itself, the connection between theory and empiric. Whereas the external validity is about the whole projects, taking in the whole project and everything around it, when looking at the study’s theory and empirical findings.<sup>38</sup> Reliability is the extent to which our evidence is independent in the study.<sup>39</sup> If nothing changes in a population, two different studies with the same purpose and method should yield the same results.<sup>40</sup>

We base our method on the fact that we will use an approach that is comparable to what Attaway<sup>41</sup>, Hall<sup>42</sup> and Madura<sup>43</sup> used in their paper. Attaway states that “ Pooling performance data into a four or five year average reduces variability, provides a better long term indicator, and provides a more reliable and valid measure of firm performance than annual measures”.<sup>44</sup> We use a six year period but otherwise we replicate the approach that Attaway used in his study. Further, regarding the research period, it have both bull and bear market, so we will eliminate a bias that may arise when examine a period with just bull or bear market. We also double check our results with control companies that do not have bonus program, which give us the possibility to have a high external validity.

When conducting a study were primary data are used, there may arise some complications due to the human factor. For instance when gathering information a person may writ a wrong number, miss calculate or in some other way make a mistake. We have will try to eliminate this in the way that we will double check and work together for instance one is reading and the other is writing and after a couple of hours change position. Regarding calculations we will use excel. The external data will be gathered from Data Stream and Stockholm Stock exchanges. As mentioned the different companies annual reports will be used, however they have been review and approved by an auditor.<sup>45</sup>

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<sup>37</sup> Ryan et al., 2003, pg 155

<sup>38</sup> Svenning, 1999, pg 61-62

<sup>39</sup> Ryan et al, 2003, pg 156

<sup>40</sup> Svenning, 1999, pg 63-64

<sup>41</sup> Attaway, 2000

<sup>42</sup> Hall et al.,1998

<sup>43</sup> Madura et al.,1996

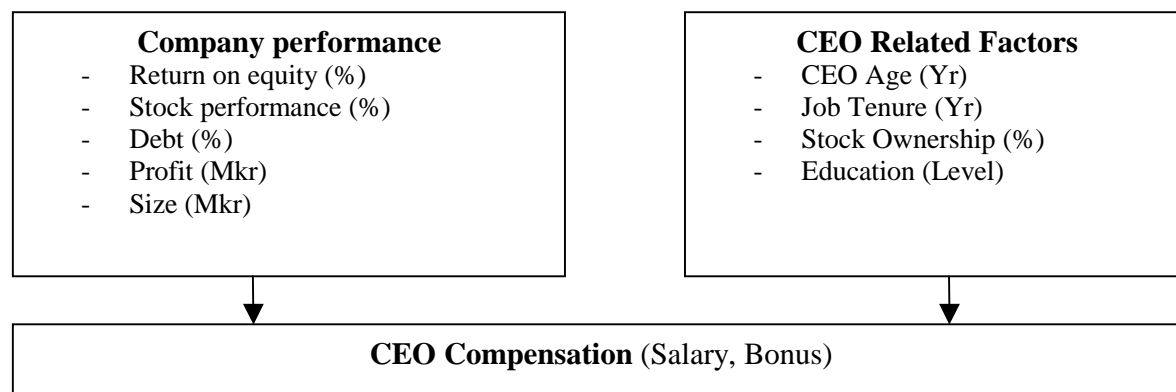
<sup>44</sup> Attaway, 2000

<sup>45</sup> Also see delimitations

## 2.4 Research Model

The research model of CEO compensation that we used in the study is shown in Figure 3 below. Similar models have been applied in previous studies, for example Attaway<sup>46</sup>, Hall<sup>47</sup> and Madura<sup>48</sup>.

Figure 3: Research model



Hall uses this model as a foundation for his study and he also makes an expansion of it. He includes variables such as value of option grants, value of restricted stock grants and other compensation. With this approach he finds that the relationship between CEO compensation and performance is almost entirely driven by changes in the value of stock and stock options.<sup>49</sup> Thus, when Madura used this model, he didn't find any significant relationship between CEO compensation and company performance.<sup>50</sup> So again with our expansion, we hope to find a result that can lead to strengthen or discard Attaways findings.

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<sup>46</sup> Ibid

<sup>47</sup> Hall et al.,1998

<sup>48</sup> Madura et al.,1996

<sup>49</sup> Hall et al., 1998

<sup>50</sup> Madura et al., 1996



## 2.5 Sample Selecting Procedure

Figure 4: Sample selecting/elimination

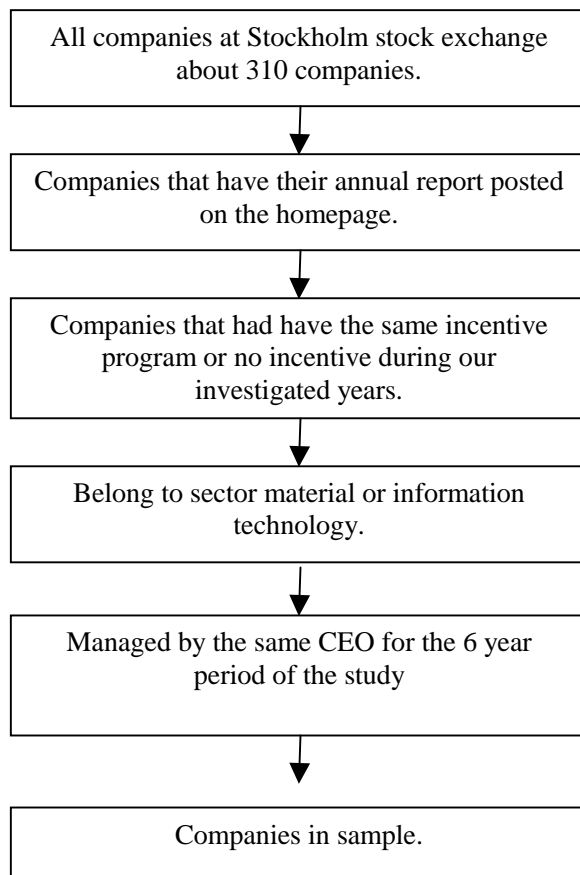


Figure 4 shows the proceedings, selecting the sample from the population.

We *start* with about 310 stocks (firms), were the firm has both an A- and a B-stock, we chose to eliminate the A-stock. However, firms that don't have both, we of course kept the A-stock. Some firms have a C-stock instead of a B-stock, this is then eliminated and we use the A-stock.

*Second step* is to see which time frame we could use in the thesis. Which involves finding out how many of the companies that have their annual report posted on their homepage.<sup>51</sup> The purpose was to investigate a longer time period than other studies, so we could use a whole business cycle<sup>52</sup>. To get a view of how bonuses have affected the stock return in times of both bull and bear markets on the stock exchange.

However, the time frame was limited once again to the years of the firm's annual reports distributed on their homepage. So eliminating firms that didn't have reports longer than 10 years back, would give us a too small sample. So we decided to include those that have posted their reports on their homepage since 2000. This is a time period where there was an "IT boom", which had an effect on the firms in the way that there first was an enormously increase of earnings, then enormous losses. A loss usually has the effect that people get fired, and from a manager's point of view, there option based bonus programs was not "in the money". This may lead to lower correlation between bonuses and stock return in the results.

The *third step* is to find out whether firms had an incentive program or not, during the period of our study. To get this type of information we once again use the annual report. We conclude that this method is very time consuming. We reasoned that if a firm has some of the words bonuses, incentive, variable compensation/remuneration or commission on profit, we would read more deeply to find out if these companies directed their incentive towards the CEO or not. Companies

<sup>51</sup>[http://domino.omgroup.com/www/InfoSupervision.nsf/48b05a67b780646dc12569b6004124d6/812ad3b6a5c22b4bc1256eae004169a3/\\$FILE/\\_g8tqmip3541q6ir3c41198sjje9imer35e8g34c1g6o\\_.pdf](http://domino.omgroup.com/www/InfoSupervision.nsf/48b05a67b780646dc12569b6004124d6/812ad3b6a5c22b4bc1256eae004169a3/$FILE/_g8tqmip3541q6ir3c41198sjje9imer35e8g34c1g6o_.pdf)

<sup>52</sup> [http://en.wikipedia.org/wiki/Business\\_cycle#Types\\_of\\_business\\_cycle](http://en.wikipedia.org/wiki/Business_cycle#Types_of_business_cycle) (About ten years of historical data)

that don't have any of those words in their annual report, we conclude that they don't use any incentive program for their managers. This information can contribute to our result with what effect incentive programs on average have on companies' performance.

In *step four*, we divide the companies into their respective sector. The different sectors are obtained from OMX's GICS- classification, it contains 10 different sectors.<sup>53</sup> After this we have to incorporate two different sectors in our study, as Attaway, we look at our data and find that the two largest groups are materials and information technology. With the aim to use as many companies as possible in our study, we chose these two groups. We now have a sample that contains around 85 companies, approximately 16 firms without bonuses, and 69 firms with bonuses.

*Finally*, to get a better measurement of the relationship between company performance and CEO compensation, we included some managerial variables into our study. Because we need to explain compensation to the CEO, to be able to test, if these variables are of significance when explaining companies' performance. Another restriction is that firms had to have the same CEO during the years 2000 to 2005, if not the firm is eliminated. So we can see if there is any effect of a CEO's "experience". This is also done because if a change of CEO, new incentive programs are probably used, and the new bonus program could be designed for other goals. We now have our sample and it contains 34 firms that have some sort of incentive program to their CEO and 7 firms that don't use that kind of incentive at all. That gives us a total sample size of 41 firms<sup>54</sup>.

## **2.6 Chosen Variables**

When choosing variables we partly relied on the paper by Attaway<sup>55</sup>. We also included some additional variables that other researchers have used, e.g. Coughlan<sup>56</sup>. In addition to that we also include some variables based on economic theory. Since the dependent variable and most of our explanatory variables have been used in previous studies, they are supposed to be comparable and it should be possible to generalize. With help of correlation matrices and regressions we could eliminate highly correlated and non significant variables.<sup>57</sup>

### **2.6.1 Presentation of Variables**

The variables used in our regressions are presented below, along with a section with our expectation of how our variable will turn out in the regression. Both our variables and the

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<sup>53</sup> [http://domino.omgroup.com/www/WebTransaction.nsf/attachments/omxlistan/\\$file/OMX-listan\\_Sv\\_final.pdf](http://domino.omgroup.com/www/WebTransaction.nsf/attachments/omxlistan/$file/OMX-listan_Sv_final.pdf)

<sup>54</sup> See Appendix 6

<sup>55</sup> Attaway, 2000

<sup>56</sup> Coughlan et al., 1985

<sup>57</sup> Appendix 1-5

expected signs are motivated with help of earlier studies, when no prior studies were to be found we used existing literature within this topic.

### **2.6.1.1 The Dependent Variables**

*CEO Compensation* – Is defined as total cash compensation, which include the sum of annual salary plus the bonuses. Data for CEOs compensation was obtained from the sampled companies annual reports.

*Return on Equity (ROE)* - A measure of how well a company used reinvested earnings to generate additional earnings, equal to a fiscal year's after-tax income divided by book value, expressed as a percentage. It is used as a general indication of the company's efficiency; in other words, how much profit it is able to generate given the resources provided by its stockholders.<sup>58</sup> ROE is obtained from Data Stream.

*Stock performance* - A couple of authors has made some research of the relationship of stock performance and executive compensation, for example Attaway<sup>59</sup>. In a study by Coughlan he finds that there exist a relation and that stock performance and the executive compensation are linked<sup>60</sup>. Stock performance is obtained from the change in the historical development of the stock prices from each company, by taking the natural logarithm for the price today minus the natural logarithm of the price yesterday<sup>61</sup>.

### **2.6.1.2 The Explanatory Variables**

*Job tenure* - Is the number of years that the executive have spent in his or her present position and was obtained from the sampled companies annual reports. In our study the present CEO must have hold his present position during our period of study (2000-2005).

*CEOs age* - Is how old the companies CEO is, was obtained from the sampled companies annual reports.

*CEOs stock ownership* – Is measured as the percentage of outstanding shares held by the CEO. Data on shares was obtained from the sampled companies annual reports.

*CEOs education* – Is defined as no formal education, bachelor's degree, master degree and above master degree, also a category where no data could be found is included. Data for CEO's education was obtained from the sampled companies annual reports.

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<sup>58</sup> [http://www.investorwords.com/4248/Return\\_on\\_Equity.html](http://www.investorwords.com/4248/Return_on_Equity.html)

<sup>59</sup> Attaway, 2000

<sup>60</sup> Coughlan et al., 1985

<sup>61</sup>  $\text{LN}(P_t) - \text{LN}(P_{t-1})$

*Profit* – Is how much money the company made that year. This variable has been used in prior studies such as Eriksson where they examine whether the compensation of Danish managers is systematically related to firm performance and firm size.<sup>62</sup>

*Size* – In this study, book value of total assets is a proxy for firm size, this is in line with prior studies such as Chang, which have used total asset the same way.<sup>63</sup>

*Debt* – The debt variable shows how much debt the company has in relation to their equity

## 2.7 Statistical Method

The statistical method used in our study is Ordinary Least Square (OLS), which we use for the purpose to test our hypothesis.<sup>64</sup> The OLS method serves as the best linear unbiased estimator (B.L.U.E.)<sup>65</sup>, the so called Gauss-Markov Theorem<sup>66</sup>. Between two or more variables, the regression has to be linear<sup>67</sup>. When our study contains more than one independent variable, we have applied the classical linear multiple regression analysis.

### 2.7.1 Multiple Regression

Multiple regression analysis are used when analyzing two or more independent variables which serves to explain variations in the dependent variable, Y.<sup>68</sup> Because it is more likely that the explanatory variables will explain more of Y together than a separate regression on each.<sup>69</sup> By using multiple regression analysis we can obtain data for the statistical significance between the various variables. When running a Multiple regression there are a couple of assumptions that has to be fulfilled, to know that the data has the desirable properties of the probability distribution of the random errors.<sup>70</sup>

These are the assumptions concerning the disturbance terms and their interpretation:<sup>71</sup>

- 1)  $E(u_i) = 0$ , The errors has zero mean.
- 2)  $\text{Var}(u_i) = \sigma^2 < \infty$ , The variance of the errors is constant.
- 3)  $\text{Cov}(u_i, u_j) = 0$ , Errors are statistically independent of one another.
- 4)  $\text{Cov}(u_i, x_j) = 0$ , No relationship between the errors and the corresponding x variables.
- 5)  $u_i \sim N(0, \sigma^2)$ , Errors are normally distributed

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<sup>62</sup> Eriksson et al., 1999

<sup>63</sup> Chung et al., 1995

<sup>64</sup> Hill, 2001, pg 68- 76

<sup>65</sup> Ibid,pg 77-79

<sup>66</sup> Ibid, pg 154

<sup>67</sup> Brooks, 2004, pg 44

<sup>68</sup> Ogden et al., 2003, pg 29

<sup>69</sup> Brooks, 2004, pg 82

<sup>70</sup> Hill et al., 2001, pg 149-150 also see MR1 – MR6

<sup>71</sup> Brooks, 2004, pg 145

To estimate the parameters of the Multiple regression Model equations are built as this<sup>72</sup>:

$$(1) \quad Y_t = \beta_1 + \beta_2 x_{t2} + \beta_3 x_{t3} + \dots + \beta_k x_{tk} + u_t$$

For the implementation of the OLS method we have used the statistical data program EViews.

### 2.7.2 Tests of Multiple Regression

To establish whether there exists a connection between firm performance and CEO compensation we use hypothesis tests. A hypothesis test aims to validate a belief about what a certain procedure looks like.<sup>73</sup> A researcher can have a belief or a guess about how a certain phenomenon can be explained. The guess or the assumptions credibility that the investigated sample is representative for the whole population can be confirmed by a hypothesis test. If the conducted test is significant, we can say, with high probability that the obtained result from our sample isn't a consequence of chance.<sup>74</sup> The level of significance place the level for when the null hypothesis should be rejected. The significance is the risk for reject  $H_0$  (null hypothesis) when it really is the true one, this risk is expressed in percent. We have chosen to use 10% significance level, which is the most commonly used within studies concerning our investigated area. The null hypothesis will be rejected if the models resulting P-value is less than 10%<sup>75</sup>.

Before running the regressions there are a need to test if there is a correlation between the variables. If there is a relationship the variables may be serial correlated, even called multicollinearity. If so there are no gurantee that the data will be providing a lot of information, the variables should be orthogonal.<sup>76</sup> Multicollinearity, is tested with a closer look at correlations matrixes, identifying high correlations between the individual variables. If there exist high correlated variables, there is a choice to make either to eliminate some explanatory variables or to try to transform the variable. For instance, a variable can be transformed by taking the logarithm<sup>77</sup> of the series or the change from observation to observation.<sup>78</sup>

Since we are using the OLS, there is a need to check for linearity. The test for this is whether or not the model is linear, is carried out with Ramsey's RESET test, which generate a test for misspecification of functional form using fitted terms.<sup>79</sup>

$H_0$ : Linearity

$H_1$ : Nonlinearity

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<sup>72</sup> Hill et al., 2001, pg 150

<sup>73</sup> Rosengren et al., 2002, pg 91

<sup>74</sup> Körner et al., 2000, pg 180

<sup>75</sup> Ibid

<sup>76</sup> Hill et al., 2001, pg 189

<sup>77</sup> Can't use the log transformation on negative numbers

<sup>78</sup> Hill et al., 2001, pg 125-126

<sup>79</sup> Ibid, pg 194

We also test the data for the five phenomenon:

The first is to include an intercept, to make sure that the errors have a zero mean; if an intercept is included there will be no problems with this assumption<sup>80</sup>. The intercept is also interpreted as the average value that Y can take if the X variables<sup>81</sup> took a value of zero.<sup>82</sup>

Second test, if the variance of the errors is constant and finite over all values, is for homoskedasticity. If the assumption of homoskedasticity doesn't hold, then the data is heteroscedastic.<sup>83</sup> There are a number of tests for this, but we will use White's test, that is recommended by Brooks.<sup>84</sup> When testing the hypothesis is stated:

Ho: Homoskedasticity, with alternative hypothesis

H<sub>1</sub>: Heteroskedasticity.

If there is a problem with heteroskedasticity, Eviews has a solver called White's correction. Running a regression with this correction will yield a homoskedastic regression.<sup>85</sup>

The Third test, that the errors are statistically independent of one another, even called autocorrelation. This is the case when the errors have a serial correlation to each other. To test for autocorrelation, it is recommended both from Hill<sup>86</sup> and Brooks<sup>87</sup> to use the Durbin-Watson test and the Lagrange multiplier test. These both authors also suggest that this problem can be solved by take the first difference of the series, using lagged values or to use logarithms.<sup>88</sup> This "problem" solving methods are in line with Attaway's methodology.<sup>89</sup>

Ho:  $\rho = 0$

H<sub>1</sub>:  $\rho \neq 0$

The Fourth test, no relationship between the errors and the corresponding x variables, that the  $x_t$  are non stochastic.<sup>90</sup>

The Fifth test is that the errors are normally distributed. Even here there are a lot of test that can be used, we chose to follow Brooks suggestion of Bera-Jarque test (JB). This test is for the property of normally distributed random variate that the entire distribution is characterized by the

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<sup>80</sup> Brooks, 2004, pg 146-147

<sup>81</sup> See Multiple Regression Equation

<sup>82</sup> Brooks, 2004, pg 83

<sup>83</sup> Brooks, 2004, pg 56, Hill, 2001, pg 68

<sup>84</sup> Brooks, 2004, pg 148,

<sup>85</sup> Hill, 2001 pg 240-244

<sup>86</sup> Hill et al., 2001, pg 271

<sup>87</sup> Brooks, 2004, pg 159

<sup>88</sup> Brooks, 2004, pg 156 and Hill et al., 2001, pg 270

<sup>89</sup> Attaway, 2000

<sup>90</sup> Ibid, pg 178

mean and the variance. However the two most specific details are skewness and kurtosis. If the data is normally distributed, skewness should be equal to 0 and kurtosis should be equal to 3.<sup>91</sup>

H<sub>0</sub>: Normally distributed

H<sub>1</sub>: Not normally distributed

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<sup>91</sup> Brooks, 2004,pg 178-180

### **3. Theoretical Framework**

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*In this chapter the theories that are included in our study will be introduced. The chapter starts with describing what a bonus system is. Followed by previous research that is done within this subject. Further some theories involving principal agent theory will be introduced, and we finish with a presentation of our chosen variables and our hypothesis.*

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#### **3.1 Bonus System**

Some firms use incentive programs, also called bonuses, to steer a CEO. A bonus system is of great influence for companies' operating plans. A number of important considerations and choices needs to be made when constructing a bonus system, to be sure that the effects of the bonus system are what the company desired.<sup>92</sup>

Armstrong believes that the companies' *business strategy, culture and surrounding* needs to be considered when constructing a bonus system.<sup>93</sup> An incentive program can include both *monetary and non-monetary rewards*. Monetary rewards can include salary, bonus, profit, shares and options. Non-monetary rewards can consist of different kinds of perks, such as pension savings and health care, career paths within the company or competence development.<sup>94</sup>

From several empirical studies a connection between a higher value on the stock and the compensation to the CEO has been proved<sup>95</sup>. Other studies in this field have shown that the size of the compensation determines where the CEO's choose to work and the structure of their bonuses decides how hard they are prepared to work<sup>96</sup>. It is important to keep in mind, that the conditions are different for different companies, and as Armstrong states; there is no such thing as an optimal bonus system.<sup>97</sup>

#### **3.2 Previous Research; Company Performance and CEOs Compensation**

In an article by Weinberg he tries to answer some question about a CEO's salary. There has been some focus on this topic in Congress, where they have proposed a bill that says that the wage of a CEO should be limited to 25 times the salary of the company's lowest paid employee. Weinberg found a very low correlation between revenue and pay and he suggests that consideration should be given to linking executive incentive compensation awards to the financial results and other accomplishments of the CEO and the senior staff. Traditional thinking, that CEO bonuses are based on true pay for performance programs. However, Weinberg found no correlation between

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<sup>92</sup> Arvidsson, 2003, pg 34

<sup>93</sup> Armstrong , 1993, pg 77-78

<sup>94</sup> Arvidsson, 2003, pg 35

<sup>95</sup> Jensen et al., 1990

<sup>96</sup> Baker et al., 1988

<sup>97</sup> Armstrong , 1993, pg 80-81



CEO bonuses and company performance. He suggests that the CEOs bonuses ought to be more firmly linked to the results he or she realizes for the company's shareholders unless special circumstances dictate otherwise.<sup>98</sup>

Weinberg also concludes in his paper that he found no meaningful relationship between the CEO's annual incentive award and company performance. He also recommends that a CEO should get paid on the basis of the level of responsibility on the job, and for the level of financial performance realized by the CEO.<sup>99</sup> Also Madura looks for a relationship between management compensation and firm performance of small businesses. He uses a management compensation model for small businesses and regression analysis similar to past studies is developed and tested. The analysis confirms, however, a lack of significant positive relationship between performance and compensation. The lack of external pressure on small-firm CEOs may help explain the lack of a relationship between firm performance and CEO compensation.<sup>100</sup>

These findings are contradicted in an article by Hall where he studies whether there exists a correlation between firm performance and CEO pay. He uses data for CEOs salary in the largest publicly traded U.S. companies during the years 1980 -1994. He finds a relationship between company performance and CEO salary. The relationship between pay and performance is almost entirely driven by changes in the value of stock and stock options.<sup>101</sup> These findings are in line with Coughlan study where he finds that there exist a relationship and that stock performance and the executive compensation are linked<sup>102</sup>.

Another researcher that has found this relationship is Murphy where he investigates the pay-performance relation for chief executives officers. He estimate that a change in 1000 dollar of shareholders wealth will lead to an average increase in this year and next year's salary and bonuses of about 2 cents. When Murphy adds other incentives that are under direct control of the board of directors such as outstanding stock options and performance related dismissals. The change in salary for a CEO estimates to 75 cent for 1000 dollar increase in shareholders wealth. In his sample CEOs hold a median of about 25 percent of their firm's common stocks. Thus the value of the stock owned by the median CEO changes by \$2.50 whenever the value of the firm changes by 1000 dollar. So the final pay-performance sensitivity that this study concludes is that a change in 1000 dollar for stockholders wealth leads to an increase of \$3.25 of executive's compensation.<sup>103</sup>

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<sup>98</sup> Weinberg, 1995

<sup>99</sup> Ibid

<sup>100</sup> Madura et al., 1996

<sup>101</sup> Hall et al., 1998

<sup>102</sup> Coughlan et al., 1985

<sup>103</sup> Murphy et al, 1990,

Jensen has also done some research in this topic and he thinks that the persistent focus on how much CEOs are paid diverts public attention from the real problem, how CEOs are paid. In most publicly held companies, the compensation of top executives is virtually independent of performance. In his study he finds that despite the headlines, top executives are not receiving record salaries and bonuses. CEO pay levels are just now catching up to where there were 50 years ago. For the period 1982 through 1988, the average salary and bonus for CEOs of comparable companies was \$843,000. He also finds that on average, CEOs receive about 50% of their base pay in the form of bonuses and that the most powerful link between shareholder wealth and executive wealth is direct stock ownership by the CEO.<sup>104</sup>

Another researcher that focuses on this topic, the relationship between company performance and CEO compensation, is Attaway. In his study he uses variables such as CEO age, job tenure, stock owned, education and return on stockholders equity (ROE) to try and find a relationship between CEO compensation and company performance. He uses companies from computer and electronics industry in his sample, and finds a small but positive relationship between firm performance and CEO compensation, with a degree of explanation of 29 %.<sup>105</sup>

There is also a number of other researcher that have used a similar model as Attaway, for example, Weber's study about executive compensation, corporate value and executive ownership. He uses variables such as education, board composition, market value of equity, founder, institutional holdings, board size, total asset, company age, CEO age and CEO tenure. His result indicates that higher firm value is associated with higher CEO compensation. From his variables he finds that CEO age and firm value are positively related to CEO compensation.<sup>106</sup>

Chung uses a similar approach in his study where he presents an integrated investigation of the factors affecting executive ownership, firm value, and executive compensation. He also examines how various firm and executive specific characteristics affect executive compensation, and thereby expand our understanding of executive compensation policies. He uses variables such as size, company age, CEO age, years as CEO and if the CEO was the founder. The results he finds strengthen previous studies that these variables have a high degree of explanation for total compensation. Further, it provides evidence that the level of executive ownership is strongly related to the market value of equity, executive tenure, and firm-founding status, and that Tobin's q, firm size (total assets), and CEO job-specific experience are important determinants of executive compensation.<sup>107</sup>

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<sup>104</sup> Jensen et al., 1990

<sup>105</sup> Attaway, 2000

<sup>106</sup> Weber et al., 2003

<sup>107</sup> Chung et al., 1995

Finally Cordeiro who in his paper, beyond pay for performance, study how to best determine CEO compensation. He also uses, as in Attaways study, CEO related variables such as CEO tenure and stock ownership and he also include CEO duality (if the CEO also has a position in the board) and board composition. As control variables he includes firm size, firm performance and risk. He finds that all control variables risk, size and performance has a positive influence on total compensation. He also finds that inside stock ownership has a negative effect on total compensation and it could be a possible substitution effect between cash compensation and incentives furnished via stock ownership. CEO duality and board composition didn't prove to be important variables when explaining total compensation.<sup>108</sup>

Another approach is used in a study by Eriksson. They examine whether the compensation of Danish managers is systematically related to firm performance and firm size. In addition to the pay performance relationship among managers in general, he also investigate the relative performance hypothesis according to which firms, in setting up their compensation packages, use information about the firm's performance relative to that of other firms in the same industry. He finds that for most managers the pay-for performance relation is relatively weak. The changes in their pay are not predominantly driven by changes in corporate performance, but the pay of the CEO as well as of the other managers is affected by the rate of return on the firm's own capital. He does not reject the hypothesis that managerial performance is valued relative to that of other firms in the same industry. However, the specification of relative performance does not outperform a specification of absolute performance in the statistical sense.<sup>109</sup>

How the bonus system should be used is examine in an article by Baker where he does a survey about compensation and incentives and the relationship to theory and practical uses. He finds that despite that many companies' claims that their pay systems are based on merits, it's a rather low pay difference between "good" workers and "bad" workers on managerial levels. Then he goes on and examine if pay for performance system is an effective way to motivate workers. Baker finds that they are not ineffective but rather that they are too effective and motivate people to only focus on the job that gives them the extra pay and nothing else. This can be a big problem in a company because it can be difficult to adequately specify what people should do and therefore some important things may be overlooked. Pay for performance system gives people an incentive to lobby about how the system should be measured and take time away from there actual work. However, if these two things are handled right pay for performance system can be very efficient for a company to use.<sup>110</sup>

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<sup>108</sup> Cordeiro et al., 2003

<sup>109</sup> Eriksson et al, 2000

<sup>110</sup> Baker et al, 1988

Another system used to motivate people that Baker presents is promotion based incentive, where the worker gets a promotion and with that also an increase in salary. This demand according to Baker a rapidly growing company that can meet the organizational growth required to feed the reward system. A third way to motivate workers that Baker considers is profit sharing plans, where all workers get an equal share of the profit. This will lead to a free-rider problem where a worker bear the full cost of working harder and yet only receive a fraction of the increased profits. Also he states that it always seems better to tie pay to individual performance rather than to overall performance.<sup>111</sup>

### **3.3 The Theory of the Firm**

There have been a lot of debates about if there exists of a significant relationship between management's compensation and the development of the company. The first thoughts about this subject were expressed in an article by Jensen and Meckling, where the authors try to explain the theory of the firm. In this article they, among other things, draw the conclusion that a higher incentive to the management leads to a better performing company.<sup>112</sup>

#### **3.3.1 Principal Agent Theory**

Usually the invested amount of money, from an investor, is small in relation to the total company value. This affects a single investors influence and control, in the sense that it becomes rather limited. This is a big factor, when it comes to explain the separation between ownership and control.<sup>113</sup> This separation often exists in large corporations, and can be an efficient form of economic organization, which is in line with portfolio theory. According to portfolio theory an investor should diversify his stock portfolio to spread the risk. However, due to separation between ownership and control some agency problems can arise. If so, it is important to recognize that managers and shareholders are likely to have different view of the riskiness in the firm.<sup>114</sup> In the litterateur managers are often described as risk averse, which reflects when examine their compensation, where managers prefer fixed salaries before variable compensation. Variable compensation is tied to different firm specific key figures and makes their income more uncertain. If the company choose not to tie the manager's compensation to certain productivity result, it is more likely that the manager wouldn't pursue those investments that are risky, but profitable.<sup>115</sup> This will lead to decisions that aren't in the best interest for the shareholders, due to shareholders own possibility of diversification. So in theory, it is optimal for the shareholders to have a

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<sup>111</sup> Ibid

<sup>112</sup> Jensen et al., 1986

<sup>113</sup> Fama, 1980

<sup>114</sup> Ogden et al., 2003, pg 86-87.

<sup>115</sup> Also see: Underinvestment problem

manager with salary tied to certain productivity measurements, with incentives too base decisions on what's best for the company and its owners.<sup>116</sup>

### **3.3.2 Underinvestment Problem**

As mentioned above, there can be a problem when managers are choosing which investments to peruse or not. Another problem that is explained in theory is the underinvestment problem. This can occur when a firm has default-risky debt outstanding and a profitable investment opportunity, which if it's to be undertaken must be financed with equity funds. Under such circumstances, the firm has to transfer a portion of the new projects net present value to the firm's debt holders and the benefit to stockholders may be lower than the project's cost. Which will not result in the shareholders best interest, and the manager shouldn't adopt the project.<sup>117</sup>

### **3.3.3 Overinvestment Problem**

An over investment problem arise when, as Jensen states in his study, a firm generate substantial free cash flow and the conflict between shareholders and managers are especially sever.<sup>118</sup> Due to managers incentive to use the firms free cash flow to undertake negative net present value projects, while it would not happen if they had to raise external capital at a higher cost.<sup>119</sup>

A benefit from debt is the reduction of over investment problem, trough the free-cash-flow hypothesis<sup>120</sup>. This states that, debt can help to impose investment discipline on managers. Because debt forces the company to pay out free cash flow, for interest and principal obligations,<sup>121</sup> and that long-term debt holder watches the firms' ability to meet its obligations.<sup>122</sup> Management has to make decisions regarding the long-term target capital structure, such as desired level of debt financing and dividend, with the fundamental choice between debt and equity.<sup>123</sup> Despite the extensive academic research, there is no clear model for an optimal leverage ratio.<sup>124</sup>

### **3.3.4 Management Entrenchment**

Since the CEO will be the one making a lot of the daily decisions at a company, a CEO also will have a tendency to steer the firm towards investment that reflect his or her unique talents. This will put the owners in a difficult situation, in some cases they have to fire the CEO. To remove a

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<sup>116</sup> Fama, 1980

<sup>117</sup> Ogden, 2003, pg 93

<sup>118</sup> Jensen 1986

<sup>119</sup> Pindando, 2001

<sup>120</sup> Jensen, 1986

<sup>121</sup> Koller et al, 2005, pg 476-477

<sup>122</sup> Penman, 2003, pg 686

<sup>123</sup> Koller et al, 2005, pg 475-476; Penman, 2003, pg 686

<sup>124</sup> Ibid, pg 476

CEO can be hard, even if he is not performing adequately. Because the CEO has become entrenched, he has already secured his position in the company.<sup>125</sup>

Weisbach describes entrenchment as:<sup>126</sup>

*"Managerial entrenchment occurs when managers gain so much power that they are able to use the firm to further their own interests rather than the interests of shareholders."*

### 3.3.5 Empire Building

A manager with high influence that is to some extent entrenched can peruse something called empire building. Empire building is an agency problem of management, were the CEO can engage self-serving actions, that is, to maximize the size of the firm, rather than the market value of the firms equity. This can be possible through excessive internal expansion, to make mergers and acquisitions or reduce dividends, even though these actions aren't in the shareholders best interest. Managers that are engaging in these activities are said to build their own empire.<sup>127</sup>

### 3.3.6 Agency Costs

All these imperfections, has of course their costs, and these costs are the difference in profit if the owners themselves will lead the company, compared to the profit when the company is managed by an agent. These costs are called, residual loss, and in order to decrease these losses, owners use control and monitoring such as budgets and annual reports. However, it's impossible to implement a perfect monitoring because this will cost the owners more than they will earn. Therefore, the owners and the board use incentive programs.<sup>128</sup>

A small review of the costs of different control procedures:<sup>129</sup>

- *Monitoring cost* – Those costs that the principal pays to get back a part of the control that was transferred to agents.
- *Biding cost* – Those cost that the agent pays to get a form of insurance that the principal will do his job, for example incentives
- *Residual loss* – Those cost and loss of profits that happens when the agent act in a way that have a negative impact on company value.

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<sup>125</sup> Ogden, 2003, pg 87-88.

<sup>126</sup> Weisbach, 1998

<sup>127</sup> Ogden et al, 2003, pg 84-86

<sup>128</sup> Kreps, 1990, pg 17-19

<sup>129</sup> Ibid

## 4. Expectations and Hypothesis

Here we will present our expected signs and our hypothesis. Our expectations are strengthened with results from previous studies within this field.

### 4.1 Expectations

With help of previous studies we can make a prediction of our variables will show a positive or negative sign. The variable debt has not been used in any previous study that we have found so we use a suitable theory to predict a sign. Since total compensation should be in relation to company performance, as Attaway finds, we can predict that with better performance the higher salary to the CEO. Debt will help to impose investment discipline on manager according to the free cash flow hypothesis and with that higher company performance. Thereby we predict debt to show a positive sign. The table below shows what we expect our variables to look like in the regression with total compensation as dependent variable.

| Expected signs on explanatory variables<br>with total compensation |       |                          |
|--|-------|--------------------------|
| Variables  | Signs | Referenced<br>researcher |
| <b>CEO age</b>   | (+)   | Attaway                  |
| <b>CEO Tenure</b>  | (+)   | Ibid                     |
| <b>CEO stock ownership</b>   | (-)   | Ibid                     |
| <b>Education</b>   | (+)   | Ibid                     |
| <b>Size</b>  | (+)   | Cordeiro                 |
| <b>Debt</b>  | (+)   | No prior studies         |
| <b>Profit</b>  | (+)   | Eriksson                 |

**Table 1: Expected signs for Total compensation**

We will also include expected signs for the regression where we use ROE and return on stock as dependent variables. There were few studies that have looked at the same variables that we have in relation to ROE and return on stock. So for the variables debt and profit we motivate it with suitable theories. In line with free cash flow hypothesis we expect that debt will help to impose investment discipline on manager and that will lead to better company performance, thereby we expect it to be positive. With the same theory we also expect that profit will be positive sign, since profit stands for free cash in the company and with help of debt it will have a positive affect on company performance.

| Expected signs on explanatory variables<br>with ROE and return on stock |       |                          |
|---|-------|--------------------------|
| Variables   | Signs | Referenced<br>researcher |
| <b>CEO age</b>  | (+)   | Chung                    |
| <b>CEO Tenure</b>   | (+)   | Ibid                     |

|                            |     |                  |
|----------------------------|-----|------------------|
| <b>CEO stock ownership</b> | (+) | Ibid             |
| <b>Education</b>           | (-) | Ibid             |
| <b>Size</b>                | (+) | Ibid             |
| <b>Debt</b>                | (+) | No prior studies |
| <b>Profit</b>              | (+) | No prior studies |

**Table 2: Expected signs for ROE and Return on stock**

## 4.2 Hypothesis

At a hypothesis test assumes two hypotheses, one *null hypothesis* ( $H_0$ ), and one *alternative hypothesis*. The null hypothesis is the statement or the statistical hypothesis that is actually being tested.<sup>130</sup> We have constructed our hypothesis on the basis of Attaways study, to try and find a relationship between firm performance and CEO compensation.<sup>131</sup>

*H<sub>0</sub>: There is a negative linear relationship or no linear relationship between firm performance and CEOs compensation for firms in the materials and information technology industry.*

*H<sub>1</sub>: There is a positive linear relationship between firm performance and CEO compensation for firms in the materials and information technology industry.*

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<sup>130</sup> Brooks, 2004, pg 65

<sup>131</sup> Attaway, 2000



## 5 Empirical Results

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*In this chapter we will present our sample companies, our chosen variables and our regression results, to give the reader a better overview of the data. We are first going to present the sample and then follow up with our chosen variables and finish with the regressions.*

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### 5.1 Our Sample

We started with all companies on the Stockholm stock exchange list, consisting of over 300 companies, we narrowed it down to a final sample that contains 41 firms. These are presented in the table below, and are divided in to two groups, companies that have a bonus program and companies without such incentive. For further specification of exactly which companies that are included in our sample see appendix.<sup>132</sup>

*Presentation of total sample*

| Number of companies included<br>in our study |        |         |
|--|--------|---------|
| Companies                                    | Number | Percent |
| <b>With bonus</b>                            | 34     | 82,9    |
| <b>Without bonus</b>                         | 7      | 17,1    |
| <b>Total</b>                                 | 41     | 100,0   |

**Table 3: Sampled companies**

We can see that there is a big difference between the two groups. The bonus group represents almost 83 % of our total sample. There are 7 companies that don't have any bonus program, representing 17 % of our total sample. Stating a obvious result, that bonuses are very common to use as a reward system.

### 5.2 Variables

The chosen variables are presented separately in a six year table that illustrates maximum, minimum, mean, median and standard deviation. This will give an overview of our variable and a better understanding of our regressions. The tables are divided in two groups. One group contains the dependent variables and the other group contains the independent variables. Tests for all variables see appendix.<sup>133</sup> The tables are presented below.

#### 5.2.1 Dependent Variables

The variables total compensation shows how much fixed salary and bonuses the CEOs received during our investigated years. We can see that it is a steady increase in maximum compensation

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<sup>132</sup> Appendix 6

<sup>133</sup> Appendix 7-16

from 2000 to 2001. For 2002 the maximum compensation was 13 million SEK which is a decrease of about 2 million SEK compared to 2001. The years 2003 to 2005 the maximum compensation increased each year to 23, 7 million SEK in compensation in 2005.

*Year by year presentation of Total Compensation variable*

|               | Total Compensation (000's SEK) |       |       |       |       |       |
|---------------|--------------------------------|-------|-------|-------|-------|-------|
|               | 2000                           | 2001  | 2002  | 2003  | 2004  | 2005  |
| <b>Max</b>    | 10700                          | 15600 | 13000 | 18550 | 22200 | 23740 |
| <b>Min</b>    | 90                             | 112   | 175   | 552   | 578   | 624   |
| <b>Mean</b>   | 2370                           | 2815  | 2914  | 3104  | 3394  | 5691  |
| <b>Median</b> | 1676                           | 1816  | 1929  | 2091  | 2254  | 4483  |
| <b>St dev</b> | 2414                           | 3137  | 3126  | 3905  | 3822  | 4756  |

**Table 4: Total compensation**

The minimum compensation shows a similar development as the maximum compensation. The mean compensation is greatest in 2005, about 5,7 million SEK. Table 4 is also inline with the graph (Figur 2) of CEOs salary.

Next variable that is included in the study as dependent variable is ROE (Return on equity), which shows how much return a company receive on their invested capital. We can see that on an average there is a positive return for all years except for the year 2001 which shows a negative return on -0.1 %.

*Year by year presentation of ROE variable*

|               | ROE (%) |       |       |       |       |       |
|---------------|---------|-------|-------|-------|-------|-------|
|               | 2000    | 2001  | 2002  | 2003  | 2004  | 2005  |
| <b>Max</b>    | 28,2    | 31,2  | 26,2  | 26,1  | 39,5  | 182,2 |
| <b>Min</b>    | -38,8   | -47,7 | -27,0 | -33,0 | -14,3 | -52,9 |
| <b>Mean</b>   | 6,9     | -0,1  | 2,7   | 2,4   | 8,7   | 19,8  |
| <b>Median</b> | 5,9     | 0,1   | 1,6   | 2,1   | 5,6   | 18,8  |
| <b>St dev</b> | 15,9    | 24,1  | 16,1  | 11,3  | 12,6  | 35,1  |

**Table 5: ROE**

The median is positive for all years in our sample and the largest return on equity was during the year 2005, which has an positive return on 182.2 %. That year also had the largest negative return on equity in our sample, -52.9 %.

The last variable that is used as dependent variable in this study is return on stock, which shows how the company's stock return has developed during the investigated period. The average return is negative for the years 2000 to 2002 and after that it has been positive for the remaining three years.

*Year by year presentation of Return on Stock variable*

|  | Return on stock (%) |      |      |      |      |      |
|--|---------------------|------|------|------|------|------|
|  | 2000                | 2001 | 2002 | 2003 | 2004 | 2005 |

|               |        |        |        |        |       |        |
|---------------|--------|--------|--------|--------|-------|--------|
| <b>Max</b>    | 168,2  | 103,0  | 71,1   | 220,2  | 86,7  | 179,1  |
| <b>Min</b>    | -260,2 | -204,5 | -238,8 | -107,7 | -99,3 | -111,7 |
| <b>Mean</b>   | -25,6  | -23,1  | -1,5   | 26,6   | 9,5   | 33,7   |
| <b>Median</b> | 0,0    | 1,6    | -8,9   | 22,0   | 14,1  | 38,2   |
| <b>St dev</b> | 93,5   | 73,9   | 0,6    | 52,7   | 30,0  | 47,2   |

**Table 6: Return on stock**

This is also the case for the average return and the median which has increased for each year except for 2002, which shows a negative median of 8.9 %. The best year 2005, where the average return for our sample was 33.7 % and the a median return at 38.2 %.

### 5.2.2 Independent Variables

The variable CEO stock ownership describes how much company stock the CEO owns. We can see that the maximum stock ownership decreases each year from 86.2 % in 2000 to 51 % in 2005. The minimum stock ownership is zero for all years, when some CEOs don't have any company stock at all.

*Year by year presentation of Stock Ownership variable*

|               | CEO stock ownership (%) |      |      |      |      |      |
|---------------|-------------------------|------|------|------|------|------|
|               | 2000                    | 2001 | 2002 | 2003 | 2004 | 2005 |
| <b>Max</b>    | 86,2                    | 68,2 | 68,2 | 47,0 | 52,0 | 51,0 |
| <b>Min</b>    | 0,0                     | 0,0  | 0,0  | 0,0  | 0,0  | 0,0  |
| <b>Mean</b>   | 6,8                     | 6,3  | 6,1  | 5,6  | 5,3  | 4,8  |
| <b>Median</b> | 0,3                     | 0,3  | 0,2  | 0,2  | 0,3  | 0,5  |
| <b>St dev</b> | 16,6                    | 14,3 | 14,4 | 12,1 | 11,7 | 4,8  |

**Table 7: CEO Stock ownership**

The average ownership is also decreasing each year, from 6.8 % to 4.8 %. The median ownership is almost the same for all years.

The next variable, CEO tenure, shows for how many years the present CEO has been in his position, over the compulsory six year minimum. This variable will of course increase with one for every year, hence we can see that for the year 2000 the maximum number of years any CEO held his or hers position was 12 years and it increases to 17 years in 2005.

*Year by year presentation of Tenure variable*

|               | CEO Tenure (years) |      |      |      |      |      |
|---------------|--------------------|------|------|------|------|------|
|               | 2000               | 2001 | 2002 | 2003 | 2004 | 2005 |
| <b>Max</b>    | 12                 | 13   | 14   | 15   | 16   | 17   |
| <b>Min</b>    | 1                  | 2    | 3    | 4    | 5    | 6    |
| <b>Mean</b>   | 4,6                | 5,6  | 6,6  | 7,6  | 8,6  | 9,6  |
| <b>Median</b> | 4                  | 5    | 6    | 7    | 8    | 9    |
| <b>St dev</b> | 3,2                | 3,2  | 3,2  | 3,2  | 3,2  | 3,2  |

**Table 8: CEO Tenure**

The minimum value for the same year is one, this will then increase for each year and for 2005 the minimum numbers of years a CEO hold his or her position is for 6 years. We can see that the

average number of years that a CEO held his or her position is 4,6 years for 2000 and that will obvious increase for each year to 9,6 years for 2005.

The next variable, CEO age, is similar to the last in that it will increase with one for every year. This variable shows how old the CEOs are among our sampled companies. In 2000 the oldest CEO is 57 and the youngest is 34, and the average age is 45.7 years.

*Year by year presentation of Age variable*

|               | CEO AGE |      |      |      |      |      |
|---------------|---------|------|------|------|------|------|
|               | 2000    | 2001 | 2002 | 2003 | 2004 | 2005 |
| <b>Max</b>    | 57      | 58   | 59   | 60   | 61   | 62   |
| <b>Min</b>    | 34      | 35   | 36   | 37   | 38   | 39   |
| <b>Mean</b>   | 45,7    | 46,7 | 47,7 | 48,7 | 49,7 | 50,7 |
| <b>Median</b> | 46      | 47   | 48   | 49   | 50   | 51   |
| <b>St dev</b> | 6,3     | 6,3  | 6,3  | 6,3  | 6,3  | 6,3  |

**Table 9: CEO Age**

The same numbers for 2005 shows that, the oldest CEO is 62 and the youngest 39, making an average age of 50,7 years.

The table below shows what education the CEOs of our sample companies with bonus have. The most common education among our sampled CEOs is a bachelor degree, which represents almost 37 % of our sample. This is closely followed by the master degree, which represents about 34 %. Together these two groups make up about 70 % of our total sample.

*Presentation of Education variable*

| Frequency table for education |        |         |
|-------------------------------|--------|---------|
| Level of education            | Number | Percent |
| <b>No college</b>             | 5      | 12,2    |
| <b>Bachelors degree</b>       | 15     | 36,6    |
| <b>Master degree</b>          | 14     | 34,1    |
| <b>Above Masters</b>          | 7      | 17,1    |
| <b>Total</b>                  | 41     | 100,0   |

**Table 10: Education**

The smallest group contains those CEO that doesn't have any formal education, representing about 12 %. The group with an education higher than master degree represents about 17 % of our total sample.

The first four independent variables are CEO related, the next three are more related to the company itself. The company related variable "size" shows how much total asset a company has. The largest company has total assets of 199 000 millions in 2000, and the largest total assets is 252 000 millions in 2005.

*Year by year presentation of Size variable*

| Size (Total asset in million SEK) |      |      |      |      |      |
|-----------------------------------|------|------|------|------|------|
| 2000                              | 2001 | 2002 | 2003 | 2004 | 2005 |

|               |        |        |        |        |        |        |
|---------------|--------|--------|--------|--------|--------|--------|
| <b>Max</b>    | 199000 | 253000 | 232000 | 224000 | 218000 | 252000 |
| <b>Min</b>    | 0,11   | 0,16   | 0,22   | 0,17   | 0,19   | 0,17   |
| <b>Mean</b>   | 9303   | 11331  | 10703  | 10264  | 10048  | 11812  |
| <b>Median</b> | 909    | 803    | 793    | 780    | 732    | 663    |
| <b>St dev</b> | 33012  | 41734  | 38532  | 37191  | 36028  | 41468  |

**Table 11: Size**

The smallest company in our sample has assets of 0,11 millions. The average size for a company is 9303 millions for the year 2000. That average grew to a total of 11812 millions in 2005.

The variable debt shows in percent how much debt to equity our sample companies have. We can see that the maximum amount of debt that a company have is during 2004, with a maximum of 224 % debt. In our sample there are some companies that don't have any debt at all, so the minimum amount of debt is zero for all years.

*Year by year presentation of Debt variable*

|               | Debt (%) |       |       |       |       |       |
|---------------|----------|-------|-------|-------|-------|-------|
|               | 2000     | 2001  | 2002  | 2003  | 2004  | 2005  |
| <b>Max</b>    | 217,5    | 191,0 | 222,4 | 242,5 | 244,1 | 219,3 |
| <b>Min</b>    | 0,0      | 0,0   | 0,0   | 0,0   | 0,0   | 0,0   |
| <b>Mean</b>   | 48,3     | 50,6  | 52,3  | 55,9  | 51,3  | 32,3  |
| <b>Median</b> | 36,8     | 21,8  | 28,4  | 27,9  | 31,5  | 0,6   |
| <b>St dev</b> | 57,3     | 58,5  | 60,7  | 66,7  | 57,5  | 51,6  |

**Table 12: Debt**

The average amount of debt is similar for the years 2000 to 2004. In 2005, the average debt decreased to 32.3%.

The last variable shows how much total profit the companies have for each year. We can see that the maximum profit increased from 5532 millions in 2000 to 17660 millions in 2005. There were a decrease in maximum profit during the years 2001 to 2003 and an increase in profit for 2004 and 2005.

*Year by year presentation of Profit variable*

|               | Profit (million SEK) |       |       |       |       |       |
|---------------|----------------------|-------|-------|-------|-------|-------|
|               | 2000                 | 2001  | 2002  | 2003  | 2004  | 2005  |
| <b>Max</b>    | 5532                 | 3188  | 3852  | 4839  | 12558 | 17660 |
| <b>Min</b>    | -497                 | -2002 | -272  | -2220 | -936  | -105  |
| <b>Mean</b>   | 333,6                | 123,2 | 316,5 | 268,9 | 550,1 | 777,8 |
| <b>Median</b> | 11,5                 | 5,4   | 13,4  | 8,3   | 31,6  | 38,1  |
| <b>St dev</b> | 1040                 | 832   | 903   | 1082  | 2145  | 2962  |

**Table 13: Profit**

The minimum profit follows almost the same pattern as the maximum profit, with greater negative numbers during the year 2001 and 2003. The average profit for our sample is greatest during the year 2005 and minimum for 2001.

### 5.3 All Variables

In this table all variables for all six years are presented, to give the reader a last overview over of our chosen variables. As previously the mean, median, maximum, minimum and standard deviation for all six years are presented. We can see that the average CEO age for the entire sample is 48,2 years. The mean amount of years that a CEO has been in his or her position is 7,3 years. The average amount of CEO stock ownership for the companies in our sample is 5.8 %. The average compensation to an CEO during the investigated period is about 3,5 millions SEK.

#### *Six year Average for each variable*

| Descriptive statistic of chosen variables |         |       |                    |                      |                     |            |         |                                |                     |
|---|---------|-------|--------------------|----------------------|---------------------|------------|---------|--------------------------------|---------------------|
|   | CEO age | Debt  | Size (million SEK) | Profit (million SEK) | Stock ownership (%) | CEO Tenure | ROE (%) | Total compensation (000's SEK) | Return on stock (%) |
| Maximum                                   | 62,0    | 244,1 | 252000,0           | 17660,0              | 86,2                | 17,0       | 182,2   | 23740,0                        | 220,2               |
| Minimum                                   | 34,0    | 0,0   | 0,1                | -2220,0              | 0,0                 | 1,0        | -52,9   | 90,0                           | -260,2              |
| Mean                                      | 48,2    | 48,7  | 10007,0            | 394,8                | 5,8                 | 7,3        | 7,3     | 3389,3                         | -1,5                |
| Median                                    | 49,0    | 24,4  | 786,0              | 14,0                 | 0,3                 | 7,0        | 4,0     | 2140,0                         | 9,3                 |
| Std. Dev.                                 | 6,5     | 58,8  | 37714,0            | 1688,6               | 13,3                | 3,6        | 23,2    | 3719,7                         | 68,6                |

**Table 14: Six year average**

There is a positive average return on equity of 7.3 % during the six year period. The return on stock shows a negative average return of 1.5 %. The profit is on average about 395 millions SEK, and the average size of a company in our sample is 10007 millions SEK.

### 5.4 Regressions

Before the regressions are conducted they are tested for multicollinearity and from this we have used the method of eliminating one of two variables, if there existed higher correlation than 0.6, this is inline with Attaways methodology.<sup>134</sup> Next step for us is to use these variables, that was left after the adjustments made for multicollinearity, to run the first regression to find variables that is significant in relation to total compensation.<sup>135</sup>

After finding variables that are significant we need to get an overview of the variables to find any “outliers” or something that might effect an regression in an unreasonable way. This is done by using E-views descriptive statistics. The description is done on the variables before any transformation of the variables.<sup>136</sup>

As Appendix 7<sup>137</sup> also shows the JB test, the test of normality. Normally distributed variables should have a p-value (the probability) higher than 0.1 (10%).<sup>138</sup> This, as shown, is not the case for any of the variables and therefore transformations of the variables are needed.

<sup>134</sup> Attaway, 2000, Also see Appendix 1 – 4, pg 61-63

<sup>135</sup> Appendix 5, pg 64

<sup>136</sup> Appendix 7, pg 66

<sup>137</sup> Pg 66

<sup>138</sup> Brooks, 2004, pg 181

The reason that both fixed, variable and total compensation is in this model is just to see if there is a difference of each variable before and after adding fixed and variable salary together. In next section only total compensation will be used due to the same problem with normality in all three variables. We will also exclude the variables education since it is a dummy variable.

When transforming the variables, we will as in the case of multicollinearity, use the natural logarithm, (LN) as stated in our methodology. Another method would be to take the first difference, however if this is done variables like age and tenure just will end up with a one year scale, so this has to be LN. To be able to have a LN LN model<sup>139</sup> we chose to take the LN of all variables. However with this procedure there arise some problems, for example there are some companies that have a negative operating income, which then has to be set to 0, because it is not possible to take the LN of a negative number, so operating income also will be excluded from this second description.<sup>140</sup>

Once again a closer look at Appendix 8<sup>141</sup>, the p-values shows that the variables are not normally distributed. However the skewness and kurtosis are a lot closer to 0 and 3, so the LN of the variables will be used in the regressions. There is a possibility of using estimation method that does not assume normality, however using this method may be hard and can lead to a higher uncertainty of the data's properties. Ignore the problem of normality will force us to assume that the sample size is sufficiently large, and the central limit theorem is applicable. This means that the distribution follows an appropriate distribution even if there exists problems with normality.<sup>142</sup>

After this we finally can start with the regressions, of the remaining variables. The results of these regressions are presented below. The results has been derived from a multiple regression model, using :

$$(2) \quad Y_1 = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \mu_t,$$

Where the dependent variable (Y) has been regressed with six different variables.

#### **5.4.1 Regression with Total Compensation as Dependent Variable (Y)**

This regression is conducted by using the LN of total compensation as the dependent variable. The regression model is defined in equation (3) below:

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<sup>139</sup> LN LN Model; when all the variables is transformed in the same way, in this case the botn dependent and explanatory variables is in LN.

<sup>140</sup> Appendix 8

<sup>141</sup> Pg 66

<sup>142</sup> Brooks, 2004, pg 182

(3) 
$$\text{Total Compensation} = C + \beta_1 * \text{CEO's Age} + \beta_2 * \text{Debt to Equity} + \beta_3 * \text{Firms Total Assets} + \beta_4 * \text{Firms Operating Income} + \beta_5 * \text{Stock Ownership} + \beta_6 * \text{Education} + \beta_7 * \text{Bonus or not} + u_t$$

| Dependent Variable: LN_TOT_COMP |             |            |             |         |
|---------------------------------|-------------|------------|-------------|---------|
| Method: Least Squares           |             |            |             |         |
| Variable                        | Coefficient | Std. Error | t-Statistic | Prob.   |
| C                               | 4.702522    | 1.188186   | 3.957731    | 0.0001* |
| LN_AGE                          | -0.011218   | 0.309486   | -0.036248   | 0.9711  |
| LN_DET                          | 0.062366    | 0.023318   | 2.674587    | 0.0080* |
| LN_TA                           | 0.132798    | 0.017736   | 7.487357    | 0.0000* |
| LN_SPROC                        | -0.074527   | 0.014110   | -5.281793   | 0.0000* |
| LN_TENURE                       | 0.134513    | 0.066279   | 2.029506    | 0.0436* |
| EDC                             | 0.229560    | 0.079873   | 2.874074    | 0.0044* |
| OI                              | 0.020166    | 0.007728   | 2.609496    | 0.0097* |
| B                               | 0.231005    | 0.112526   | 2.052903    | 0.0412* |
| R-squared                       | 0.539166    |            |             |         |
| Adjusted R-squared              | 0.522781    |            |             |         |
| S.E. of regression              | 0.563816    |            |             |         |
| Sum squared resid               | 71.52483    |            |             |         |

Table 15: Regression with Total Compensation  
 \* Variables significant at 10% level

Even if all the variables except age are significant at the 10% level, we have to test the regression.

### 5.4.2 Test of the Regression, Total Compensation

#### Linearity

Ramsey's RESET test, Ho: Linearity and H<sub>1</sub> : Nonlinearity

| Ramsey RESET Test:   |          |                     |          |
|----------------------|----------|---------------------|----------|
| F-statistic          | 9.020825 | Prob. F(3,222)      | 0.000012 |
| Log likelihood ratio | 26.91617 | Prob. Chi-Square(3) | 0.000006 |

With a probability lower than 0.1, we have to reject Ho, this shows that the data is non linear, and the model is miss specified. This can be due to omitting some variables that would be better when explaining the total compensation. Maybe this is a quite obvious result, since for example we could use more financial variables to explain the numbers in compensation.

However this is a study to find which CEO specific variables that describes the compensation and further see if these variables can explain the company performance.

Since the variables already are LN this is not an option, an alternatives is to use a non-linear model however we don not have any guidance from this test to which kind of model we should use. If we use an non-linear model we probably can not use the OLS model anymore.



There is one possibility of using OLS and this is if using polynomial in the explanatory variables.<sup>143</sup> However when using this method, the Ramsey RESET Test still yields non linearity. So with the fact that we are looking for significant COE specific variables that explain compensation we ignore this problem of linearity. This gives us the problem that this model is not B.L.U.E. We have to accept the fact that we do not have linear estimators.

### Homoskedasticity

White's test, Ho: Homoskedasticity and H<sub>1</sub>: Heteroskedasticity

| White Heteroskedasticity Test: |          |                      |          |
|--------------------------------|----------|----------------------|----------|
| F-statistic                    | 4.523246 | Prob. F(13,220)      | 0.000001 |
| Obs*R-squared                  | 49.35296 | Prob. Chi-Square(13) | 0.000004 |

With a probability lower than 0.1, we reject Ho, and conclude that there is a problem of heteroscedasticity. This is as stated in methodology corrected by running the regression once more but this time with Whites Correction, and this will be the regression we will use in the analysis.

| White Heteroskedasticity-Consistent Standard Errors & Covariance |             |            |             |         |
|--|-------------|------------|-------------|---------|
| Variable   | Coefficient | Std. Error | t-Statistic | Prob.   |
| C  | 4.702522    | 0.983926   | 4.779346    | 0.0000* |
| LN_AGE   | -0.011218   | 0.259696   | -0.043198   | 0.9656  |
| LN_DET   | 0.062366    | 0.022166   | 2.813656    | 0.0053* |
| LN_TA  | 0.132798    | 0.028064   | 4.732000    | 0.0000* |
| LN_SPROC   | -0.074527   | 0.013420   | -5.553510   | 0.0000* |
| LN_TENURE  | 0.134513    | 0.059294   | 2.268586    | 0.0242* |
| EDC  | 0.229560    | 0.070702   | 3.246848    | 0.0013* |
| OI   | 0.020166    | 0.008095   | 2.491190    | 0.0135* |
| B  | 0.231005    | 0.124203   | 1.859892    | 0.0642* |
| R-squared  | 0.539166    |            |             |         |
| Adjusted R-squared   | 0.522781    |            |             |         |
| S.E. of regression   | 0.563816    |            |             |         |
| Sum squared resid  | 71.52483    |            |             |         |

\* Variables significant at 10% level.

The correction do not change the significance of the variables, however there may by a smaller change in the coefficients.

### Autocorrelation

BG test, Ho: No serial correlation and H1: at least one is lagged residual is correlated

| Breusch-Godfrey Serial Correlation LM Test: |          |                 |          |
|---|----------|-----------------|----------|
| F-statistic                                 | 15.12073 | Prob. F(10,216) | 0.000000 |

<sup>143</sup> Brooks,2004, pg 195

We reject the  $H_0$  and conclude that we have a problem with autocorrelation. We will proceed with this model knowing that ignoring autocorrelation will affect the output in the way that the coefficient will be biased downwards and still not B.L.U.E.

### 5.4.3 Interpretation of Regression, Total Compensation

Interpretation of the significant variables from the regression after Whites Correction:

|                            |  |
|----------------------------|--|
| Debt to Equity:            | If a firm increase its debt to equity ratio with one unit, the total compensation will on average increase with 0.062366 units.          |
| Size:                      | If the total assets of a firm increase with one unit, the total compensation will on average increase with 0.132798 units                |
| Profit:                    | If a firm increases its operating income with one unit, the total compensation will on average increase with 0.020166 units.             |
| CEO's stock ownership (%): | If a CEO's ownership of a firms stock increases with one unit the total compensation will on average decrease with -0.074527 units.      |
| Tenure:                    | If a CEO remains in his position as CEO in a firm for one more year the total compensation will on average increase with 0.134513 units. |
| Education:                 | If a CEO has an education of a higher level, the total compensation will on average increase with 0.229560 units.                        |
| Bonus:                     | If a CEO receives a bonus the total compensation will on average increase with 0.231005 units.   |

### 5.4.4 Regression with Return on Equity as Dependent Variable (Y)

Using the same procedure when running this regression with a change in the dependent variable (Y) now using Return on Equity. The regression model is defined in equation (4) below:

$$(4) \quad \text{Return on Equity} = C + \beta_1 * \text{CEO's Age} + \beta_2 * \text{Debt to Equity} + \beta_3 * \text{Firms Total Assets} + \beta_4 * \text{Firms Operating Income} + \beta_5 * \text{Stock Ownership} + \beta_6 * \text{Education} + \beta_7 * \text{Bonus or not} + u_t$$

Before running the regression of course a look at the descriptive statistic is needed, this is presented in Appendix 9<sup>144</sup>. This variable, ROE, is not possible to transform using LN due to the negative returns, if using LN we have to assume that there are no companies with a negative return on equity. This would eliminate too many observations, and would affect the data too much. If this would be done all the firms in the sample would have a positive return, which is unrealistic. So the variable is not normally distributed, and the same assumption as in total compensation is needed<sup>145</sup>.

The result from the regression is shown below.

| Dependent Variable: ROE |             |            |             |         |
|-------------------------|-------------|------------|-------------|---------|
| Method: Least Squares   |             |            |             |         |
| Variable                | Coefficient | Std. Error | t-Statistic | Prob.   |
| C                       | 4.822892    | 2.622403   | 1.839112    | 0.0672* |
| LN_AGE                  | -0.787936   | 0.683055   | -1.153546   | 0.2499  |
| DET                     | -0.064923   | 0.051465   | -1.261503   | 0.2084  |
| LN_TA                   | 0.082160    | 0.039145   | -2.098841   | 0.0369* |
| LN_SPROC                | -0.003328   | 0.031142   | -0.106869   | 0.9150  |
| LN_TENURE               | 0.013987    | 0.146281   | 0.095617    | 0.9239  |
| EDC                     | 0.371823    | 0.176284   | -2.109229   | 0.0360* |
| OI                      | 0.205016    | 0.017056   | 12.02026    | 0.0000* |
| B                       | -0.423567   | 0.248352   | -1.705513   | 0.0895* |
| R-squared               | 0.430023    |            |             |         |
| Adjusted R-squared      | 0.409757    |            |             |         |
| S.E. of regression      | 1.244377    |            |             |         |
| Sum squared resid       | 348.4067    |            |             |         |

Table 16: Regression with ROE

\* Significant variables at 10% level

However, before we can use this regression we have to run a couple of tests on it.

## 5.5 Test of the Regression, Return on Equity

To see how we deal with the problems appearing in the models see tests of the regression with total compensation as the dependent variable.

### Linearity

| Ramsey RESET Test:   |          |                      |          |
|----------------------|----------|----------------------|----------|
| F-statistic          | 1.417204 | Prob. F(10,216)      | 0.141068 |
| Log likelihood ratio | 22.46188 | Prob. Chi-Square(10) | 0.096253 |

The data is linear, so far we have a good specified model.

<sup>144</sup> Pg 67

<sup>145</sup> See pages 36 and 37

## Homoskedasticity

| White Heteroskedasticity Test: |          |                      |          |
|--------------------------------|----------|----------------------|----------|
| F-statistic                    | 2.630688 | Prob. F(14,219)      | 0.001492 |
| Obs*R-squared                  | 33.68700 | Prob. Chi-Square(14) | 0.002291 |

However there is a problem with heteroskedasticity, this will be corrected with Whites Correction.

| White Heteroskedasticity-Consistent Standard Errors & Covariance |             |            |             |         |
|--|-------------|------------|-------------|---------|
| Variable   | Coefficient | Std. Error | t-Statistic | Prob.   |
| C  | 4.822892    | 3.617179   | 1.333330    | 0.1038* |
| LN_AGE   | -0.787936   | 0.845067   | -0.932395   | 0.3521  |
| LN_DET   | -0.064923   | 0.040800   | -1.591225   | 0.1130  |
| LN_TA  | 0.082160    | 0.030211   | -2.719555   | 0.0070* |
| LN_SPROC   | -0.003328   | 0.029940   | -0.111159   | 0.9116  |
| LN_TENURE  | 0.013987    | 0.235155   | 0.059480    | 0.9526  |
| EDC  | 0.371823    | 0.160552   | -2.315904   | 0.0215* |
| OI   | 0.205016    | 0.013275   | 15.44396    | 0.0000* |
| B  | -0.423567   | 0.396201   | -1.069071   | 0.2862  |
| R-squared  | 0.430023    |            |             |         |
| Adjusted R-squared   | 0.409757    |            |             |         |
| S.E. of regression   | 1.244377    |            |             |         |
| Sum squared resid  | 348.4067    |            |             |         |

\*Significant variables at 10% level

This regression yield a different result in the significance of the variables, however this will be the regression we use for interpretation. There still remains one test, the BG test for autocorrelation.

## Autocorrelation

| Breusch-Godfrey Serial Correlation LM Test: |          |                      |          |
|---|----------|----------------------|----------|
| F-statistic                                 | 1.584534 | Prob. F(10,215)      | 0.079930 |
| Obs*R-squared                               | 23.79160 | Prob. Chi-Square(15) | 0.068718 |

We reject the Ho of non serial correlation and conclude that we have a problem with autocorrelation.

### **5.5.1 Interpretation of Regression, Return on Equity**

Interpretation of the significant variables from the regression after Whites Correction:

Size: If a firms total assets increases with one unit, the returns on equity will on average increase with 0.082160 units.

Profit: If a firm increases its operating income with one unit, the returns on equity will on average increase with 0.205016 units.

Education: If a CEO has an education of a higher level, the returns on equity will on average increase with 0.371823 units.

## 5.6 Regression with Stock Return as Dependent Variable (Y)

Once again the same procedure is used this time the dependent variable (Y) is Stock Return. The regression model is defined in equation (5) below:

$$(5) \quad \text{Stock Return} = C + \beta_1 * \text{CEO's Age} + \beta_2 * \text{Debt to Equity} + \beta_3 * \text{Firms Total Assets} + \beta_4 * \text{Firms Operating Income} + \beta_5 * \text{Stock Ownership} + \beta_6 * \text{Education} + \beta_7 * \text{Bonus} + u_t$$

Before running the regression of course a look at the descriptive statistic is needed, this is presented in Appendix 10. In this case we from start by using LN of each observation and then took the difference between the observations to get the return from each companies stock, after this we had LN Stock Return. However it is not normally distributed, as the skewness, kurtosis and JB displays.

The result from the regression is shown below:

| Dependent Variable: LNSTOCK |             |            |             |         |
|-----------------------------|-------------|------------|-------------|---------|
| Method: Least Squares       |             |            |             |         |
| Variable                    | Coefficient | Std. Error | t-Statistic | Prob.   |
| C                           | -2.688074   | 1.346847   | -1.995828   | 0.0472* |
| LN_AGE                      | 0.699331    | 0.350812   | 1.993464    | 0.0474* |
| LN_DET                      | 0.028112    | 0.026432   | 1.063574    | 0.2887  |
| LN_TA                       | -0.031991   | 0.020105   | -1.591220   | 0.1130  |
| LN_SPROC                    | 0.016359    | 0.015994   | 1.022804    | 0.3075  |
| LN_TENURE                   | 0.208352    | 0.075129   | 2.773263    | 0.0060* |
| EDC                         | -0.106219   | 0.090538   | -1.173203   | 0.2420  |
| OI                          | 0.024055    | 0.008760   | 2.746059    | 0.0065* |
| B                           | -0.151674   | 0.127552   | -1.189121   | 0.2356  |
| R-squared                   | 0.159475    |            |             |         |
| Adjusted R-squared          | 0.129589    |            |             |         |
| S.E. of regression          | 0.639103    |            |             |         |
| Sum squared resid           | 91.90184    |            |             |         |

Table 17: Regression with Stock Return

\* Significant at 10% level

### 5.6.1 Test of the Regression, Stock Return

To see how we deal with the problems appearing in the models se tests of the regression with total compensation as the dependent variable.

#### Linearity

|                    |  |  |  |
|--------------------|--|--|--|
| Ramsey RESET Test: |  |  |  |
|--------------------|--|--|--|

|                      |          |                      |          |
|----------------------|----------|----------------------|----------|
| F-statistic          | 4.116620 | Prob. F(10,215)      | 0.000033 |
| Log likelihood ratio | 40.99409 | Prob. Chi-Square(10) | 0.000011 |

Not linear

### Homoskedasticity

#### White Heteroskedasticity Test:

|               |          |                      |          |
|---------------|----------|----------------------|----------|
| F-statistic   | 2.308908 | Prob. F(14,219)      | 0.005611 |
| Obs*R-squared | 30.09646 | Prob. Chi-Square(14) | 0.007402 |

There is problem with heteroskedasticity, and we will use Whites correction. This will be the regression we use for interpretations:

#### White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable           | Coefficient | Std. Error | t-Statistic | Prob.   |
|--------------------|-------------|------------|-------------|---------|
| C                  | -2.688074   | 1.367538   | -1.965631   | 0.0506* |
| LN_AGE             | 0.699331    | 0.376144   | 1.859210    | 0.0643* |
| LN_DET             | 0.028112    | 0.025584   | 1.098817    | 0.2730  |
| LN_TA              | -0.031991   | 0.013672   | -2.339978   | 0.0202* |
| LN_SPROC           | 0.016359    | 0.016420   | 0.996263    | 0.3202  |
| LN_TENURE          | 0.208352    | 0.097156   | 2.144504    | 0.0331* |
| EDC                | -0.106219   | 0.092686   | -1.146018   | 0.2530  |
| OI                 | 0.024055    | 0.008819   | 2.727632    | 0.0069* |
| B                  | -0.151674   | 0.129133   | -1.174559   | 0.2414  |
| R-squared          | 0.159475    |            |             |         |
| Adjusted R-squared | 0.129589    |            |             |         |
| S.E. of regression | 0.639103    |            |             |         |
| Sum squared resid  | 91.90184    |            |             |         |

\* Significant at 10% level

### Autocorrelation

#### Breusch-Godfrey Serial Correlation LM Test:

|               |          |                      |          |
|---------------|----------|----------------------|----------|
| F-statistic   | 2.742907 | Prob. F(10,215)      | 0.003371 |
| Obs*R-squared | 26.47538 | Prob. Chi-Square(10) | 0.003151 |

Have problem with autocorrelation.

## 5.6.2 Interpretation of Regression, Stock Return

Interpretation of the significant variables from the regression after Whites Correction:

|         |  |
|---------|--|
| Age:    | If a CEO's age increases with one year, the stock return will increase on average with 0.026 units.                          |
| Size:   | If a firms total assets increases with one unit, the stock return will on average decrease with 0.017 units                  |
| Profit: | If a firm increases its operating income with one unit, the stock return will on average increase with 0.00000022 units      |
| Tenure: | If a CEO keeps his position as CEO in a firm for one more year, the stock return will on average decrease with 0.0039 units. |

## 6. Analysis

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*In this chapter we are going to analyze our empirical data using our theoretical framework. We will apply our theory and previous research on our empirical results with the purpose to interpret our results. This section will follow the same structure as earlier, which start with our total sample, followed by our variables and finish with the regressions.*

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### 6.1 Descriptive Analysis

Our sample contains a total of 41 companies, 34 of them have bonus programs and 7 don't use any kind of incentive programs for their CEO. This may seem as a rather large difference in these two groups, but that is representative for the most traded list, where only about 10 % of the companies don't use any kind of bonus programs<sup>146</sup>. Even the size of our total sample of companies that we are going to use is in line with other studies, for example Attaways who uses 42 companies in his study.

#### 6.1.2 Dependent Variables

In this part we will analyze some of the variables that we feel have shown some interesting properties. We start with a view of our dependent variables, total compensation, ROE and stock return.

##### **Total Compensation**

There is a rather large difference in compensation to the CEOs in our sample. This can be because we have both large and small companies in the same sample. For example, Volvos' CEO earned 23.7 millions SEK during 2005, in comparison to the CEO for All cards service center, who earned 624.000 SEK (Swedish kronor).

##### **Return on Equity**

The next variable is ROE, it has been positive on an average for five of our six investigated years. This is in line with the Stockholm stock exchange which has had strong growth during the last three to four years. This shows that this variable is representative, our sample companies have followed the development of the whole market. We can then use this variable and draw valid conclusion from it.

##### **Stock Return**

The stock return follows a more or less expected curve, where the first two years shows large negative return following the collapse of the IT-bubble around 2000, which was followed by a strong growth for 2003 to 2005. This indicates that our sample is representative for the whole market, and we can therefore draw valid conclusions from our study.

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<sup>146</sup> [http://svt.se/content/1/c6/55/22/44/060307\\_kartlaggning.pdf](http://svt.se/content/1/c6/55/22/44/060307_kartlaggning.pdf)



### **6.1.3 Independent Variables**

In this part we will analyze some of the independent (X) variables that we feel have shown some interesting properties and are of importance, CEO stock ownership, CEO education and firm size.

#### **Stock Ownership**

The independent variable CEO stock ownership shows that there are some CEOs that don't own any stock at all in the company. This is against the principal-agent theory, which establishes that it is important for the CEO to share some of the same risk as the shareholders. To mitigate this problem, the firm should tie the CEO salary to certain productivity measurements that gives the manager an incentive to work in the best interest of the shareholders. If this is the case among our companies is hard to say but we can see that among those companies that don't use any kind of incentive for their manager, all of them own stock in the company. So it is among the other group where such incentives are used where we can find those CEOs that don't own any share in the company. In fact, it could be that these firms instead have some incentive that is tied to a productivity measurement that will encourage them to work in the best interest of the shareholders. This would then be in line with Bakers study, where he states that it always seems better to tie salary to individual performance rather than to overall performance.

#### **Education**

How important is education in getting a position as manager for a company? Our variable shows that almost 90 % of the CEOs has some form of higher education.

This can also be related to the principal-agent theory, where the shareholders want their CEO to work in their best interest. To do so the manager needs some sort of education which can be one explanation to why so many of our CEO has a higher education.

#### **Size**

The variable size shows an average increase in total assets of about 2000 million from 2000 to 2005. This could indicate that both empire building and management entrenchment exists among managers. Managers will try to maximize the size of the firm with the purpose to build an empire. The manager will advance himself to a better position both for bonus purposes and also try to entrench himself in the firm. This can be done by maximizing the size of the firm to a degree where it is only the manager that have full control over every part of the company, and so it becomes difficult for the board to fire him. This can be a conceivable explanation to why the average size of the sample companies has increased during our six year period. During the same period the return on equity has been negative for five of the six years, and that should indicate a decrease in size rather than an increase. However, from another point of view, firms can be in a growth phase and their earnings are expected to increase.

## 6.2 Regression Analysis

We have three different regressions to analyze; we are going to use the same procedure as in previous chapter and start with the regression that has total compensation as dependent variable. This will be followed by regression with ROE as dependent variable and finish with the regression with stock return as dependent variable.

### 6.2.1 Regression with Total Compensation as Dependent Variable (Y)

#### Expected signs

If we start with looking on the expected signs, we can see that all variables except age show the sign that we expected. Every variable also is significant at 10 % level, only age is not significant. With a degree of explanation of 54 %, we capture half of the variables that explain total compensation. This would constitute as a high degree of explanation in comparison with Attaway that explained about 29 % of total compensation in his paper.

#### Age, Education and Tenure

Looking at first regression we can see that if a CEOs age is not significant, and this can be an explanation of the negative sign which contradict the findings of Weber. The purpose of using the variables age, education and tenure was partly to check for a relation to experience and not the actual change in the number of years. However both education and tenure are significant which can compensate for age. Because tenure is number of years that the CEO has been CEO on a company and for each year longer the CEO also becomes one year older.

Looking at the interpretations of tenure, that is, if a CEO has the position as CEO one more year the total compensation will increase with an average of 0.1345 units. This could be one way of saying that if the CEO work for one more year he will get more experience and can contribute with a better work, and the compensation will be higher. If a CEO stays one more year we have to assume that the board/owners think that the CEO makes a good work. It also say that it does not matter how old the CEO is, it is his/hers contribution.

The other variable educations states that if a CEO has an education of a higher level, the total compensation will on average increase with 0.229560 units. This would say that if a CEO has a theoretical ground he or she would have a experience that probably will make it easier to solve problems and identify new ways to increase a firms performance than a CEO without or a “lower” degree of education. Another view could be that education is important, maybe because a person would not get the COE position without an education in Sweden.<sup>147</sup> Once again the age is not of any importance.

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<sup>147</sup> 90% of our sample has an education

Then the combination of education and tenure could be a natural explanation of experience, a development of the CEOs personal skills that would of course yield a higher compensation. However, analyzing experience it could lead to the theory of management entrenchment. If a CEO has great experience, a CEO also has the ability to become specialized and can steer the firm in a wanted direction, in other words the CEO will become entrenched. However when looking at our sample, which includes smaller firms, where the CEO may lack education. This of course contradicts the importance of keeping education and tenure as a part of experience. Another factor that contradicts the importance of education and tenure is that a CEO also can be the founder and/or owner of the company as Chung uses this as a variable in his study, and finds a positive relation to company performance. Using this kind of argumentation the education and tenure variables could be ignored, however, in this case it seems to be of importance since the effects of these two variables are positive and significant. This would then say nothing about the connection of experience and entrenchment, maybe it just a natural thing, for a CEO to steer firm actions in a direction that is inline with the unique talent a CEO have. This can from another point of view be seen as a connection between CEO compensation and performance. Since the board would probably not keep a CEO one more year if he/she did not fulfill the performance expected.

### **Profit**

Further the regression shows that if a firm increases its profit with one unit the CEO's total compensation will on average increase with 0.020166 units. Even though this coefficient has a very small effect, it has a positive effect on the total compensation, which can be an incentive to increase the profits of the firm and will lead to an increase in compensation. This finding can be compared with Webers findings, that a higher firm value is associated with higher CEO compensation. This coefficient seams to be a great "multiple" to use in a CEOs' incentive plan, because if a firms' profitability increases the purpose of a CEO has been fulfilled and the shareholders wealth can be maximized. However when Weinberg tested for this relation, between revenue and compensation, he found very low correlation. Because of this we did not use revenue instead use operating income, and the correlation we got where 77%. So our study contradicts Weinberg, and we can say that operating income would be a good multiple to use as an incentive. This is relative and Armstrong may have right when he say that it is needed to take a firms business strategy, culture and surroundings into account when constructing a bonus program. However, with incentive there come a lot of other problems, one example is the incentive to make new investments. From an empire building perspective a CEO will use the position to build a bigger firm. With an increase of the firms operating income, there will be more "available money" for the CEO, which may lead to a higher degree of freedom to steer the firm in a direction that the CEO personally would benefit from. However looking at the variable it is significant and positive

which would be an indication that a CEO that create a higher operating income also “perform” which would once again display a connection between CEO compensation and performance.

### **Size and Debt**

Another effect that strengthens the argumentation above is coefficient of firm size. If a firm increases total assets with one unit the total compensation will on average increase with 0.132798 units. This could ultimately lead to a double effect, more profit, new investments can be done and this will increase the firms’ total assets. With this view, this kind of expansion gives the CEO higher compensation, which again can be viewed as the CEO builds their own empire, in the sense that there will be a maximization of the firm size, rather than the market value of the firm. This could be controlled in an incentive that limits the CEOs compensation, as the Congress in USA done, but it could also be recognized as an over investment problem. If the CEO gets controlled for overinvestment problems, ie includes debt in the firms’ capital structure. Including debt, and using the free-cash-flow hypothesis, this could lead to a risk aversion from the CEO, since this is the problem stated in the underinvestment theory, a mix of debt and equity would be preferred from a board’s point of view. A different view could be that a bigger company demands more work and responsibility, which could lead to a higher salary.

As our empirical work shows, raising debt can also be a factor that will increase a CEOs total compensation, that is, if the debt to equity ratio increases with one unit, the total compensation will on average increase with 0.062366 units. To be able to increase the debt to equity ratio the CEO either has to increase debt, or lower the amount of equity. This will yield an effect of higher total compensation. This result gives a rather “unsafe” picture, that higher debt will yield a higher compensation. It can depend on the time period, it could be, when the “IT bobble” burst the earnings decreased and the equity where lower valued. If so, the debt to equity ratio increased, while the compensations have been gradually increasing. Another effect that could stop the CEO of increasing debt is all the risks that come with it, but analyzing from this point of view demands a lot of more information than what this regression contributes with answers to. For example rates on both the loans and the rating of the firm, default risks and so on.

Looking at our sample we can see that the average debt to equity ratio is about 50%. That could say something about the usage of money, managers do not use too much debt but they use it to a certain point. If this has anything to do with what Sven-Erik Sjöstrand calls window dressing or not is hard to say, but it sure can be a way for manager to use creative accounting methods and hold a lot of cash in the company for the purpose of improving their balance sheets. Given that our regression shows that an increase in debt would increase the total compensation, the incentive to hold borrowed money as cash until the end of the year could effect the amount of investments made, and the CEO could skip investment with positive net present value, an under investment

problem. So analyzing this variable we would say that debt is not a variable that would describe performance, if there is not an optimal way of handling the capital structure of the firm and from this way create profitability. With our belief there is, and so also this variable show a connection between performance and total compensation.

### **Stockownership**

We found that a very important significant coefficient, the CEOs stockownership, in relation to the total compensation. This coefficient yields a result that shows a negative relation. If a CEO increases the stockownership in the firm with 1%, total compensation will on average decrease by 0.074527 units. This is in line with the connection found by Attaway, where he finds a negative relationship between CEO stock ownership and total compensation. Since the total compensation is decreasing when a CEO increases the stock ownership, it would seem to be an effect that a lower compensation to a CEO would result in a higher compensation to stockowners. This in term would also result in mitigating differences in shareholders and managers views of risk, because the CEO becomes a shareowner as well. When Cordeiro finds that inside stockownership has a negative effect on total compensation, this just strengthens our finding. The result from this coefficient also provides the information that a CEO that have a stock ownership in their company that is below 1 %, has on average, a salary for 2005 of about 5 million SEK. Corresponding salary for those that have a stock ownership that exceeds 5 % is about 2.2 millions SEK. Accordingly there is a difference of about 3 million in salary, this can be in some part related to bonuses to the CEO. Of those 7 companies that don't have any bonus program in our sample, about 70 %, have a CEO with over 1 % or more stocks in the firm. This can be interpreted as those CEOs that have a lot of stock in the company are less inclined to use incentive programs. This interpretation is supported by Murphy as he shows that a CEOs wealth change 3.25 dollar for every 1000 dollar change in shareholder wealth. He also says that the incentive generated by the stockownership is large relative to compensation and dismissal incentives. However, most CEOs own a trivial fraction of their firms stock. When applying the principal agent theory and the separation between ownership and control there becomes a problem, since the theory states that the separation can be an efficient form of organization, and that is in line with portfolio theory. Our results say that the separation is not efficient, rather inefficient when it comes to owning stocks in the firm and to use the control. However when it comes to diversification there is another problem, if the CEO is a stock owner he probably would like to diversify his position, which will lead to diversified investments, and this would probably conflict with an investor's view of risk.

Looking at this variable it can from one point of view contradict all the variables described above, because the all say that if the CEO performance is connected to their total compensation. However when the CEO becomes a stockowner there is an decrease in total compensation which indicate an

infectivity in compensation. Because the regression would say that if the CEO becomes an owner he/she would probably supply the same performance with lower salary. Another way would to say that if a CEO is stockowner he/she has another incentive to perform and will receive the compensation from an increase in firm value. So in this case it is hard to say if there is a relation between performance and total compensation, from one side there is and from another there is not.

### **Bonus or not**

Relating the discussion above to whether a firm has bonus or not, the answers given from this was that bonus has a positive effect on CEOs compensation, with on average 0.231005 units . This is natural, since the CEOs total compensation is a function of the variable- and fixed- salary, so for CEO without bonus, the fixed part is equal to total compensation. Adding a bonus will of course have a positive effect on a CEOs total compensation. Thus using a more sophisticated method, as the one Weinberg used, there is no correlation between bonus and company performance. Another effect of adding a variable remuneration as compensation is that the costs for the firm will increase. Its not just the cost of the salary, the agency cost will also increase since the compensation is discussed in huge amounts of money. This would trigger the effect of an even higher “incentive” for a board or firm owners to monitor the CEO, binding costs and controlling residual losses. Given this, there is a problem, because it is impossible to design a perfect monitoring due to the costs for the owners.

Claes Dahlbäck<sup>148</sup> says that managers needs to be motivated with bonus programs so they can work harder even in bad times, and that this is an effective way for the board to show the CEO what they think is important for the company. Baker shows in his study that Dahlbäck may be right. That the usage of bonuses are to effective and motivates people too only focus on the job that gives them the extra pay and nothing else. It gives people incentives to lobbying about how the system should be measured and take time away from their actual work. If the CEO is successful in this, the costs of monitoring will be very high. As discussed before if a firm use debt they will get “free” monitoring from debt holders. This of course works against Kozan’s thesis that the objective for an organization is to maximize shareholder value. However he also states, that the challenges is to find a balance between different variables, when designing an incentive. As Jensen and Dahlbäck says, bonuses is a great possibility for the shareowners and the board to use, to be able to control the CEO, which issues to work on, and which project to pursue. Since bonus programs should be linked to performance and the variable are positive and significant it also show that there exist a connection between performance and total compensation.

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<sup>148</sup> Stora Ensos Chairman

### **6.2.2 Regression with ROE as Dependent Variable (Y)**

After establishing which variables that explain at least a part of total compensation, we want to see if the same variables can be used to explain company performance, which in this case is represented by ROE. If we can get a high degree of explanation in this case we can then state that there is a relationship between company performance and total compensation. So this can be viewed as a test regression compared to the first one.

If we start to look on our expected signs we can see that the variables that meet our expectations are size that show a positive coefficient, and profit also as expected shows a positive sign. However education shows a positive sign which is the opposite to our expectation. The other four variables age, tenure, debt and stock ownership and if the firm has a bonus or not which we had expected signs on, prove not to be significant.

CEO age has in previous studies such as Chang been found to have a positive relation between CEO age and company performance. Why this is the case, can be explained by the ROE variable it self. As stated before this variable is not representative for the whole market, because during this time period the “IT bubble” burst occurred, so that ROE is naturally declining.

This finding, that the bonus variable is not significant is in line with Weinbergs studies where he found no correlation between CEO bonuses and company performance. This result also gives media right when being so critical.

To summarize we can see that in this regression we only have three variables that are significant. With a model that have a degree of explanation of 43 %, we really can not draw any valid conclusions from this model. However, this is not all negative, rather it can be a positive sign that ROE is not that dependent on a CEO. It should not be the CEOs age, education or compensation that explains the companies ROE. Fairly some other more firm specific variables should be used. However what we can say is that we did not find any evidence of an existing relationship between total compensation and company performance when using ROE as dependent variable. Which contradict the former regression in the sense that a lot of the variables representing performance were significant. To continue looking for a relationship between company performance and total compensation we made one more regression with return on stock as dependent variable.

### **6.2.3 Regression with Stock Return as Dependent Variable (Y)**

This regression is the same as the earlier but with the difference that we have return on stock as dependent variable which will explain company performance. The expected sign table shows in this case three of four variables that have the signs that we expected, just size that do not meet our expectations. These four is also the variables significant in the regression, age, size, tenure and operating income. As we can see the variables operating income and total assets are as in last

regression strength here, that these variables naturally explain return. However this does not say anything about the performance of a CEO. Of course if he/she increase operating income and total assets the stock return will increase with 0.02455 or decrease with 0.031991 units each. To be able to analyze this regression it probably would be necessary to have more CEO specific variables significant.

The variable CEO age and tenure both has a positive impact on company performance, for every year that a CEO gets older the return on stock increases. This is inline with the discussion in the regression with total compensation of experience. However in this regression is questionable if it is true because even if a CEO gets older it do not have to mean that he/she can generate higher stock return. As this variable is also highly significant we can with a high certainty state that CEO age has a positive influence on company performance. This result is in line with most previous studies conducted in this field, both Chung and Ericsson established in their studies that CEO age has a positive influence on company performance.

This result contradicts prior studies such as Eriksson where he finds that size has a positive influence on company performance. The contradicting of our result to prior studies can be explained by our sample, where we have both very large companies and relatively small ones. This is shown, by Madura, small businesses lack significant positive relationship. Maybe this can cause the variable to behave in ways that are not in line with other studies.

The last variable that is not significant, the dummy variable bonus. Which in this regression show that there is no relationship between the performance of companies that have bonuses and of those companies that does not. As earlier regressions, this can be evidence on the fact that companies with bonuses do not perform better than companies without such bonuses. This finding is in line with Weinbergs studies where he found no correlation between CEO bonuses and company performance.



## **7. Conclusion**

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*In this chapter we will draw conclusions from the study. We will also include own criticism of our study. Finally proposals to additional research within this topic will be suggested.*

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According to the theory of the firm a CEO will perform better if he has some incentive, for example bonus, that will guarantee higher compensation. Jensen means that bonus programs are a necessary tool to steer a company. If this is true then this will be shown in the firm's performance, and it will be in the stockholders best interest. According to Hall, if such a relationship doesn't exist and there is no meaningful link between CEO compensation and company performance, it is doubtful that the large sum of assets in public corporations is being managed efficiently.

After having done a number of regressions we can say that we know to about 50 % what variables that explain total compensation for a CEO. But as the purpose of this study was to try and find a relationship between CEO compensation and company performance. We then draw the conclusion that if we have some variables that explain total compensation rather well those variables should also to some degree explain company performance, if a relationship between them should exist. After having run regressions with both ROE and return on stock as measurement for company performance and only ending up with models that explains about 2 % and 6 % of company performance, we then draw the conclusion that there does not exist any strong relationship between company performance and CEO compensation. Therefore all bonuses paid out to CEOs as an incentive to perform better are just a way to expropriate wealth from the shareholders, if there is no relationship between bonuses and company performance, then are bonuses to CEOs not in the shareholders best interest. If we apply our results to the two earlier statements we can conclude that Jensen statement isn't accurate in our case, and bonus program doesn't seem to be a necessary tool to steer a company when it hasn't shown a positive relation to company performance in our case. It could be that Hall is right, and many of our companies aren't being managed efficiently, which will at the end be at the expense of the shareholders.

Further, we can draw the conclusion that CEO stock ownership doesn't have a positive effect on total compensation. This is as earlier stated in line with Attaways findings. The fact that we found a negative relationship between stock ownership and total compensation would indicate that CEOs that have a lot of stock in the company has no reason to use incentive programs they are through their stock ownership already fully motivated to work in the company and shareholders best interest. This would then be an important reason for investors to take in consideration when looking for companies to invest in. That way they can avoid any risk for manager to use incentive programs as a tool to divert money from shareholders to

management. We although see risks of a CEO that own too much stock and that is the risk of the CEO to become a majority owner in the company and thereby become entrenched.

Summation, we fail to reject the null hypothesis, which mean that there is a negative or nonlinear relationship between firm performance and CEO compensation for firms in the materials and information technology industry. Bonuses have a negative impact on the return on equity and the stock return. Although the regressions do not have a high degree of explanation and that is good, it means that there are other variable that explains companies performance better. That is in line with our other findings that a CEO has a low influence on company performance and that are therefore not motivated to pay out high salaries and bonuses to the CEO.

## **6.2 Own Criticism**

The criticism that we have against our study is partly the fact that we used companies with rather different size in our study. Then our variable has shown both very large numbers in some extent and also very small. This could then have a negative effect on our regression and have given some unwanted results. We could also have included a regression with some variables that explains company performance better than those variables that we used. Just to show the readers what better explains company performance.

## **6.3 Additional Research**

Since there has been a large number of studies of this topic and the results has been very different there is reason for additional research within this field. Researcher has found evidence for a relationship between company performance and CEO compensation and also that such relationship doesn't exist. The reason to why such difference results have been found is for the most cases a consequence of what variables they choose to include in their studies.

For additional research we suggest a closer look on exactly how the CEO compensation is paid out, both for pension funds and stock options. It has been shown that those researchers that includes pension and option program to the CEO often ends up with a better degree of explanation. This is a time consuming option but if the researcher has the time we believe that more accurate result will be found. Including relevant micro variables can be of interest for explaining total compensation to the manager.

Another interesting aspect could be to look at how the institutional ownership in a company is divided. We think that this could be a contributing reason to why companies pay out bonus. Because the shareholders have become weaker through that the companies in larger extent is owned by institutions and that these, so far, has been a weaker owners group.

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## 9. Appendix:

Appendix 1: First correlation matrix with all variables

| Correlation compensation | Control | variables | and         |        |       |             |             |             |             |         |             |             |       |       |             |             |             |
|--------------------------|---------|-----------|-------------|--------|-------|-------------|-------------|-------------|-------------|---------|-------------|-------------|-------|-------|-------------|-------------|-------------|
|                          | AGE     | SPROC     | OI          | TENURE | ROIC  | CFS         | DET         | DTT         | F           | LNSTOCK | NETSALES    | OPMARG      | PB    | PEG   | R           | TCOMP       | TA          |
| AGE                      | 1,00    | 0,13      | 0,15        | 0,11   | -0,11 | 0,03        | 0,24        | 0,21        | 0,21        | 0,27    | 0,20        | 0,02        | -0,13 | -0,08 | 0,17        | 0,21        | 0,17        |
| Stock own                | 0,13    | 1,00      | 0,09        | 0,26   | -0,03 | -0,08       | -0,18       | -0,21       | -0,21       | 0,05    | -0,13       | -0,07       | 0,11  | -0,05 | -0,17       | -0,21       | -0,11       |
| <b>Profit</b>            | 0,15    | -0,09     | 1,00        | -0,05  | -0,01 | 0,07        | 0,12        | 0,18        | <b>0,78</b> | 0,07    | 0,80        | 0,07        | -0,04 | -0,02 | <b>0,60</b> | <b>0,77</b> | <b>0,73</b> |
| Tenure                   | 0,11    | 0,26      | 0,05        | 1,00   | -0,08 | 0,01        | 0,15        | 0,04        | 0,01        | 0,04    | 0,00        | 0,01        | 0,02  | -0,06 | -0,03       | 0,00        | 0,00        |
| ROIC                     | 0,11    | -0,03     | 0,01        | -0,08  | 1,00  | 0,01        | -0,05       | -0,06       | -0,02       | 0,01    | -0,01       | 0,02        | -0,04 | -0,01 | -0,03       | -0,03       | -0,02       |
| CF/Sale                  | 0,03    | -0,08     | 0,07        | 0,01   | 0,01  | 1,00        | 0,18        | 0,21        | 0,10        | -0,01   | 0,08        | <b>1,00</b> | -0,03 | 0,03  | 0,11        | 0,11        | 0,07        |
| <b>Debt</b>              | 0,24    | -0,18     | 0,12        | 0,15   | -0,05 | 0,18        | 1,00        | <b>0,92</b> | 0,34        | 0,11    | 0,27        | 0,18        | 0,02  | -0,06 | 0,22        | 0,32        | 0,24        |
| <b>Debt/total asset</b>  | 0,21    | -0,21     | 0,18        | 0,04   | -0,06 | 0,21        | <b>0,92</b> | 1,00        | 0,37        | 0,06    | 0,32        | 0,21        | -0,01 | -0,05 | 0,22        | 0,35        | 0,28        |
| <b>Fixed salary</b>      | 0,21    | -0,21     | <b>0,78</b> | 0,01   | -0,02 | 0,10        | 0,34        | 0,37        | 1,00        | 0,07    | <b>0,91</b> | 0,09        | -0,07 | -0,04 | <b>0,69</b> | <b>0,96</b> | <b>0,85</b> |
| LNSTOCK                  | 0,27    | 0,05      | 0,07        | 0,04   | 0,01  | -0,01       | 0,11        | 0,06        | 0,07        | 1,00    | 0,04        | -0,01       | -0,05 | -0,20 | 0,07        | 0,07        | 0,04        |
| <b>NETSALES</b>          | 0,20    | -0,13     | <b>0,80</b> | 0,00   | -0,01 | 0,08        | 0,27        | 0,32        | <b>0,91</b> | 0,04    | 1,00        | 0,08        | -0,07 | -0,02 | 0,59        | <b>0,86</b> | <b>0,98</b> |
| <b>OPMARG</b>            | 0,02    | -0,07     | 0,07        | 0,01   | 0,02  | <b>1,00</b> | 0,18        | 0,21        | 0,09        | -0,01   | 0,08        | 1,00        | -0,03 | 0,03  | 0,11        | 0,11        | 0,07        |
| P/B                      | 0,13    | 0,11      | 0,04        | 0,02   | -0,04 | -0,03       | 0,02        | -0,01       | -0,07       | -0,05   | -0,07       | -0,03       | 1,00  | -0,01 | -0,04       | -0,06       | -0,07       |
| P/E                      | 0,08    | -0,05     | 0,02        | -0,06  | -0,01 | 0,03        | -0,06       | -0,05       | -0,04       | -0,20   | -0,02       | 0,03        | -0,01 | 1,00  | 0,01        | -0,02       | -0,02       |
| <b>Rem salary</b>        | 0,17    | -0,17     | <b>0,60</b> | -0,03  | -0,03 | 0,11        | 0,22        | 0,22        | <b>0,69</b> | 0,07    | 0,59        | 0,11        | -0,04 | 0,01  | 1,00        | <b>0,86</b> | 0,47        |
| <b>Total comp</b>        | 0,21    | -0,21     | <b>0,77</b> | 0,00   | -0,03 | 0,11        | 0,32        | 0,35        | <b>0,96</b> | 0,07    | <b>0,86</b> | 0,11        | -0,06 | -0,02 | <b>0,86</b> | 1,00        | <b>0,78</b> |
| <b>Total assets</b>      | 0,17    | -0,11     | <b>0,73</b> | 0,00   | -0,02 | 0,07        | 0,24        | 0,28        | <b>0,85</b> | 0,04    | <b>0,98</b> | 0,07        | -0,07 | -0,02 | 0,47        | <b>0,78</b> | 1,00        |

## Appendix 2: We have eliminated operating margin, DTT, F, Net sales and R

| New Correlation |       |       |       |         |       |          |       |       |       |       |       |        |       |
|-----------------|-------|-------|-------|---------|-------|----------|-------|-------|-------|-------|-------|--------|-------|
|                 | AGE   | CFS   | DET   | LNSTOCK | LOGTA | LOGTCOMP | OI    | PB    | PEG   | ROIC  | SPROC | TENURE | EDC   |
| AGE             | 1,00  | 0,03  | 0,24  | 0,28    | 0,12  | 0,16     | 0,15  | -0,13 | -0,08 | -0,11 | 0,13  | 0,10   | -0,12 |
| CF/Sale         | 0,03  | 1,00  | 0,18  | -0,01   | 0,12  | 0,13     | 0,07  | -0,03 | 0,03  | 0,01  | -0,08 | 0,01   | 0,01  |
| Debt            | 0,24  | 0,18  | 1,00  | 0,10    | 0,42  | 0,34     | 0,12  | 0,02  | -0,06 | -0,05 | -0,18 | 0,15   | -0,16 |
| LNSTOCK         | 0,28  | -0,01 | 0,10  | 1,00    | -0,03 | 0,08     | 0,07  | -0,05 | -0,20 | 0,01  | 0,05  | 0,04   | -0,05 |
| Total asset     | 0,12  | 0,12  | 0,42  | -0,03   | 1,00  | 0,45     | 0,33  | -0,21 | 0,06  | 0,01  | -0,23 | 0,00   | 0,01  |
| Total comp      | 0,16  | 0,13  | 0,34  | 0,08    | 0,45  | 1,00     | 0,51  | -0,08 | -0,01 | -0,02 | -0,42 | -0,02  | 0,08  |
| Profit          | 0,15  | 0,07  | 0,12  | 0,07    | 0,33  | 0,51     | 1,00  | -0,04 | -0,02 | -0,01 | -0,10 | -0,05  | 0,10  |
| P/B             | -0,13 | -0,03 | 0,02  | -0,05   | -0,21 | -0,08    | -0,04 | 1,00  | -0,01 | -0,04 | 0,11  | 0,02   | 0,08  |
| P/E             | -0,08 | 0,03  | -0,06 | -0,20   | 0,06  | -0,01    | -0,02 | -0,01 | 1,00  | -0,01 | -0,05 | -0,06  | 0,08  |
| ROIC            | -0,11 | 0,01  | -0,05 | 0,01    | 0,01  | -0,02    | -0,01 | -0,04 | -0,01 | 1,00  | -0,03 | -0,08  | -0,07 |
| Stock own       | 0,13  | -0,08 | -0,18 | 0,05    | -0,23 | -0,42    | -0,10 | 0,11  | -0,05 | -0,03 | 1,00  | 0,26   | 0,06  |
| Tenure          | 0,10  | 0,01  | 0,15  | 0,04    | 0,00  | -0,02    | -0,05 | 0,02  | -0,06 | -0,08 | 0,26  | 1,00   | 0,33  |
| Education       | -0,12 | 0,01  | -0,16 | -0,05   | 0,01  | 0,08     | 0,10  | 0,08  | 0,08  | -0,07 | 0,06  | 0,33   | 1,00  |

## Appendix 3: We include ROE in this matrix and see that we can eliminate ROIC

| New Regression with explanatory variable ROE |      |      |      |         |       |          |       |       |       |             |       |        |       |             |
|--|------|------|------|---------|-------|----------|-------|-------|-------|-------------|-------|--------|-------|-------------|
|  | AGE  | CFS  | DET  | LNSTOCK | LOGTA | LOGTCOMP | OI    | PB    | PEG   | ROIC        | SPROC | TENURE | EDC   | ROE         |
| AGE  | 1,00 | 0,03 | 0,24 | 0,28    | 0,12  | 0,16     | 0,15  | -0,13 | -0,08 | -0,11       | 0,13  | 0,10   | -0,12 | -0,11       |
| CFS  | 0,03 | 1,00 | 0,18 | -0,01   | 0,12  | 0,13     | 0,07  | -0,03 | 0,03  | 0,01        | -0,08 | 0,01   | 0,01  | 0,02        |
| DET  | 0,24 | 0,18 | 1,00 | 0,10    | 0,42  | 0,34     | 0,12  | 0,02  | -0,06 | -0,05       | -0,18 | 0,15   | -0,16 | -0,05       |
| LNSTOCK                                      | 0,28 | 0,01 | 0,10 | 1,00    | -0,03 | 0,08     | 0,07  | -0,05 | -0,20 | 0,01        | 0,05  | 0,04   | -0,05 | 0,02        |
| LOGTA  | 0,12 | 0,12 | 0,42 | -0,03   | 1,00  | 0,45     | 0,33  | -0,21 | 0,06  | 0,01        | -0,23 | 0,00   | 0,01  | 0,02        |
| LOGTCOMP                                     | 0,16 | 0,13 | 0,34 | 0,08    | 0,45  | 1,00     | 0,51  | -0,08 | -0,01 | -0,02       | -0,42 | -0,02  | 0,08  | -0,02       |
| OI   | 0,15 | 0,07 | 0,12 | 0,07    | 0,33  | 0,51     | 1,00  | -0,04 | -0,02 | -0,01       | -0,10 | -0,05  | 0,10  | -0,01       |
| PB   | 0,13 | 0,03 | 0,02 | -0,05   | -0,21 | -0,08    | -0,04 | 1,00  | -0,01 | -0,04       | 0,11  | 0,02   | 0,08  | -0,04       |
| PEG  | 0,08 | 0,03 | 0,06 | -0,20   | 0,06  | -0,01    | -0,02 | -0,01 | 1,00  | -0,01       | -0,05 | -0,06  | 0,08  | -0,01       |
| <b>ROIC</b>                                  | 0,11 | 0,01 | 0,05 | 0,01    | 0,01  | -0,02    | -0,01 | -0,04 | -0,01 | 1,00        | -0,03 | -0,08  | -0,07 | <b>1,00</b> |
| SPROC  | 0,13 | 0,08 | 0,18 | 0,05    | -0,23 | -0,42    | -0,10 | 0,11  | -0,05 | -0,03       | 1,00  | 0,26   | 0,06  | -0,03       |
| TENURE                                       | 0,10 | 0,01 | 0,15 | 0,04    | 0,00  | -0,02    | -0,05 | 0,02  | -0,06 | -0,08       | 0,26  | 1,00   | 0,33  | -0,08       |
| EDC  | 0,12 | 0,01 | 0,16 | -0,05   | 0,01  | 0,08     | 0,10  | 0,08  | 0,08  | -0,07       | 0,06  | 0,33   | 1,00  | -0,07       |
| <b>ROE</b>                                   | 0,11 | 0,02 | 0,05 | 0,02    | 0,02  | -0,02    | -0,01 | -0,04 | -0,01 | <b>1,00</b> | -0,03 | -0,08  | -0,07 | 1,00        |

Appendix 4: Our final correlation matrix with no highly correlated variables

| Final Correlations |       |       |       |         |       |          |       |       |       |       |        |       |
|--------------------|-------|-------|-------|---------|-------|----------|-------|-------|-------|-------|--------|-------|
|                    | AGE   | CFS   | DET   | LNSTOCK | LOGTA | LOGTCOMP | OI    | PB    | PEG   | SPROC | TENURE | EDC   |
| AGE                | 1,00  | 0,03  | 0,24  | 0,28    | 0,12  | 0,16     | 0,15  | -0,13 | -0,08 | 0,13  | 0,10   | -0,12 |
| CFS                | 0,03  | 1,00  | 0,18  | -0,01   | 0,12  | 0,13     | 0,07  | -0,03 | 0,03  | -0,08 | 0,01   | 0,01  |
| DET                | 0,24  | 0,18  | 1,00  | 0,10    | 0,42  | 0,34     | 0,12  | 0,02  | -0,06 | -0,18 | 0,15   | -0,16 |
| LNSTOCK            | 0,28  | -0,01 | 0,10  | 1,00    | -0,03 | 0,08     | 0,07  | -0,05 | -0,20 | 0,05  | 0,04   | -0,05 |
| LOGTA              | 0,12  | 0,12  | 0,42  | -0,03   | 1,00  | 0,45     | 0,33  | -0,21 | 0,06  | -0,23 | 0,00   | 0,01  |
| LOGTCOMP           | 0,16  | 0,13  | 0,34  | 0,08    | 0,45  | 1,00     | 0,51  | -0,08 | -0,01 | -0,42 | -0,02  | 0,08  |
| OI                 | 0,15  | 0,07  | 0,12  | 0,07    | 0,33  | 0,51     | 1,00  | -0,04 | -0,02 | -0,10 | -0,05  | 0,10  |
| PB                 | -0,13 | -0,03 | 0,02  | -0,05   | -0,21 | -0,08    | -0,04 | 1,00  | -0,01 | 0,11  | 0,02   | 0,08  |
| PEG                | -0,08 | 0,03  | -0,06 | -0,20   | 0,06  | -0,01    | -0,02 | -0,01 | 1,00  | -0,05 | -0,06  | 0,08  |
| SPROC              | 0,13  | -0,08 | -0,18 | 0,05    | -0,23 | -0,42    | -0,10 | 0,11  | -0,05 | 1,00  | 0,26   | 0,06  |
| TENURE             | 0,10  | 0,01  | 0,15  | 0,04    | 0,00  | -0,02    | -0,05 | 0,02  | -0,06 | 0,26  | 1,00   | 0,33  |
| EDC                | -0,12 | 0,01  | -0,16 | -0,05   | 0,01  | 0,08     | 0,10  | 0,08  | 0,08  | 0,06  | 0,33   | 1,00  |



Appendix 5: From this regression we eliminated non significant variables CF/sale, Price to book and PEG. The variables ROE and Instock will be used as explanatory variables.

| Dependent Variable: Total compensation |                  | 1                     |                  |                |
|--|------------------|-----------------------|------------------|----------------|
| Method: Least Squares                  |                  |                       |                  |                |
| Date: 05/10/06 Time: 17:31             |                  |                       |                  |                |
| Sample: 1 234                          |                  |                       |                  |                |
| Included observations: 233             |                  |                       |                  |                |
| Variable                               | Coefficient      | Std. Error            | t-Statistic      | Prob.          |
| C                                      | 5.924127         | 0.394038              | 15.03439         | 0.0000*        |
| ROE                                    | 1.25E-05         | 2.13E-05              | 0.587001         | 0.5578         |
| <b>AGE</b>                             | <b>0.013459</b>  | <b>0.006675</b>       | <b>2.016205</b>  | <b>0.0450*</b> |
| CF/Sale                                | -0.000140        | 0.000260              | -0.538791        | 0.5906         |
| <b>DEBT</b>                            | <b>0.001600</b>  | <b>0.000805</b>       | <b>1.987717</b>  | <b>0.0481*</b> |
| LNSTOCK                                | 0.062922         | 0.059963              | 1.049353         | 0.2952         |
| <b>Size</b>                            | <b>0.034026</b>  | <b>0.013600</b>       | <b>2.501855</b>  | <b>0.0131*</b> |
| <b>Profit</b>                          | <b>1.83E-07</b>  | <b>2.46E-08</b>       | <b>7.458321</b>  | <b>0.0000*</b> |
| P/B                                    | -0.000480        | 0.006226              | -0.077085        | 0.9386         |
| PEG                                    | -1.96E-05        | 9.41E-05              | -0.208431        | 0.8351         |
| <b>Stock ownership</b>                 | <b>-1.859953</b> | <b>0.328682</b>       | <b>-5.658829</b> | <b>0.0000*</b> |
| <b>Tenure</b>                          | <b>0.020466</b>  | <b>0.014367</b>       | <b>1.424517</b>  | <i>0.1557</i>  |
| <b>Education</b>                       | <b>0.132725</b>  | <b>0.086348</b>       | <b>1.537085</b>  | <i>0.1257</i>  |
| <b>Bonus</b>                           | <b>0.418380</b>  | <b>0.123883</b>       | <b>3.377202</b>  | <b>0.0009*</b> |
| R-squared                              | 0.521194         | Mean dependent var    | 7.671442         |                |
| Adjusted R-squared                     | 0.492771         | S.D. dependent var    | 0.817404         |                |
| S.E. of regression                     | 0.582155         | Akaike info criterion | 1.814044         |                |
| Sum squared resid                      | 74.22004         | Schwarz criterion     | 2.021403         |                |
| Log likelihood                         | -197.3362        | F-statistic           | 18.33748         |                |
| Durbin-Watson stat                     | 0.898006         | Prob(F-statistic)     | 0.000000         |                |

\* Significant at 10 % level, tenure and education is kept in the mode even if not significant

## Appendix 6: Companies and respective CEO

| Comapnies with bonus              | CEO                  | Comapnies with bonus | CEO                |
|-----------------------------------|----------------------|----------------------|--------------------|
| Nefab AB                          | Lars-Åke Rydh        | Telelogic AB         | Anders Lidbeck     |
| Peab AB                           | Mats Paulsson        | Närkes Elektriska AB | Hans Hallin        |
| Precise Biometrics AB             | Christer Bergman     | XANO Industri AB     | Sune Lantz         |
| Scribona AB                       | Tom Ekevall          | Westergyllen, AB     | Göran Brorsson     |
| Hexagon AB                        | Ola Rollén           | AcandoFrontec AB     | Lars Wollung       |
| Industrial & Financial Systems AB | Alistair Sorbie      | Cherryföretagen AB   | Pontus Lindwall    |
| Modul 1 Data AB                   | Peter Wranéus        | CTT Systems AB       | Torbjörn Johansson |
| Observer AB                       | Niklas Flyborg       | IBS AB               | Erik Heilborn      |
| Proffice AB                       | Lars Wahlström       | Midway Holding AB    | Peter Svensson     |
| Know IT AB                        | Anders Nilsson       | Munters AB           | Lennart Evrell     |
| SAS AB                            | Jørgen Lindegaard    | Securitas AB         | Thomas Berglund    |
| SKF, AB                           | Tom Johnstone        | Softronic AB         | Per Eriksson       |
| Axis AB                           | Ray Mauritsson       | Teligent AB          | Tomas Duffy        |
| Beijer AB                         | Joen Magnusson       | Active Biotech AB    | Sven Andréasson    |
| Digital Vision AB                 | Lars Taflin          | Strålfors AB         | Per Samuelson      |
| Broström AB                       | Lennart<br>Simonsson | TietoEnator          | Pentti Heikkinen   |
| Semcon AB                         | Lars-Inge Sjöqvist   | Volvo, AB            | Leif Johansson     |

| Companies without bonus  | CEO                |
|--------------------------|--------------------|
| Custos                   | Stefan Charette    |
| Fingerprint Cards        | Lennart Carlson    |
| MSC Konsult              | Muazzum Choudhury  |
| NOVOTEK AB               | Göran Andersson    |
| SinterCast AB            | Steve Dawson       |
| All Cards Service Center | Anders Segenmark   |
| NIBE Industrier AB       | Gerteric Lindquist |

## Appendix 7: Descriptive statistics without transformation

|              | AGE      | DET      | TA       | SPROC    | TENURE   | EDC      | R        | F        | TCOMP    | OI       |  |
|--------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|
| Mean         | 48.19231 | 48.46158 | 10595251 | 0.057589 | 7.269231 | 0.512821 | 651.3147 | 2452.551 | 3103.866 | 394760.2 |  |
| Median       | 49.00000 | 24.28000 | 798061.0 | 0.002700 | 7.000000 | 1.000000 | 200.0000 | 1676.500 | 1993.000 | 14000.00 |  |
| Maximum      | 62.00000 | 244.1000 | 2.53E+08 | 0.862000 | 17.00000 | 1.000000 | 9400.000 | 17400.00 | 23740.00 | 17660000 |  |
| Minimum      | 34.00000 | 0.000000 | 1000000  | 0.000000 | 1.000000 | 0.000000 | 0.000000 | 60.00000 | 90.00000 | 2220000. |  |
| Std. Dev.    | 6.458965 | 58.74689 | 37708802 | 0.132383 | 3.604979 | 0.500907 | 1308.287 | 2520.669 | 3553.974 | 1688636. |  |
| Skewness     | 0.226445 | 1.310505 | 5.231663 | 3.114399 | 0.425305 | 0.051299 | 3.829048 | 3.279131 | 3.227590 | 6.744644 | Non has a Skewness of 0                                |
| Kurtosis     | 2.084945 | 4.016741 | 30.86407 | 13.65210 | 2.581110 | 1.002632 | 19.47877 | 15.55654 | 14.83504 | 60.36073 | Non has a Kurtosis of 3<br>Use the LN of the variables |
| Jarque-Bera  | 10.16374 | 77.05872 | 8637.406 | 1484.585 | 8.765329 | 39.00007 | 3219.413 | 1956.606 | 1771.941 | 33709.41 |  |
| Probability  | 0.006208 | 0.000000 | 0.000000 | 0.000000 | 0.012492 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |  |
| Sum          | 11277.00 | 11340.01 | 2.48E+09 | 13.47586 | 1701.000 | 120.0000 | 152407.6 | 573897.0 | 726304.6 | 91979129 |  |
| Sum Sq. Dev. | 9720.346 | 804128.9 | 3.31E+17 | 4.083395 | 3028.038 | 58.46154 | 3.99E+08 | 1.48E+09 | 2.94E+09 | 6.62E+14 |  |
| Observations | 234      | 234      | 234      | 234      | 234      | 234      | 234      | 234      | 234      | 234      |  |

## Appendix 8: Descriptive statistics after transformation

|              | LN_AGE   | LN_DET   | LN_TA    | LN_SPROC  | LN_TENURE | LN_TOT_COMP |
|--------------|----------|----------|----------|-----------|-----------|-------------|
| Mean         | 3.865896 | 2.915194 | 13.47879 | -4.667150 | 1.830525  | 7.673342    |
| Median       | 3.891820 | 3.409961 | 13.58992 | -5.184989 | 1.945910  | 7.597396    |
| Maximum      | 4.127134 | 5.497578 | 19.34963 | 0.000000  | 2.833213  | 10.07492    |
| Minimum      | 3.526361 | 3.912023 | 4.740575 | -10.81978 | 0.000000  | 4.499810    |
| Std. Dev.    | 0.138175 | 1.936619 | 2.476266 | 2.864727  | 0.608951  | 0.816166    |
| Skewness     | 0.436781 | 0.981122 | 0.455121 | 0.147457  | -1.000894 | 0.144788    |
| Kurtosis     | 2.206632 | 3.795580 | 5.070979 | 1.977915  | 4.045964  | 4.959714    |
| Jarque-Bera  | 13.57729 | 43.71266 | 49.89559 | 11.03341  | 49.73667  | 38.26223    |
| Probability  | 0.001126 | 0.000000 | 0.000000 | 0.004019  | 0.000000  | 0.000000    |
| Sum          | 904.6196 | 682.1553 | 3154.037 | -1092.113 | 428.3429  | 1795.562    |
| Sum Sq. Dev. | 4.448534 | 873.8652 | 1428.731 | 1912.152  | 86.40143  | 155.2074    |
| Observations | 234      | 234      | 234      | 234       | 234       | 234         |

### Appendix 9: Descriptive statistics of Return on Equity

|              | ROE       |     |
|--------------|-----------|-----|
| Mean         | -5.179875 |     |
| Median       | 3.310000  |     |
| Maximum      | 192.1600  |     |
| Minimum      | -335.1300 |     |
| Std. Dev.    | 48.72708  |     |
| Skewness     | -2.379546 |     |
| Kurtosis     | 18.61078  |     |
| Jarque-Bera  | 2596.867  |     |
| Probability  | 0.000000  |     |
| Sum          | -1212.091 |     |
| Sum Sq. Dev. | 553218.5  |     |
| Observations |           | 234 |

### Appendix 10: Descriptive statistics of Stock Return

|              | LNSTOCK   |     |
|--------------|-----------|-----|
| Mean         | -0.039354 |     |
| Median       | 0.080101  |     |
| Maximum      | 2.201642  |     |
| Minimum      | -2.602032 |     |
| Std. Dev.    | 0.685029  |     |
| Skewness     | -0.887679 |     |
| Kurtosis     | 5.192158  |     |
| Jarque-Bera  | 77.58520  |     |
| Probability  | 0.000000  |     |
| Sum          | -9.208788 |     |
| Sum Sq. Dev. | 109.3386  |     |
| Observations |           | 234 |