

# The impact of CEO compensation on firm performance in Scandinavia

Emre Kazan  
University of Twente  
P.O. Box 217, 7500AE Enschede  
The Netherlands

**ABSTRACT:** This study examines the impact of CEO compensation on firm performance for Scandinavian firms. The existing literature presents different findings on the impact of CEO compensation on firm performance. Two important theories, the agency theory and stakeholder theory are described. The test sample consists of Scandinavian firms that had a spot on the Forbes Global 2000 List of 2016. The impact of CEO compensation on firm performance is tested by using the performance measures of ROE and ROA. The results show a non-significant negative relationship between CEO compensation and firm performance.

## **Supervisors:**

Prof. Dr. R. Kabir  
Dr. X. Huang

## **Keywords**

CEO compensation, firm performance, agency theory, stakeholder theory, Scandinavian countries

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# 1. INTRODUCTION

Corporate governance is an important issue for firms around the world, and it has also been a popular topic for many studies. The corporate governance systems of firms from different countries largely differ from each other (Shleifer & Vishny, 1997). A reason for these differences can be the law, or ownership structures in a particular country. Therefore it is hard to say which governance system is the best (Shleifer & Vishny, 1997). Corporate governance deals with many mechanisms that are important for a firm, such as ownership structure, company law, board structure, et cetera. However, Shleifer & Vishny (1997) mention that the main concern for corporate governance lies in the agency problem, which can also be described as the separation of management and finance. The fundamental question of corporate governance is how to assure financiers that they get a return on their financial investment (Shleifer & Vishny, 1997).

The main point in the separation of management and finance is that there are managers - chosen by shareholders or owners of the firm - who have to work in the best interest of the firm. The Chief Executive Officer (CEO), responsible for many important tasks within the firm, is an example of such a manager. Bhagat, Bolton & Subramanian (2010) describes that one of the primary roles of a board is to hire a CEO with superior ability. Finding and hiring the appropriate CEO is an important task for the board of a firm. However, even if the suitable CEO is hired, there are some issues that occur. The primary issue that arises is the CEO pay, and whether or not this will impact firm performance. Over the past decades CEO compensation has received a great deal of attention. Shareholders, regulators, politicians and the media have all weighed in on the appropriateness of the level of CEO compensation. Critics argue that CEO compensation is excessive because it is weakly linked to firm performance and the problems related to CEO compensation are so pervasive that most CEOs receive excessive compensation (Hill, Lopez & Reitenga, 2016). Thus, CEO compensation on itself is already an important issue but if firm performance is also involved it becomes even more interesting.

There are many studies that examine CEO compensation and firm performance; these will be explained in more detail further in this paper. But what can be mentioned right now, is the different conclusions concerning this topic. Some studies find a positive relationship between CEO compensation and firm performance (e.g., Coughlan & Schmidt, 1985; Cheng & Farber, 2008). Other studies conclude that CEO compensation has no impact on firm performance at all (Boyd, 1994). Finally, there are even some studies that find a negative relationship between CEO compensation and firm performance (Core, Holthausen & Larcker, 1999). Therefore, whether CEO compensation has an impact on firm performance or not is an outstanding issue. After many studies, the empirical record on this topic is still mixed (Finkelstein & Boyd, 1998). Besides that, most studies have been conducted for American, European, Japanese or Chinese firms (e.g., Kato & Kubo, 2006; Brunello, Graziano & Parigi, 2001; Hubbard & Palia, 1995).

This study will focus on firms in Scandinavian countries. Randoy & Nielsen (2002) mentions that the CEO compensation in the highly egalitarian Scandinavian countries are small compared to the compensation in other European countries. Therefore it will be interesting to look whether this factor of CEO compensation has an impact on the firm performance for the Scandinavian countries. Empirical research is needed to determine whether CEO compensation has an impact on firm

performance for Scandinavian firms. With this information, the research question for this paper has been formed as follows:

*What is the impact of CEO compensation on the firm performance of firms listed in Scandinavian countries?*

The main purpose of this study is to find an answer to the research question, thereby contributing to the existing literature written on this topic – but, with different countries as the focal point. This paper is structured in the following way: first, I present a literature review that states the findings from previous studies. Two important theories will be put to use, forming hypotheses that will also be presented in this section. After the literature review, follows the methodology and data section. This is where the collected data will be presented, after which there will be an explanation on how the research was conducted. Then the results on the research will be presented. Finally, the paper will end with a discussion and conclusion.

## 2. LITERATURE REVIEW

This literature review, on the impact of CEO compensation on firm performance, has been divided into three subsections. First, two important theories, namely the agency theory and stakeholder theory will be presented. Second, the findings of previous studies will be described. The third subsection will be used to form the hypotheses for this study.

### 2.1 Theoretical Perspectives

#### 2.1.1 Agency theory

The focus point of the agency theory is that one party delegates work to a second party. The parties that are involved are called the principal and the agent. In other words, the principal stands for the owners/shareholders of a firm and the agents are the managers (Guilding, Warnken, Ardill & Fredline, 2005). Thus, managers are hired by the owners of a firm to create greater performance and returns for the company. However, in practice this is not always the case.

Problems can arise between the agent and the principal, which could result in poor firm performance. The number one reason for the rise of problems between managers and owners are the different interests they have (Hill & Jones, 1992). This conflict of interest has four typical reasons, these are: a potential of effort aversion by the agent, the agent can use his work situation as an opportunity to divert resources towards his own personal benefit, the agent and owner can have different opinions on long-term relationships and there might be different attitudes towards risk from the manager and the owner (Guilding et al., 2005).

The lack of alignment between agent and principal results in agency loss (Donaldson & Davis, 1991). To prevent this agency loss owners should make sure that their interests are aligned with those of the agents. Nyberg & Gerhart (2010) pays attention to three points in order to minimize agency problems, these are: improving directors' monitoring of managers, discipline mischievous managers and agent equity ownership. Supporting the third reason is the study of Donaldson & Davis (1991) who suggests to implement incentive schemes for managers. In these schemes managers are rewarded financially for maximizing shareholder interests.

The principal can thus limit the difference in alignment with the manager by setting appropriate incentives for the manager (Hill & Jones, 1992). These incentives could also include the compensation that managers, including the CEO, receive. Manager and CEO motivation will increase and this could have a positive impact on firm performance. However, if the

principal does not set appropriate incentive systems for managers this can lead to poor firm performance.

### 2.1.2 Stakeholder theory

The term stakeholder refers to any group or individual who has a legitimate claim on the firm. A firm has many stakeholders, several of them are: stockholders, employees, suppliers, managers, customers et cetera. Each of these groups can be seen as supplying the firm with critical resources, and in exchange each expects its interests to be satisfied (Hill & Jones, 1992). A separation is made between internal and external stakeholders. According to Van Puyvelde, Caers, Bois & Jegers (2012), managers are internal stakeholders and customers or suppliers are examples of external stakeholders.

Every stakeholder of a firm creates value for the company. Since managers are considered to be stakeholders of a firm, the CEO is also included in this consideration. Thus according to this theory the CEO is also affected by the outcomes of the firm. A positive firm performance will eventually make his position stronger. This will make the probability of him being fired smaller. Besides, this can also be applied to the topic regarding CEO compensation and firm performance. Thomsen & Conyon (2012) describe that the view of corporate expenditure of CEO's change when they buy or receive company's stock. Thus changing the compensation structure or setting appropriate incentives for the CEO can give positive results to the firm.

## 2.2 CEO compensation and firm performance

The board of directors is responsible for determining CEO compensation amounts, which must be approved by shareholders. This often happens at the annual general shareholders' meeting (Basu, Hwang, Mitsudome & Weintrop, 2007). CEO compensation has several components. The basic form is a fixed base salary. Next to this CEO's can receive remuneration in the forms of cash bonuses, share-based payments, stock options etc. Cash bonuses are payments given by firms based on the performance of CEO's. Firms can also introduce incentive programs in order to align interests between the CEO and shareholders. CEO's are then given the right to buy or receive company shares or stock options, this process eventually leads to the share-based payments and stock option payments to CEO's. As previously mentioned, former studies have different findings about the impact of CEO compensation on firm performance. In the next three sections each possibility will be examined more thoroughly.

### 2.2.1 Positive relationship between CEO compensation and firm performance

There are many previous studies with CEO compensation and firm performance as their focus point, which come to a conclusion that there is a positive relationship between the two variables.

The study conducted by Finkelstein & Boyd (1998), finds a positive relationship between CEO compensation and firm performance. In their study they come to the conclusion that firm performance is higher when manager discretion and CEO pay are aligned. This is supported by Shaw & Zhang (2010), who find that CEO cash compensation is positively related to firm performance. Carpenter & Sanders (2002), also conclude that the pay-performance relation is significant and positive. These relationships are primarily explained by the alignment of CEO and shareholders' interests by using efficient compensation contracts. The agency theory supports this result, because it was stated that incentive schemes in the form of

financial rewards to the CEO would limit the difference in alignment.

Gao & Li (2015), gives a different view on the topic by comparing the CEO pay-performance sensitivity in privately-held and public firms. Their results indicate that in both private and public firms the relation between CEO compensation and firm accounting performance is positive. Appropriate CEO compensation contracts are given as the main reason for this impact. Kuo, Li & Yu (2013), focus on the share-based pay to CEO's and its impact on firm performance. They find that an increase in share-based pay has beneficial effects on firm performance. This is because CEO's who earn share-based payments are more motivated to increase performance, since it can result in a higher remuneration. This increase in performance is also supported by the stakeholder theory, which suggested that when CEO's buy or receive company shares it positively influences firm performance.

There is also country specific research regarding this topic. Ozkan (2011) examined the link between CEO pay and firm performance for firms in the UK. A positive and significant link between CEO cash compensation and firm performance was found. There was also a positive relation between total compensation and firm performance, but this was not significant. The reason for the positive relationship is the mitigation of the conflict of interest between the CEO and the principal by using appropriate compensation packages. Brunello et al. (2001) did research on Italian firms, and conclude that executive pay is positively linked to firm performance.

### 2.2.2 Negative relationship between CEO compensation and firm performance

Several previous empirical studies present findings on CEO compensation and firm performance, where the results indicate that there is a negative relationship between the two variables. It may sound odd when it is said that higher CEO payments result in poor firm performance. However, the following studies have a feature in common that explains the negative impact of higher CEO compensation on firm performance.

Basu et al. (2007) examine the CEO compensation and firm performance of Japan. They find a negative relationship between compensation and accounting performance. According to this study the negative relationship can be explained by the weak governance structures, which result in greater agency problems. Because of these weak governance structures an overcompensation of CEO occurs, which eventually leads to poor firm performance. Brick, Palmon & Wald (2006) furtherly examine the cause of the problem with CEO overcompensation. They mention that the board of directors often fail to effectively monitor the firm's management. These problems are also linked to directors' compensation, eventually resulting in overcompensation of managers, including the CEO. With their results, they are able to prove that overcompensation of CEO's has a negative impact on firm performance.

There has been many research on CEO compensation that addresses the association of CEO compensation with performance. However, there is little evidence on why firms change CEO compensation from a purely cash based compensation structure to an equity based compensation structure. Matolcsy, Shan & Seethamraju (2012) have conducted further research on this change in CEO compensation structure and its consequences on firm performance for Australian firms. They made a separation between firms who changed their compensation structure from cash based to equity based and firms who only use cash based structures. Their results suggest that changes in CEO

compensation structure are negatively linked with firm performance.

Claiming that CEO compensation has a negative relationship with firm performance might sound strange at first. But previous literature presented above has shown that this is possible, mainly because of two reasons. The first reason is the great agency problems that occur in a firm which result in CEO overcompensation and ultimately in poor firm performance. The second reason is the change in CEO compensation structure, changing from a cash based to an equity based structure.

### 2.2.3 No relationship between CEO compensation and firm performance

With any empirical research it is possible that it fails to present any (significant) relationship between the two variables. This is also the case in CEO compensation and its impact on firm performance.

Tosi, Misangyi, Fanelli, Waldman & Yammarino (2004) did research on the CEO charisma, compensation and its effects on firm performance. After conducting the research they found a relationship between CEO charisma and higher payment. However, they failed to prove any relation between CEO compensation and firm performance. This study mentions that other factors play a role in CEO compensation and firm performance, which could explain this non-significant relation. More attention has to be paid to the relation of CEO's and the board, and in forming the remuneration that is paid. The agency theory plays an important role, since it describes the relation between managers and owners. Mohammed & Phil (2013) have similar findings in their study. The results found that there were no relationships between CEO compensation and firm performance. Another study supporting this relationship between CEO compensation and firm performance is from Leone, Wu & Zimmerman (2006). Their conclusion is that CEO compensation has no significant relationship with firm performance.

## 2.3 Hypothesis Development

Both the agency theory and the stakeholder theory suggest that interests between managers and the principal can be aligned by setting appropriate incentive systems for CEO's. These systems reward CEO's financially for maximizing shareholders' interests. Adding to this, many previous studies find a positive relationship between CEO compensation and firm performance. Goa & Li (2015), conclude that CEO compensation and firm performance have a positive relationship. Ozkan (2011) finds a positive relation for both total compensation and cash compensation and firm performance. This means that if the principal sets appropriate incentives for CEO's this could result in greater firm performance. However, this positive relationship can also mean that if the principal does not set appropriate incentive systems for CEO's that it can lead to poor firm performance. Compensation to CEO's can have different forms, with the base salary being the basic form of remuneration. Next to this CEO's can earn cash bonuses, share-based payments and stock option payments. These forms of payments will be referred to as variable compensation; more over this issue will be explained in section 3. These payments are important because they can be seen as extra incentives for CEO's, which could result in greater firm performance. Kuo et al. (2013), support this with their results, where they find that increased share-based payments result in greater firm performance. Based on the theories and findings of previous empirical studies, the hypotheses in this study are formed as follows:

*H1: total CEO compensation has a positive relationship with firm performance*

*H2: higher variable compensation to CEO's results in greater firm performance*

## 3. METHODOLOGY AND DATA

This section describes the steps that are taken in order to conduct the research. The first subsection gives the model that is used in this study. The second subsection describes the independent, dependent and control variables for this study. The third section explains how the data for the research sample has been collected.

### 3.1 Model

The regression model that will be used in the research for the impact of CEO compensation on firm performance is presented as follows:

$$PERF_{it} = \beta_1 CEO_{it} + \beta_2 PRE_{it} + \beta_3 SIZE_{it} + \beta_4 AGE_{it} + \beta_5 LEV_{it} + \epsilon_{it}$$

In this equation, PERF stands for firm performance of firm  $i$  in period  $t$ . CEO stands for CEO compensation, expressed in natural logarithm. Several previous studies also express compensation in natural logarithm (e.g., Duffhues & Kabir, 2008; Brick et al., 2006). PRE is used for the previous firm performance. SIZE stands for the size of the firm and is also expressed in natural logarithm (e.g., Kuo et al., 2013, Matolcsy et al., 2012). AGE is used for the age of the firm. LEV stands for leverage of the firm. The standard error is  $\epsilon_{it}$ . A similar equation has been used by Duffhues & Kabir (2008) in their research of executive compensation and firm performance. For firm performance two measures will be used, ROE and ROA (explained in section 3.2.1). Therefore the specific equations are:

$$1: ROE_{it} = \beta_1 CEO_{it} + \beta_2 PRE_{it} + \beta_3 SIZE_{it} + \beta_4 AGE_{it} + \beta_5 LEV_{it} + \epsilon_{it}$$

$$2: ROA_{it} = \beta_1 CEO_{it} + \beta_2 PRE_{it} + \beta_3 SIZE_{it} + \beta_4 AGE_{it} + \beta_5 LEV_{it} + \epsilon_{it}$$

These two equations will be used in answering hypothesis 1. For hypothesis 2, only the variable compensation is used. This means that instead of the total CEO compensation ( $CEO_{it}$ ), variable compensation to CEO's ( $VARCEO_{it}$ ) will be included in the equation. This change leads to the next equations for hypothesis 2:

$$3: ROE_{it} = \beta_1 VARCEO_{it} + \beta_2 PRE_{it} + \beta_3 SIZE_{it} + \beta_4 AGE_{it} + \beta_5 LEV_{it} + \epsilon_{it}$$

$$4: ROA_{it} = \beta_1 VARCEO_{it} + \beta_2 PRE_{it} + \beta_3 SIZE_{it} + \beta_4 AGE_{it} + \beta_5 LEV_{it} + \epsilon_{it}$$

### 3.2 Variables

#### 3.2.1 Independent and dependent variables

In this study the impact of CEO compensation on firm performance is examined. This means that the CEO compensation is the independent variable. The dependent variable is the firm performance, since it will be tested whether or how the independent variable is related to the dependent variable. For the independent variable CEO compensation, data on the base salary and variable compensation will be collected. The variable compensation includes the cash bonuses, share-based payments and stock option payments to CEO's. Total compensation is measured as the sum of the base salary and the variable compensation of CEO's. All measures of CEO

compensation are in absolute values. When doing the analysis these are expressed in natural logarithm (Brick et al., 2006).

For the dependent variable firm performance, there are several options of measures. Previous studies regarding this topic have used several different measures as indicators for firm performance. Kuo et al. (2013) use return on equity (ROE) as their performance measure. Postma, van Ees & Sterken (2003) use the return on assets (ROA), return on equity (ROE) and return on sales (ROS) as the accounting measures. Sigler (2011) only uses ROE as performance measure. In this study the ROE and ROA will be used as firm performance measures. There are two reasons for choosing these measures. The first reason is the availability of the data from the source that has been used in this research. More over this issues will be explained in subsection 3.3. The second reason is because it has been used many times in previous studies. In this way comparing this research to the existing literature will be done in a more efficient way.

### 3.2.2 Control variables

It is obvious that CEO compensation is not the only variable that can influence firm performance. There are other factors that can have an impact on firm performance. These factors will be used as control variables, and are included in the regression model. The first control variable is the previous performance of the firm. The second and third control variables are the size and age of a firm. This is because the size and age of a firm can affect performance in many ways. According to Chaudhuri, Khumbakar & Sundaram (2016), firm size and age are associated with firm performance. The last control variable is the leverage ratio of a firm. The measures for the prior performance of a firm are the ROE and ROA of the previous year. For the size of the firm the natural logarithm of total assets have been used (Kuo et al., 2013). The age of the firm is measured from the founding year of a firm, which were available in the database. The observation year (2015) minus the founding year resulted in the age of the firm. The leverage of a firm is measured as the ratio of total debt to total assets (e.g., Basu et al., 2007; Matolcsy et al., 2012). All needed information on the control variables was available in the database that was used in this study.

### 3.3 Sample Data

The sample for this research consists of firms from Scandinavian countries which had a spot on the Forbes Global 2000 List of 2016. This list presents the world's biggest public companies. The initial sample contains 50 firms which have been selected from Denmark, Finland, Norway and Sweden. The data collection for this research has two steps. First data has been collected for the CEO compensation. Second, data on the firm performance and the control variables have been collected. Five firms were removed from the sample due to the incompleteness of the data. Therefore the final sample consisted of 45 firms.

In order to collect data on the CEO compensation, the annual reports of the selected firms are manually collected for the year 2015. This is the most recent year with presented annual reports. Annual reports were available for every firm from the test sample. In each annual report information regarding the CEO compensation has been looked for. Two Danish and one Swedish firm did not disclose information on CEO compensation, therefore these three firms were excluded from the sample. The remaining firms gave information on CEO compensation in their annual reports. Every firm presented the base salary of their CEO and many firms gave information on the variable compensations they paid. The base salary and the

variable compensation are used to calculate the total compensation of CEO's, which is used in the equations for hypothesis 1. Information on only variable compensation is used to test hypothesis 2. The Danish (DKK), Swedish (SEK) and Norwegian (NOK) firms used their local currencies. The payments of those firms were converted to Euro currency<sup>1</sup>. Finnish firms used the Euro as currency, thus converting was not needed.

The second step of collecting data is finding information on the firm performance measures and the control variables. For this process the ORBIS database has been used. A search has been made to every firm which disclosed the payments made to their CEO's. For one Finnish and one Norwegian firm not all information was available in the database, therefore these were excluded from the sample. The ORBIS database has been used because it makes collecting information on firms more efficient. Information regarding the ROE, ROA, total assets and the founding year of the firms are available in the database. Total assets were given in USD, therefore these were converted to Euro's. The leverage of a firm was measured as the ratio of total debt to total assets, also for this variable the needed information was available in ORBIS.

## 4. RESULTS

### 4.1 Descriptive Statistics

Table 1 presents the descriptive statistics of all variables. The base salary was disclosed by every firm, and on average CEO's were paid a fixed amount of €0.936 million (median = €0.938 million). The lowest base salary paid to a CEO is an amount of €0.195 million, and the highest base salary is €1.696 million. There is a big difference in the minimum and the maximum, however the majority of the values are close to each other. This can be seen from the values of the mean and the median, which are very close to each other. 36 firms from the sample gave also information on the variable compensation paid to their CEO's. On average CEO's earned €0.852 million (median = €0.557 million) in variable compensations. The lowest amount of variable compensation paid is €0.051 million and the highest amount is €4.275 million. These values indicate that several CEO's received much higher amounts in variable compensation. This explains the gap in the mean and the median. The total CEO compensation is the sum from the base salary and the variable compensation. This measurement shows an average of €1.617 million (median = €1.414 million). The CEO with the lowest total compensation received €0.283 million from his firm. On the other hand the CEO earning the highest amount, received a total compensation of €5.275 million. In this case there are also some CEO's who increase the average with their higher compensations. This can also be seen in the differences in mean and median of total CEO compensation.

The average ROE for a firm is 19.812% (median = 14.64%) and for ROA the mean is 8.209% (median = 5.99%). Not all firms had a positive ROE and ROA. The table shows that the minimum ROE is -10.56%. For the ROA the minimum is also a negative value, namely -3.88%. The maximum value of ROE for a specific firm is 150.63%. For the ROA this rate is 48.27%. This means that the performance of firms differ quite a lot. This explains the differences in mean and median for both ROE and ROA

Next to the independent and dependent variables, this research included several control variables. The findings for the total

<sup>1</sup> <https://www.ecb.europa.eu/stats/exchange/eurofxref/html/index.en.html> ; exchange rates of 31-12-2015 are used

assets show that the sample exists of smaller firms and very large firms. This is because the minimum and maximum of the total assets differ in a great amount. The smallest firm in the sample has total assets of €1,492.073 million, and the largest firm has an impressive total assets of €646,848.958 million. The average total assets for the firms in the sample is €58,906.58283 million (median = €11,209.208 million). The variable, age of firm is also interesting, since it has values that show differences. The median firm in this sample has an age of 68 years, and the average age of firms is 82.64 years. The oldest and youngest firms are existing for 361 years and 13 years. On

average firms show a leverage ratio of 0.603 (median = 0.598). The mean and median are close to each other, which means that most firms have leverage ratios that are close to each other. The ROE of 2014 gives an average of 18.302% (median = 13.610%). These values are quite similar to the ROE of 2015, but a difference in ROE 2014 is that all firms have positive percentages. The ROA of 2014 has a mean of 8.256% (median = 5.280%). These values are similar to the following year. But also in this case none of the firms show a negative ROA in 2014, contrary to ROA 2015.

**Table 1: Descriptive Statistics**

Variables	N	Mean	Median	Std. Deviation	Minimum	Maximum
Base Salary	45	0.936	0.938	0.427	0.195	1.696
Variable CEO Compensation	36	0.852	0.557	0.867	0.051	4.275
Total CEO Compensation	45	1.617	1.414	1.085	0.283	5.275
ROE 2015	45	19.812	14.640	24.585	-10.560	150.630
ROA 2015	45	8.209	5.990	10.031	-3.880	48.270
Total Assets	45	58,906.583	11,209.208	126,012.104	1,492.073	646,848.958
Age Firm	45	82.64	68	66.282	13	361
Leverage ratio	45	0.603	0.598	0.202	0.192	0.952
ROE 2014	45	18.302	13.610	15.880	1	79.790
ROA 2014	45	8.256	5.280	10.084	0.380	48.27

*Note: Base Salary, Variable Compensation, Total Compensation and Total Assets are in EUR million*

## 4.2 Correlation Analysis

The correlation analysis is the step before the regression. In this analysis attention has to be paid to variables that show significant correlations that will be put in the same model for the regression analysis. The correlations of the variables are presented in Table 2. The independent variables of total CEO compensation and variable CEO compensation both show non-significant correlations with both performance measures of ROE and ROA. However, there are some significant correlations that have to be mentioned. ROE shows a significant positive correlation with ROE 2014, with a Pearson correlation of 0.872. ROA also shows a significant positive correlation with

ROA 2014, with a correlation of 0.920. These significant correlations indicate that both performance measures are strongly positively related to the values of the previous year. Another important significant correlation is between ROA and leverage ratio, with a significant negative correlation of -0.360. This means that an increase in one variable leads to a decrease in the other variable. ROA 2014 also shows a significant negative correlation of -0.355 with leverage ratio. Another variable that is significantly correlated with leverage is total assets. These variables show a positive significant correlation of 0.621. Indicating that an increase in total assets leads to a better leverage ratio.

**Table 2: Correlations of variables**

	ROE	ROA	Total CEO Compensation	Variable CEO Compensation	Total Assets	Age Firm	Leverage	ROE 2014	ROA 2014
ROE	1								
ROA	0.925**	1							
Total CEO Compensation	0.186	0.186	1						
Variable CEO Compensation	0.179	0.183	0.871**	1					
Total Assets	-0.014	-0.230	-0.219	-0.210	1				
Age Firm	-0.145	-0.158	0.095	-0.009	0.005	1			
Leverage	-0.072	-0.360*	0.002	0.058	0.621**	-0.008	1		
ROE 2014	0.872**	0.874**	0.271	0.271	-0.098	-0.094	-0.126	1	
ROA 2014	0.858**	0.920**	0.210	0.174	-0.200	-0.126	-0.355*	0.940**	1

*Notes: 1. Correlation coefficient of variables is presented in Pearson correlation. 2. \*\*indicate significant correlation at the 0.01 level (2-tailed) and \*indicates significant correlation at the 0.05 level (2-tailed). 3. Total CEO Compensation, Variable CEO Compensation and Total Assets are expressed in natural logarithm.*

### 4.3 Regression Analysis

The significant correlations between variables that are presented in the previous section indicate a potential multicollinearity problem if those variable are put in the same model. Therefore, this has to be tested first. Table 3 presents the collinearity test for the equations 1 to 4 that are used in this study, and give the variance inflation factors (VIF) For all variables it can be seen that the values are between 1 and 2. This means that there will not be a multicollinearity problem for all equations, since the VIF values are quite low (below 5).

**Table 3: Multicollinearity Test**

	Equation 1: ROE	Equation 2: ROA	Equation 3: ROE	Equation 4: ROA
Total CEO Compensation	1.197	1.177		
Variable CEO Compensation			1.203	1.166
Total Assets	1.775	1.788	1.607	1.640
Age Firm	1.028	1.041	1.032	1.046
Leverage	1.717	1.920	1.534	1.697
ROE 2014	1.120		1.117	
ROA 2014		1.253		1.194

*Note: the variance inflation factors (VIF) are given*

Table 4 presents the regression analysis. In Panel A, the regression analysis of equations 1 and 2 are given, in which the total CEO compensation is used as independent variable. Total CEO compensation has a regression coefficient of -1.090 and a P-value of 0.700 for the dependent variable ROE. For ROA, total compensation gives a regression coefficient of -0.115 with a P-value of 0.902. The P-values will be used in order to test hypothesis 1 for the performance measures ROE and ROA. Hypothesis 1 is a one-sided test, because it is stated that lower CEO compensation has a negative impact on firm performance. This means that the P-values have to be divided by two in order to test the hypothesis. This results in a P-value of 0.350 for ROE and 0.451 for ROA. Because these values are much greater than the significance level  $\alpha$  (0.05), hypothesis 1 is rejected for both performance measures. Thus, total CEO compensation shows a non-significant negative relationship with both performance measures. The high values for the adjusted R squares for ROE (0.741) and ROA (0.831) can be explained by the significant positive relationship with the previous firm performance measures.

Panel B of table 4 presents the regressions for equation 3 and 4, in which variable CEO compensation is used as independent variable. Variable CEO compensation has a regression coefficient of -1.681 and a P-value of 0.463 for the dependent variable ROE. For ROA, variable CEO compensation gives a regression coefficient of -0.160 with a P-value of 0.797. These P-values will be used in order to test hypothesis 2 for the performance measures ROE and ROA. Hypothesis 2 is also a one-sided test, because it is stated that higher variable CEO compensation results in greater firm performance. Therefore, also these P-values have to be divided by two in order to test the hypothesis. This results in a P-value of 0.232 for ROE and a P-value of 0.399 for ROA. Because these values are much higher than the significance level  $\alpha$  (0.05), hypothesis 2 is rejected for both performance measures. Thus, variable CEO compensation shows a non-significant negative relationship with both

performance measures. Also in these two equations the adjusted R squares show high values. For ROE this is 0.772 and for ROA this value is 0.888. These values can be explained by the significant positive relationship of the dependent variables with the variables for the previous firm performance measures.

The regression analysis shows thus that there is a non-significant negative relationship between both CEO compensation measures and firm performance.

**Table 4: Regression Analysis**

**Panel A: Regression Analysis for equations 1 and 2**

	Equation 1: ROE	Equation 2: ROA
Constant	-15.020 (0.804)	10.194 (0.610)
Total CEO Compensation	-1.090 (0.700)	-0.115 (0.902)
Total Assets	1.160 (0.506)	-0.290 (0.615)
Age Firm	-0.022 (0.443)	-0.006 (0.501)
Leverage	-0.426 (0.972)	-0.695 (0.872)
ROE 2014	1.365 (0.000)	
ROA 2014		0.898 (0.000)
Adj. R square	0.741	0.831
No. of obs.	45	45

**Panel B: Regression Analysis for equations 3 and 4**

	Equation 3: ROE	Equation 4: ROA
Constant	12.198 (0.837)	27.555 (0.101)
Variable CEO Compensation	-1.681 (0.463)	-0.160 (0.797)
Total Assets	0.166 (0.935)	-1.124 (0.057)
Age Firm	-0.039 (0.230)	-0.010 (0.272)
Leverage	8.104 (0.579)	4.340 (0.311)
ROE 2014	1.414 (0.000)	
ROA 2014		0.953 (0.000)
Adj. R square	0.772	0.888
No. of obs.	36	36

*Notes: 1. Unstandardized coefficients are given. 2. P-value is reported in parentheses, and given in sig. 2-tailed. 3. Total CEO compensation, Variable CEO Compensation and Total Assets are expressed in natural logarithm.*

## 5. DISCUSSION

This study did research on CEO compensation and its impact on firm performance for firms listed in Scandinavian countries. The test sample consisted of firms from Denmark, Finland, Norway and Sweden which had a spot on the Forbes Global 2000 List of 2016. A linear regression model has been used to test this relationship. The regression model included dependent, independent and control variables. As dependent variables, the performance measures of ROE and ROA have been used. The independent variables were total CEO compensation and variable CEO compensation. Variable CEO compensation consisted of cash bonuses, share-based payments and stock option payments. The control variables in this study were the previous firm performance, size of the firm, the age of the firm and the leverage ratio. The regression analysis has been used to test the hypotheses that were formed based on two theories and previous empirical studies.

Hypothesis 1 stated that lower CEO compensation has a negative impact on firm performance. For this hypothesis the relationship between total CEO compensation and the firm performance measures of ROE and ROA was tested. The results show that there is a non-significant negative relationship between total CEO compensation and firm performance. This means that hypothesis 1 is rejected for both performance measures. Hypothesis 2 stated that higher variable compensation to CEO's results in greater firm performance. For this hypothesis the relationship between variable CEO compensation and the firm performance measures ROE and ROA was tested. Also in this case the results indicate that there is a non-significant negative relationship between variable CEO compensation and firm performance. Several previous studies had similar findings. Ozkan (2011) found a non-significant relationship between total CEO compensation and firm performance. The results from the study of Mohammed & Phil (2013) also found a non-significant relationship for CEO compensation and firm performance. This non-significant relationship was for the CEO salary, CEO bonus and CEO total compensation with the performance measure ROA. Yet another study that did not find a significant relationship between CEO compensation and firm performance was from Tosi et al. (2004).

Some limitations of this study can be mentioned so that these issues can be addressed in future research. For example, in this study total CEO compensation was the sum of base salary and variable compensation. Variable CEO compensation included the cash bonuses, share-based payments and stock option payments. These payments were combined into one because of limitations in data collection. Data on CEO compensation was hand-collected from annual reports and not every firm disclosed every form of payment. If these payments were not combined to variable compensation, the sample for every form of payment would be smaller. It was also not possible to include industry or country dummies in this study, because the samples would be too small to test. Another limitation is that this study does research on a short time interval, only the year 2015. This was because 2015 was the most recent year with available annual reports for the firms. Future research could expand the time interval, which could capture the total effects of CEO compensation on firm performance.

## 6. CONCLUSION

This study examines the impact of CEO compensation on firm performance for firms from Scandinavian countries. The primary purpose of this study is to examine whether the amount of remuneration paid to CEO's has an effect on firm performance. Previous studies regarding this topic show

different findings. Some studies find a positive relationship between CEO compensation and firm performance, others conclude that this relationship is negative. And several studies find results that indicate that there is a non-significant relationship between CEO compensation and firm performance.

Theories that are important in the analysis of CEO compensation and firm performance are the agency and stakeholder theory. Both theories suggest that the alignment of interests between CEO's and the principal is very important. In order to stimulate managers, appropriate incentive systems should be introduced. With these systems, CEO's are financially rewarded for maximizing shareholders' interests. Thus, these theories suggest that it is crucial to reward CEO's in order to gain greater firm performance.

This study analyzed the compensation data of firms from Scandinavian countries. With this analysis an answer to the research question can be given. A linear regression analysis has provided empirical evidence on the impact of CEO compensation on firm performance. The research question in this study was formed as follows:

*What is the impact of CEO compensation on the firm performance of firms listed in Scandinavian countries?*

The results of this study find a non-significant negative relationship between CEO compensation and firm performance. Several previous studies had similar findings. These results also lead to the rejection of both hypotheses. This means that the impact of CEO compensation on firm performance is rather weak for the firms in this study.

These findings contribute to the existing literature regarding CEO compensation and firm performance with different countries as focus point.

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