

CEO compensation and Firm performance. a study based on FTSE100 companies

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ABSTRACT,

This study examines how CEO compensation affects the firms' performance. Companies that make up the FTSE100 are used for data collection as they are required to explicitly report the remuneration of directors. CEO compensation consists of basic salary, Bonuses, Pensions and Long-Term Incentive Plans for the year 2017 is measured. Firm performance is measured calculating the return on stock and the return on Assets during the year 2017. I find that CEO compensation has no significant impact on stock return and that CEO compensation has a significant positive relationship with return on assets however the impact is negligible. I find that CEO compensation has no significant impact on the firm's performance. There is no evidence to believe that a higher CEO compensation package leads to better firm performance.

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Keywords

CEO, COMPENSATION, FIRM PERFORMANCE, EXECUTIVE PAY

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1. INTRODUCTION

The purpose of this study is to find out whether a higher executive pay, CEO compensation package, will lead to better firm performance. This study is inspired by recent news regarding the CEO of ING Group. Recently, the CEO of ING Group got offered a 50% increase in his compensation package, increasing his compensation package totaling €3m. This announcement has led to a shockwave of reactions. For example: Clients leaving the bank and politicians publicly attacking the bank regarding this proposal aiming to block this proposal. In defense, the bank justifies this proposal by answering that the CEO is underpaid compared to other European financial institutions and that its CEO earns this compensation package. Furthermore, ING Group said: ‘The primary objective of ING’s remuneration policy is to enable the Bank to retain and recruit qualified and expert leaders as well as senior staff and other highly qualified employees’.

This statement got me thinking. Perhaps it is true that these managers decide to leave the firm and join another firm that offers a higher compensation package. But this still raises the question: do firms perform better when the compensation package of the firm’s CEO is higher? If no, there is no need to increase the compensation package, if yes, this increase in compensation package is justified by the superior performance of the firm. This is just one example of how an increase in compensation package can cause unwanted friction despite the fact that ING Group CEO is underpaid compared to the industry. In the end, due to the pressure on ING Group, they have waived this proposal and are looking for more suitable alternative.

CEO compensation packages are there to align the interest of that of the owners and the managers of a firm. In other words, reduce conflict of interest known as agency costs which is explained by the agency theory. It is known that these packages have a major role in motivating top managers to perform and because these compensation packages can contain millions of dollars it is key to know if there is a link between the amount of compensation and firm performance.

Buck et al (2003) mentioned that especially in the current era where directors not only receive cash and shares as compensation but also receive pay from LTIP, Long-Term Incentive Plan, which is designed to increase performance-pay sensitive, directors have the opportunity to increase their own pay and reduce the agency cost. This relates to the following research question: does a higher CEO compensation package lead to better firm performance?

In this paper, I investigate whether a higher compensation of chief executive officers (CEOs) results in better firm’s performance. I analyze CEO compensation data of a sample of FTSE100 listed companies. Pay components are measured during the year 2017 and are: cash salary, stock options, Long-Term Incentive Plans and pensions are used to estimate the total CEO compensation. Firm performance is measured by the stock return and the Return on Assets generated during the year 2017. The contributions from this paper are related to executive pay and firm performance literature. First, I add strength to current studies/literature that also find no evidence that higher CEO compensation leads to higher Firm performance, based on UK panel data Secondly, I question if OLS regression is right way of investigating this relationship and that perhaps quantile regression is more suited. I investigate whether an increase in pay increases firm performance and therefor can give conclusion based on UK firms if there is a significant impact of executive pay on firm’s performance. The remainder of the paper is organized as follows. In section 2, I briefly review the relevant literature. The hypothesis of my study is presented in section3.

The methodology is explained in section 4. In section 5 the data and data description are presented. The conclusion is presented in section 7 and is followed by the limitation section. The paper ends with section 8 where future research suggestions are mentioned.

2. LITERATURE REVIEW

CEO compensation, or executive pay is most of the time researched, in the current literature, from the standpoint of firm’s shareholders. This theoretical framework is based on the agency theory that states that managers are rewarded incentives to perform according to the principles requirements, often this is in order to increase (maximize) shareholder wealth. Considering this, risk-averse managers, who also care about their job security and their reputation, are hesitant in taking on value-increasing yet more risky investment opportunities. Equity-based, such as stock, incentives, therefore, stimulate managers in executing more risky investments that yield more profit and therefore in the end, increase shareholder wealth. Jensen and Meckling (1976) already showed that reward/compensation packages should reduce agency costs.

Fama (1980) states that agents must consider future wages that will be contingent upon current results. Lambert (1983) adds to this that commitment from CEO’s to long-term contracts (3-5 years) can reduce agency costs. Coughland and Schmidt (1985, P.46) conclude that ‘‘the effects of good management will ultimately be reflected in the stock price’’. Furthermore, they conclude that compensation package plans help in reducing agency costs’’. In other words, align the interest of top management with the shareholders of the firm. Funderberg et al. (1990) noticed that these long-term contracts are only sufficient if the contract requires dedication today to something that cannot be adopted in a later point of time. for example, taking on a risky investment that yields a certain profit for the firm where both the firm and thus the CEO (in the long run) benefits from. While some empirical studies regarding, compensation, are looking at the risk-aversion effect, most studies research the incentive side of the agency theory. In other words, the compensation that agents receive for their effort.

Stammerjohan (2004) states that there is an assumption in most empirical literature that the positive relation between reward and performance acts as an indicator that CEO compensation packages are designed to reduce agency costs. Murphy (1985) finds a strong link between CEO compensation and past firm performance. Lambert and Larcker (1987) added to this that they found a positive relation with the return-on-equity and cash compensation but contradictory only a weak relation between stock return and cash compensation. Kerr and Bettis (1987) in their study the same year did not find a relation between stock performance and executive pay. One of the aspects of CEO compensation used in this research is the amount of pension as it part of the compensation structure.

While this study does not focus entirely/solely on pensions but on executive pay as a whole it is worthwhile to give a short overview of pensions as part of the total executive compensation package. Bebchuk and Jackson (2005) are arguing that this less commonly visible compensation should not be excluded in the analysis of executive pay as this could lead to underestimation of the total pay received and overestimate the pay-performance relation. Sundaram and Yermak (2007) are describing the benefit of this form of compensation in the following way: when executives receive a part of their compensation package as pension and partial in equity, we expect managers to manage the firm that satisfies both debt and equity investors. Agency costs related to debt there should diminish.

Edmans and Liu (2011) state that the pension component of executive pay can be an efficient way to reduce managerial risk-taking activities. Sundaram and Yermack (2007) furthermore find that an increase in CEO pension lowers the probability of firms defaulting. Which in turn increases shareholders' wealth, or at least not decrease it. Wei and Yermack (2011) found that equity prices declined when executives have relative high pensions implying that firms should not put too much emphasis on pension when designing the pay structure. Kabir et al (2013) state that studies related to this topic show that equity-based pay and pensions to executives are related to wealth transfer between shareholders and bondholders. Ortiz-Molina (2007) findings indicate that firms adopt executive pay in a way where conflicts between shareholders and bondholders, known as shareholder-bondholder conflict, are reduced.

3. HYPOTHESIS

The literature review in the section above describes that executive compensation is based on equity and debt-like parts. Both have an impact on shareholders' wealth and therefore must be taken into account when designing and performing rest of the study.

Eisenhardt (1985) mentions that the Agency theory, focuses on control issues resulting from conflicts of interest between top executives and shareholders. More so, agency theory is more concerned with the mechanisms that can be used to reduce or control such conflicts of interest. Furthermore, Agency theory is based on the fact that principals (the equity holders, shareholders) assign responsibilities to an agent, in my case the CEO, who is expected to perform in the best interest of the principal. Additionally, Gomez-Mejia et al,2000, states three premises of the Agency theory which are: (1) the agents are risk averse; (2) agents are self-centered; and (3) agents' interests may differ from those of the principal. This increases the possibility of taking on more risky projects or actions by the agent such as: an CEO may move the firm into a diversification program of mergers and acquisitions, with low or perhaps even negative returns to stockholders in order to increase firm size, associated with increases in CEO compensation Gomez-Mejia et al (2000) and reducing business risks (at the expense of lower returns) (Ahimud & Lev, 1981; Kroll et al., 1990). Summarizing the above, the principal may receive some losses (mentioned as "agency costs") whenever the agent chases objectives and goals that are the opposite than that of those of the principal.

Monitoring and assessing of managers by the board of directors is a large internal managerial control tool as mentioned by Coughlan and Schmidt, 1985. The board approves the structure of executive pays to which managers answer, including decisions about the compensation package of executive management. Smith and Watts (1984) are presenting evidence stating that the CEOs compensation plans, which are approved by boards of directors, generally create a relationship between executive pay and firm's performance measures which are by themselves directly related to shareholder wealth.

As an illustration, the value of stock options owned by an executive director at the beginning of a year could give him an incentive to perform in ways which maximize shareholders' wealth throughout that year. stock appreciation rights (call options), if given before the or at the beginning of the year, have the same incentive effect (Coughlan and Schmidt,1985). "Nonetheless, some investigators have argued that compensation plans do not induce top management to maximize shareholder wealth and advance evidence which they claim supports this argument" (Coughlan and Schmidt,1985, p.45). this article

further states that a CEO is more concerned with the size or growth of the firm, rather than profitability.

The argument that compensation packages stimulates management to perform in the interest of shareholders by linking executive pay to stock price performance is based on the assumption that the effects of good management will ultimately be reflected in the change in share price. premises that give the assumption that executive management should be held accountable for increase or decrease in shareholders' wealth that are under their control even if this control is only partially related to firm's performance should be associated with positive stock returns (Kerr and bettis,1987). More so, I would expect a board of directors to reward a CEO for positive returns and not reward a CEO with bonuses in case the firm underperforms. Shareholders are confronted with two problems in reducing agency costs (Kerr and bettis,1987). In the first place, the owners of the firm cannot easily structure and closely supervise the activities of the executives. Secondly, executive directors have far more inside information about organizational processes and the decision-making-process of business decisions than for example shareholders.

As an illustration, information asymmetry, the difference in available information between the agent and principal, in is in favor of the CEO and its management (agent). In the last place, executive directors are in a position to use the firm's resources to achieve objectives that may not be in line with the best interests of shareholders. (for example: large salaries and private use of the business jet). The challenge from an agency perspective is how to press self-centered, risk averse agents (managers who want to follow their own interests while minimizing the possibility of personal losses) at the lowest cost possible to act on behalf of the principals or owners who want to increase the value/performance of the firm (Bloom & Milkovich,1998)

The principal seeks to pursue this challenge by a contract with the agent that may include (a) the development of a system for monitoring the behavior and decisions of agents to ensure that these do not deviate from the interest of owners, and/or (b) create a basis of incentives that reward the agent for outcomes that are important to the principals for example profitability or growth. Gomez-Mejia et al (2000). If the wish of shareholders (principle) is to increase their wealth, this can be pursued by aligning the interest of the CEO to this by giving them incentives. often argued by remuneration committees, larger total executive compensation is required to attract, retain, and motivate those that are qualified to manage the firm. (stamerjohan,2004).

You would furthermore expect that a better quality executive decisions should be available in return for higher compensation, executive pay (stamerjohan,2004). you could further expect that under the premises that remuneration committees correctly assessed the abilities and required compensation of their managers, the subsequent performance of those firms paying higher compensation would be superior to those paying less as the results of these superior decisions were realized by paying more. (stamerjohan,2004). The proposed hypothesis are therefore:

H1: Higher CEO compensation leads to better firm performance.

4. METHODOLOGY

CEOs receive multiple forms of compensation, and therefore analyzed will be a fixed set of pay components. Looking at a comparable research such as Stammerjohan (2004) and Gomez-Mejia (2000) i constructed a pay variable consisting of total CEO compensation, which is the sum of annual salary,

pensions, cash bonuses and Long-Term incentive plans. Together this data will be called COMPENSATION. These components are publicly available and mentioned in annual reports as UK law forces them to publish this. In order to measure firm performance used will be two methods mentioned in previous studies (Ozkan, 2011; Gomez-Mejia, 2000). First, I constructed a variable that entails the wealth gained by shareholders. Argued can be the purpose of executive directors regarding their job, but it is often stated that the job of executive management is to maximize shareholders' wealth or in other words, maximize stock return. Change in shareholders' wealth or stock return is measured by the price of the share at 31/12/2017 minus the share price at 1/1/2017 plus dividends paid during the same period divided by the share price at 1/1/2017. The formula is: $(P1-P0) + D/P0$.

This results in a variable called, STOCKRETURN expressed as percentage. The second method of measuring firm performance that will be used is the Return On Assets. This is the firms net income divided by the value of total assets. $ROA = \text{Net Income} / \text{Total Assets}$. This variable will be called ROA. Controlled will be for firm size as prior literature argues that an increase in firm size leads to an increase in CEO compensation (Core & Guay, 1999; Gabaix et al, 2014). Firm size will be measured by the book value of total assets.

To summarize, cross-sectional data will be used. Performed will be an ordinary least square regression to analyze the relationship between the dependent variable, stock return and Return on assets, which represents firms' performance and the independent variables: compensation and firm size, which represents received executive pay or CEOs compensation and the total assets of a firm.

The regression will be tested at the statistical significance level of alpha 5%. Additionally, I will examine the data for statistical outliers. A regression outlier is an observation that shows an uncommon value of the dependent variable (Y), contingent upon the value of the independent variable (X) (Jacoby,2005). Removed will be outliers that are high in leverage and high in influence as they can impact the slope and intercept of the model which in turn can lead in inaccurate and misleading regression(Jacoby,2005). Outliers will be detected and removed if they have a value of ± 1.5 times the inter quartile range.

Additionally, the assumptions of linear regressions will be tested for. These are: Linearity of the dependent and independent variable, Normality of errors, no Autocorrelation and the presence of homoscedasticity and multicollinearity. Linearity of the DV and IV will be tested for by plotting the values and should show linearity. Normality of errors shall be tested by a plotting normal a P-P plot where the plotted data should follow the shown 90° line. Autocorrelation will be tested by looking at the Durbin-Watson statistic and should be around 2. In order to reduce homoscedasticity, the Log value of the following variables will be used: return on equity, return on assets, CEO compensation and Firm size. The log value is used in related papers such as: Kabir et al ,2013; Ozkan (2011) and Gomez-Mejia et al (2000). Additionally, plotted shall be the regression standardized residual versus the regression standardized predicted value and this should show no cone shape. Multicollinearity can be tested by performing a variance inflation factor test. This value should be between 1 and 10. Anything below or above should raise awareness of the presence of multicollinearity.

Based on prior literature such as (Chen,2010 and Kabir et al, 2013) the estimated regression models is as follows:

Firm performance = $\alpha_0 + \beta \text{ Compensation} + \lambda \text{ Firm Size} + \epsilon_{i,t}$. Compensation represents the sum of: salary pensions, cash bonuses and Long-term incentive plans, Firm size is measured by total assets of the firm and firm performance is representing return on stock and return on asset depending on the hypothesis I test.

5. DATA COLLECTION AND DATA DESCRIPTION

The sample consist of data collected from firms included in the Financial Times Stock Exchange 100 index, hereafter named FTSE100. This share index consists of the 100 companies listed on the London Stock Exchange(LSE) with the highest market capitalization. For each company, collected is the compensation information from the remuneration section of the annual reports. CEO compensation data include the British pound values of base salary, cash bonus, pensions and long-term incentive plans which are changed to dollar values with an exchange rate of 1.37 US dollar per British pound as this is the rate that ORBIS database used. This provides accurate and up-to-date information on the values of the compensation components. The Compensation package that is measured here, represents the compensation of the CEO during 2017. Firm size as mentioned before is measured by total assets and this data is gathered from the ORBIS database. Stock return data is retrieved from Yahoo! Financials as this adjusts the change in share price during the year for dividends paid. The sample period is 1/1/2017 until 31/12/2017. Return on assets is calculated dividing net income by total assets and this data is retrieved from the ORBIS database. Data gathered from ORBIS are based on the latest available annual reports of the firms, in this case 2017.

Since 2003 UK regulation requires firms to explicitly publish CEOs pension information. This enables the possibility to include pensions in the compensation package. This data will be hand collected. Data collected from ORBIS database is provided by UTWENTE and Bureau van Dijk. Individual firm data that is not available through ORBIS will be hand-picked from Annual reports. The 100 companies that compose the FTSE100 and used for this study are presented in table 1 in the appendix table A.

5.1 Data Description

In this section explained and defined will be the data that I used as several components require some explanation and in order to reduce confusion between definitions of variables.

CEO compensation: the amount received by the CEO as the sum of salary, bonus, pensions and Long-Term Incentive Plan. Long-Term incentive plan. This refers to an arrangement under which an employee (usually a senior executive of the company) can be awarded shares in his employer or its parent company at nil cost, subject to a period of continued employment and performance conditions that must be met over a period of more than one year¹. Another yet more scientific definition comes from (Sigler,2015 p.72): "An LTIP is a reward system designed to improve executive long-term performance, and it can use both cash and stock to compensate CEOs. In a typical LTIP, the CEO must

¹ [https://uk.practicallaw.thomsonreuters.com/0-107-6796?transitionType=Default&contextData=\(sc.Default\)&firstPage=true&bhcp=1](https://uk.practicallaw.thomsonreuters.com/0-107-6796?transitionType=Default&contextData=(sc.Default)&firstPage=true&bhcp=1)

fulfill various requirements establishing that he or she has contributed to increasing shareholder value. LTIPs many times reward executives using restricted share units (RSUs). An RSU award is normally an agreement to issue stock at the time it vests. Vesting happens when the performance criteria has been met. And no shares are delivered until the manager satisfies the vesting schedule. Some businesses have replaced pure options based incentives in favor of LTIPs''. An example of these requirements is challenging performance criteria. For instance, a measure that can be used is to compare the company performance relative to that of a group of competitors. However, Remuneration Committees have no specific rules to follow regarding the selection criteria. The committee is free in the choice of competitors; the performance measure to compare and other criteria's that they use. (Robert,2008).

In the appendix, you can find Table A. which presents the 100 companies that the FTSE100 consists of which are used for this analysis.

6. EMPIRICAL RESULTS

As elaborated in section 4, hypothesis, panel regression is used to examine the impact of CEO compensation on firm's performance which is measured by stock return and control for firm size. stock return and to examine the impact of CEO compensation on firm's performance measured by return on assets. Furthermore, the assumptions of linear regression are checked and presented in this section.

In the first place presented will be the descriptive statistics of the variables used in this empirical analysis where after the correlation matrix is presented and elaborated on. After that the regression model is presented. The Descriptive statistics are presented in table 1 below. Total assets presents a minimum of \$962 million and a maximum of \$997.23billion with a mean of \$78.80billion which shows that there is a large difference in the value of total assets in the sample. The total assets mean of \$78.80b is almost double the value of that found in Kabir et al 2013 which can be explained by the time frame used in that study (2003-2012) where this time frame is 2017. Return on assets has a minimum of - 10.12% which implies that a firm had a net loss in the year 2017. ROA shows a maximum of 28.55% with a mean of 6.98%. Return on stock has a minimum of -41.69% which means that the share price at the end of the year was lower than that of the beginning of the year. The maximum is 75.90% with a mean of 13.57% which is slightly higher than Ozkan,2011 found in his study (12%). Compensation presents a minimum of \$782.000 and a maximum of 17.125.000. This implies that the highest paid CEO earns almost 22 times more than the lowest paid CEO. The mean compensation for CEO's equals \$5.95m. The findings of CEO compensation are similar to those found by Kabir et al (2013). Concluding on the descriptive statistics argued can be that these findings show no abnormalities compared to prior studies and in fact are in line with prior studies. The correlation matrix between the variables is presented in Table 2.

Table 1 Descriptive statistics

Variables	Minimum	Maximum	Mean	Median	St. dev.
Total assets (\$bn)	0.962	997.23	78.80	139.74	176.15
Return on assets(%)	- 10.12	28.55	6.98	5.65	6.13
Return on stock(%)	- 41.69	75.90	13.57	11.82	20.12
Compensation(\$m)	0.782	17.125	5.953	5.419	3.115

The table consist of descriptive data of the FTSE100 companies used in this research.

Total assets shows negative and significant correlation with return on asset (-0.640). It also shows a significant positive correlation with compensation (0.266) which is in line with prior research (Ozkan,2011). Return on assets is positive and significantly correlated to return on stock (0.304) which is understandable. Interesting is that return on stock is negatively related to total assets(-0.228).

Table 2
Correlation matrix

	1	2	3	4
(1) Total assets	1	-0.640**	-0.228*	0.266*
(2) Return on assets	-0.640**	1	0.304**	0.061
(3) Return on stock	-0.228*	0.304**	1	0.021
(4) Compensation	0.266*	0.61	0.021	1

This table presents the correlation matrix of the variables. * means significant at the 0.05 level and ** is significant at the 0.01 level.

6.1 The impact on Return on Stock

I find that the regression analysis performed on return on stock with the variables compensation and firm size (total assets) shows an insignificant model with a P-value of 0.306. The Compensation variable presents a significance value of 0.622 and firm size 0.198. What also is important to mention is that the r^2 equals 0.059. Table 3 presents the data of this regression.

If we measure firm performance as return on stock we can conclude that there is no evidence to believe that CEO compensation affects Firm performance which is in line with prior research as the model shows no statistical significance. Elaborating on the coefficients is therefore unnecessary.

6.2 The impact on Return on Assets

I find that the regression analysis performed on the return on assets and CEO compensation and firm size is statistically significant. The model shows a significance level of 0.001 with R^2 being 0.466. Firm size presents a significance of 0.001 and compensation presents a significance of 0.004. The correlation coefficient for firm size is -0.502 and for compensation it is 0.602.

This means that I an increase of one unit of Firm size, while keeping compensation constant, would decrease the return on asset by -0.502 base point. In other words, how larger the company the lower the return on asset. The coefficient of compensation can be explained as follow: an increase of one unit of compensation, while keeping firm size constant, would increase return on assets by 0.602 base points. In other words: an increase of CEO compensation would lead to a higher return on assets.

Although this model is statistically significant and the coefficient of CEO compensation is positive and r^2 is noticeable, caution is required. After controlling for firm size the r^2 that is contributed to compensation is only 0.056. In other words, the compensation variable only explains roughly 6% of the variance of table 3.

concluded from the analysis can be that CEO compensation has little impact on firm performance after controlling for firm size. This is also in line with prior research such as Ozkan, (2011) and Gomez-Mejia (2000).

Table 3

Regression model data, CEO compensation and Firm size.		
	Return on stock = $\alpha_0 + \beta$ Compensation + λ Firm size + $\epsilon_{i,t}$	Return on assets = $\alpha_0 + \beta$ Compensation + λ Firm size + $\epsilon_{i,t}$
CEO compensation	-0.116(0.622)	0.602*(0.004)
Firm size	-0.088(0.198)	-0.502*(0.001)
R ²	0.035	0.466(0.056)
P-value	0.306	0.001
No. Of Observation	87	87

This table presents the results of regressing Firm performance on CEO compensation and firm size. * statistical significance at 5% level. R² (0.056) equals the R² of CEO compensation after controlling for firm size

6.3 Assumptions of linear regression

In this section I will elaborate on the tests I performed to check if there are no assumptions of linear regression violated as described in section 4.

First I have started by checking the linearity of the variables by plotting the dependent variable and the independent variable. This plot provides no evidence that this assumption is violated. The second assumption that has been tested is the assumption of normality of errors. This is tested by plotting a normal p-p plot. The created plot provided no evidence that this assumption has been violated. The third assumption that has been tested is the assumption that there cannot be autocorrelation. For this be violated Durbin-Watson test should yield scores below 1.5 and higher than 2.5. My model presents a Durbin-Watson statistic of 1.725 which is within the acceptable range of values. The Next assumption is the assumption of Homoscedasticity. This assumption is not violated as the plot shows a random pattern. This could already have been predicted because we transformed the data to Logarithmic values in order to prevent heteroscedasticity. The last assumption that has been tested for is multicollinearity. The variance inflation factor is 1.074 which is within the boundaries of the test. Therefore, we can conclude that this assumption is not violated and that all assumptions have been met.

7. CONCLUSION

In this paper tested has been how CEO compensation affects firm performance. I expect to observe and find a positive relationship between the amount of CEO compensation and the corresponding firm performance. This results from the agency-theory that suggest that: the better the alignment between agent and principal, which is suggested to be achieved by increasing CEO compensation, the higher the stock return would be as the agent (CEO) should act in principal's (shareholders) best interest which is theorized to be wealth maximization. The data that has been used is gathered from FTSE100 listed companies and provides me with the data that is needed to answer this research question. An advantage of the FTSE100 listed companies is that these companies are required to disclose, extensively, their remuneration report, which enables me to gather the CEO compensation data. Analyzed pay components are: basic cash salary, bonuses, pensions, and LTIP (Long-Term Incentive Plan). The finding is inconsistent with my expectation. The answer to the research question is no, there is found no evidence to believe that higher CEO compensation leads to higher firm performance. Overall, this study shows that based on the FTSE100 firms there is found no evidence to believe that higher CEO compensation leads to higher firm performance as opposed to the prediction of the agency-theory. This could imply

that Remuneration committees should reconsider their CEO compensation structure to the extent that it should not be heavily contingent upon firms' performance. Furthermore, it adds incentive for other researchers to study the agency-theory thoroughly to test if this theory still holds today, or that perhaps a different theoretical framework covers this topic more completely.

8. LIMITATIONS & FURTHER RESEARCH

In this section, multiple limitations will be elaborated on. One limitation of the used research design is the inability to set apart, or segregate, stock returns resulting from executive decisions from that of stock returns resulting from other adjustments in market expectations. This gives the opportunity to give credit to CEO's rather than external forces that influenced the stock return. Continuing on the research design, notable is the simplicity of the model and/or the absence of other (control, dummy) variables. Other research papers related to this study such as: McKnight, 2000; Ozkan, 2011; Lie et al, 2015 and Kabir et al, 2013 utilized multiple variables falling mainly under two categories: CEO characteristics such as the amount of executive ownership, age and tenure and firm characteristics such as: Board size, debt-ratio and ownership. A third category in this research could be more CEO compensation characteristics for example: a more in-depth analysis regarding the structure of the compensation could have contributed to explain different kind of effects CEO compensation on firm performance. As example that could have been investigated is that of layoffs have taken place before or during the years I have gathered data from. Brookman et al, 2010 shows that layoffs increase shareholder wealth and that CEO's receive higher compensation. Therefore, this would be an interesting variable to add and test.

We know from previous studies that the above-mentioned variables influence firm performance and/or CEO compensation. In this particular design, I have chosen not to include these variables although for the strength of the evidence I should have, because I opted for a simplistic research design that I could perform rather than having a more complete model which I cannot perform.

The next limitation I want to mention is that different methods for the detection and removal of extreme values (statistical outliers) could have been used. This research removed values that were 1.5 times above or below the interquartile range whereas for example, Kabir et al, 2013 handled this issue by winsoring values at the 2.5% level at each tail. Perhaps this could lead to different results.

A last notion will be placed on the fact this model does not include the lagged relationship between firm performance and CEO compensation, however, following Hartzell,2003, a more appropriate way would be the use of lagged explanatory variables as this could minimize the endogeneity problem in regression analysis.

8.1 Further Research

In this section suggestions will be given for further research. Based on prior literature and findings of this study multiple suggestion will be presented. This study and many others assume that shareholders, the principals in the agency model, benefit from superior long-term firm performance. However, considering the continuously decreasing holding periods of shareholders, measuring relative returns over three and five year holding periods may surpass the average shareholder's timetable. Porter (1992) records that the average holding period has decreased from seven to two years between 1960 and 1990. In fact, this leads one to wonder whether the timetable problem raised by Porter is more a result of executives not behaving in the shareholders' best interest, or if the timetable issue is also a result of shareholders' preference for near-term performance (Stammerjohan,2004)

In the recent past LTIP have gotten an increase in coverage however, if the premises of stammerjohan,2004 holds, LTIP has to be researched especially because it could lead to a higher agency costs because discrepancy arises between long-term CEO compensation and short-term focus of the principal. Consequently, evidence of reduced performance-pay sensitivities raises questions about future dependence on the agency-theory perspective as the basis for hypothesis in relation to executive pay and firm performance. At the same time, however, it seems likely that the agency-theory will continue to be used as the foundation, if only as a source of 'straw man' hypotheses to be knocked down in studies (buck et al,2003). Establishing the theoretical models is thus an important direction for future research.

Another interesting yet not mentioned in many of the articles used for this research is the examination of the life-cycle stage of the company vs CEO compensation. Perhaps, it is because it is complex and controversial (Quinn and Cameron,1983) but nonetheless is it interesting to research. This study is based on UK listed companies as they are required to explicitly report their remuneration report. As many countries now have started forcing the disclosure of pay (Gabaix_et al,2014), investigating CEO compensation and firm performance in those countries seems both performable and informative.

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10. APPENDIX

Table 1 A

Listed FTSE100 companies.

ROYAL DUTCH SHELL PLC	WM MORRISON SUPERMARKETS PLC	ASHTED GROUP PUBLIC LIMITED COMPANY
BP PLC	CARNIVAL PLC	DIRECT LINE INSURANCE GROUP PLC
GLENCORE PLC	ROYAL BANK of SCOTLAND GROUP PLC (THE)	WHITBREAD PLC
TESCO PLC	SKY PLC	INTERTEK GROUP PLC
VODAFONE GROUP PUBLIC LIMITED COMPANY	KINGFISHER PLC	BERKELEY GROUP HOLDINGS PLC (THE)
UNILEVER PLC	RECKITT BENCKISER GROUP PLC	BURBERRY GROUP PLC
PRUDENTIAL PLC	DIAGEO PLC	MEDICLINIC INTERNATIONAL PLC
HSBC HOLDINGS PLC	DCC PUBLIC LIMITED COMPANY	RENTOKIL INITIAL PLC
GLAXOSMITHKLINE PLC	SHIRE PLC	STANDARD LIFE ABERDEEN PLC
RIO TINTO PLC	JOHNSON MATTHEY PLC	MELROSE INDUSTRIES PLC
IMPERIAL BRANDS PLC	STANDARD CHARTERED PLC	SCHROEDERS PLC
BHP BILLITON PLC	MARKS AND SPENCER GROUP P.L.C.	LONDON STOCK EXCHANGE GROUP PLC
CENTRICA PLC	ROYAL MAIL PLC	SEVERN TRENT PLC
AVIVA PLC	BUNZL PUBLIC LIMITED COMPANY	THE SAGE GROUP PLC.
SSE PLC	EVRAZ PLC	INFORMA PLC
CRH PUBLIC LIMITED COMPANY	LEGAL & GENERAL GROUP PLC	PADDY POWER BETFAIR PUBLIC LIMITED COMPANY
J SAINSBURY PLC	G4S PLC	UNITED UTILITIES GROUP PLC
COMPASS GROUP PLC	SMURFIT KAPPA GROUP PLC	FRESNILLO PLC
BT GROUP PLC	RSA INSURANCE GROUP PLC	3I GROUP PLC
BARCLAYS PLC	RELX PLC	CRODA INTERNATIONAL PUBLIC LIMITED COMPANY
BRITISH AMERICAN TOBACCO P.L.C.	MONDI PLC	INTERCONTINENTAL HOTELS GROUP PLC
INTERNATIONAL CONSOLIDATED AIRLINES GROUP S.A.	EASYJET PLC	SCOTTISH MORTGAGE INVESTMENT TRUST PLC
ANGLO AMERICAN PLC	PEARSON PLC	MICRO FOCUS INTERNATIONAL PLC
LLOYDS BANKING GROUP PLC	DS SMITH PLC	
BAE SYSTEMS PLC	BARRATT DEVELOPMENTS P L C	
ROLLS-ROYCE HOLDINGS PLC	NEXT PLC	
ASTRAZENECA PLC	OLD MUTUAL PLC	
FERGUSON PLC		
TUI AG		
NATIONAL GRID PLC		

11. REFERENCES

- Anthony, J.H. and K. Ramesh, "Association Between Accounting Performance Measures and Stock Prices," *Journal of Accounting and Economics* 15 (1992), pp. 203–227.
- Bebchuk, L., Jackson, R., 2005. Executive pensions. *The Journal of Corporation Law* 30, 823–855.
- Bennedson, M., Nielsen, K., Perez-Gonzalez, F. and Wolfenzon, D. (2010). 'Do CEOs matter?', Stanford University.
- Bertrand, M. and Schoar, A. (2003). 'Managing with style: the effect of managers on firm policies', *Quarterly Journal of Economics*, vol. 118(4), pp. 1169–208.
- Black, E.L., "Life-Cycle Impacts on the Incremental Value-Relevance of Earnings and Cash Flow Measures," *Journal of Financial Statement Analysis* 4 (1998), pp. 40–5
- Brookman, J. T., Chang, S., & Rennie, C. G. (2007). CEO Cash and Stock-Based Compensation Changes, Layoff Decisions, and Shareholder Value. *The Financial Review*, 42(1), 99-119.
- Buck, T., Bruce, A., Main, B. G., & Udueni, H. (2003). Long Term Incentive Plans, Executive Pay and UK Company Performance*. *Journal of Management Studies*, 40(7), 1709-1727

- Chen, M. (2010). The Components of Managerial Pay Adjustments and Their Impact on Firm Performance. *The Manchester School*, 78(6), 582-608.
- Core, J., & Guay, W. (1999). The use of equity grants to manage optimal equity incentive levels. *Journal of Accounting and Economics*, 28(2), 151-184.
- Coughlan, A. T., & Schmidt, R. M. (1985). Executive compensation, management turnover, and firm performance. *Journal of Accounting and Economics*, 7, 43-66.
- Custodio, C., Ferreira, M. and Matos, P. (2013). 'Generalists versus specialists: lifetime work experience and CEO pay', *Journal of Financial Economics*, 108(2), 471-92
- Edmans, A., Liu, Q., 2011. Inside debt. *Review of Finance* (15), 75-102
- Eisenhardt, K. (1985) Control: Organizational and economic approaches. *Management Science*, 31, 134- 149.
- Falato, A., Li, D. and Milbourn, T. (2012). 'Which skills matter in the market for CEOs? Evidence from pay for CEO credentials', Working Paper, Federal Reserve Board.
- Fama, E. (1980). Agency problems and the theory of the firm. *Journal of Political Economy*, 88, 288-307.
- Fudenberg, D., B. Holmstrom, and P. Milgrom. (1990). Short-Term Contracts and Long-Term Agency Relationships. *Journal of Economic Theory* 51 (June), 1-31.
- Gabaix, X., Landier, A., & Sauvagnat, J. (2013). CEO Pay and Firm Size: An Update after the Crisis. *The Economic Journal*, 124 (February), 40-59.
- Hallock, K. F., Madalozzo, R., & Reck, C. G. (2010). CEO Pay-For-Performance Heterogeneity Using Quantile Regression. *Financial Review*, 45(1), 1-19
- Hartzell, J. C. and Starks, L. T., 'Institutional investors and executive compensation', *Journal of Finance*, Vol.58, 2003, pp. 2351-74.
- Holmstrom, B. (1979). Moral Hazard and Observability. *The Bell Journal of Economics*, 10(1), 74-91
- Jacoby, W. G. (n.d.). *Regression 3, advanced methods*[PDF]. Michigan State University.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure. *Journal of Financial Economics*, 3, 305-360
- Kerr, J., & Bettis, R. A. (1987). Boards Of Directors, Top Management Compensation, And Shareholder Returns. *Academy of Management Journal*, 30(4), 645-664.
- Murphy, K. J. (1985). Corporate performance and managerial remuneration. *Journal of Accounting and Economics*, 7(1-3), 11-42.
- Ortiz-Molina, H., 2007. Executive compensation and capital structure: the effects of convertible debt and straight debt on CEO pay. *Journal of Accounting and Finance* 43, 69-93.
- Ozkan, N. (2009). CEO Compensation and Firm Performance: An Empirical Investigation of UK Panel Data. *European Financial Management*, 17(2), 260-285.
- Porter, M. E. (1992). Capital Disadvantage: America's Failing Capital Investment System. *Harvard Business Review*, 70(5), 65-82.
- Quinn, R.E. and K. Cameron, "Organizational Life Cycles and Shifting Criteria of Effectiveness: Some Preliminary Evidence," *Management Science* 29 (1983), pp. 33-51.
- Sigler, K., & Sigler, J. (2015). CEO Pay Complexity. *Compensation & Benefits Review*, 47(2), 71-74.
- Stammerjohan, W. (2004). CEO Compensation and Subsequent Firm Performance: An Empirical Investigation. *Corporate Ownership and Control*, 2(1), 86-103
- Sundaram, R., Yermack, D., 2007. Pay me later: inside debt and its role in managerial compensation. *Journal of Finance* 52, 1551-1588.
- Tosi, H., Werner, S., Katz, J., & Gomez-Mejia, L. (2000). How much does performance matter? A meta-analysis of CEO pay studies. *Journal of Management*, 26(2), 301-339.
- Wei, C., Yermack, D., 2011. Investor reactions to CEOs' inside debt incentives. *Review of Financial Studies* 24, 3813-3840.