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## Article

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## DOES A “CEO CHAIRMAN” GUARANTEE BETTER PERFORMANCE FROM A FIRM?

Pavel Srbek<sup>1</sup>, Ludwig O. Dittrich<sup>2</sup>

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### Abstract

This paper provides a brief review of the state of knowledge in the field of agency theory. The managerial power approach assumes that a chief executive officer is able to affect the scale of his or her pay. However, Kaplan (2012) and others see a different picture of the corporate-governance landscape, hence they provide certain market-based explanations for high compensation. Our paper examines the relationship between a firm’s performance and the amount of managerial compensation, and the ability of a CEO to affect a board’s decision regarding his or her total compensation. The dataset consists of 75 companies traded in the capital market in the US. Our panel dataset covers a 10-year period from 2004 to 2013. We developed a single equation panel data model. The resulting parameter values provide a different picture of CEO power and the interconnection between a firm’s performance and CEO pay in both sectors.

### Keywords

Agency Problem, Incentive Plan, Board of Directors, CEO Compensation, Realized Pay

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### I. Introduction

Benjamin Graham, in his book “Security Analysis”, states that it is questionable whether the level of managerial compensation in large corporations is adequate. From his point of view, the answer is hidden in the extent to which the success of a firm is a result of the unique skills of a manager. This might not be easily measurable. Graham thought that the “Securities Exchange Act of 1934” would force companies to disclose details regarding managerial compensation and the pressure exerted by stockholders would limit compensation. However, this has not happened. Furthermore, the difference between the

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amount of the average compensation of CEOs and the average wage of workers has increased significantly. Kaplan (2012) states that the median compensation of S&P 500 managers is 165 times greater than the median income of households in the US. The income inequality is an interesting problem for experts as well as for the public. The aim of our paper is to reexamine the relationship between a firm's performance and the CEO's contribution to it. The original question is still valid: are CEOs paid for performance? This question is the foundation of the agency theory. Two basic approaches are used when researchers grapple with the agency problem.

The first approach defines and then examines the tools used to reduce the agency costs. The agency costs occur whenever the ownership and the management of a firm split. This statement is a simplified definition of the agency problem described in Jensen and Meckling (1976). Tools used to reduce the agency costs include equity-based compensation and the board of directors. The board of directors should defend stockholders' interests, set managerial compensation, and provide advice on questions of strategic importance (Baysinger, Butler, 1985). Most researchers assume that the CEO has a certain level of managerial power, i.e. that he or she has the ability to affect board decisions about the size of compensation packages. For this reason, we can call this the “managerial power approach”, in line with Fried and Bebchuk (2003). These researchers, assuming some level of managerial power, examine the effectiveness of boards and stock options in dealing with the agency problem.

The second approach disagrees that “managerial power” is a sufficient explanation of the CEOs' ability to obtain a surplus. Murphy's (2012) paper is an example of such detailed criticism. Kaplan (2012) goes much further and states that the “managerial power story”, as supported by Fried and Bebchuk, is not as “hot” as they suggest. He concludes that managerial compensation simply follow a long-term trend and are definitely not higher, in relation to the market capitalization of the 500 biggest companies, than in the thirties and forties of the last century (Kaplan, 2012, p. 14). Those researchers who disagree with “managerial power” offer an alternative. The increase in managerial compensations can be simply explained by market forces. Murphy and Zájbojník (2004) and Frydman and Saks (2010) conclude that the increase in top manager compensation is caused by greater competition in the market for talents. Kaplan (2012) suggests an explanation based on developments in technology and the growth in size of companies. Large multinational corporations require much broader scope of knowledge and abilities from a CEO. Experts in a dedicated field are not necessarily required, while expert knowledge of finance, law, accounting and management is preferred. Hence, such managers with universal skills, without any need for a deep understanding of firm-specific matters, can easily be replaced. This results in greater competition in the market for managers. Firms are willing to pay more to get the most talented CEO. This rationale may be supported by the increase in CEO turnover (Kaplan, 2012, p. 24).

Thus, what is the current state of knowledge suggested by empirical studies? Do incentive packages really provide a stimulus to performance? Are compensation plans related to performance? Is a CEO able to affect the board of directors and inflate his or her own compensation? Below, we provide a review of the relevant empirical studies and present

the results of our study, which examines determinants of CEO compensation in two sectors – basic materials and consumer goods.

## II. Literature Review

Many empirical papers examining the relationship between the performance of a firm and CEO pay have been published since 1976, at which point the agency problem was defined by Jensen and Meckling in their famous paper “*Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*”. Corporate-governance practices have changed significantly since the seventies. Jensen and Meckling (1976) assumed that an owner of a firm is also the manager and the agency problem arises when he or she decides to raise capital through the issue of new stocks or bonds. Investors may be suspicious as to whether or not the owner-manager is maximizing their wealth. As a result, they have to spend some funds to control the manager. In theory as well as in practice, two tools are considered and used – the board of directors and the incentive plan.

The board of directors is a control mechanism embodied in the organizational structure of a firm. Signs of similar supervisory bodies can be found in official documents from the 17th century (Gevurtz, 2004). It is quite common practice that a CEO simultaneously undertakes the function of the chairman of the board of directors. In our dataset, the duality of these functions takes place two thirds of the time. Out of 750 observations (75 companies in a 10-year period) only 244 times were the CEO and chairman different persons, i.e. only in one third of cases. Since this duality seems to be standard, this raises an important question: Is the board of directors independent regarding CEO pay? Of course, the “Securities Exchange Act of 1934” requires a compensation committee to be established by the board. Members of this committee have to be determined by the board as independent. The independence criteria are defined in the “NYSE Listed Company Manual”, while the “Securities Exchange Act” also refers to the stock exchange rules. The so-called Dodd-Frank Act (“The Wall Street Reform and Consumer Protection Act of 2010”) amends the “Securities Exchange Act of 1934” with section 10C, which governs the composition of the compensation committees. The theory of managerial power concludes that such provisions cannot guarantee that the board/committee will act in the best interest of stockholders. Cyert et al. (2002) found that CEO pay is 20–40% higher when the CEO is also the chairman of the board. The composition of the board is significant, according to Core et al. (1999). If the number of directors is higher, then CEO compensation is higher, since the board of directors is unable to reach a consensus and form a strong opposition to the CEO. The higher number of boards a director is sitting on, the greater the compensation of the CEO (Core et al., 1999). On the other hand, Panayiotis et al. (2014) disagree and state that “busy directors” in the board contribute to a firm’s performance. The presence of a beneficial owner (owner’s share higher than 5%) is a significant brake to CEO pay, according to Cyert et al. (2002) and Schleifer and Vishny (1989). Bertrand and Mullainathan (2001) conclude that in companies without a significant share of a beneficial owner, CEO compensation is based on variables affected by random events, such as an increase in crude oil prices, interest rate movement, and

prevailing market trends. Hartzell and Starks (2003) confirm these conclusions, stating that, in companies where a significant share is held by institutional investors, CEO pay is more likely to be related to performance and be lower. Such evidence is considered a significant proof of managerial power by proponents of the managerial power approach. The second tool used to coordinate CEO and stockholder interests is equity-based compensation. This compensation is – in the form of stock options and restricted stocks – just part of an incentive plan, but it is very often the most significant one. The Dodd-Frank act amended the Securities Exchange Act where the disclosure of pay in relation to a firm’s performance is required in Section 14. Options are very popular with public and regulatory authorities. The underlying reason is that the CEO is rewarded if a firm performs better than its competitors. The resulting increase in stock prices allows the CEO to exercise his or her options with significant gain. Meanwhile, stockholders are rewarded through the increase in the stock price, and therefore they can realize a capital gain. Unfortunately, this simplified picture does not represent the complex nature of reality. Fried and Bebchuk (2003) state that the result is again highly affected by chance, although in favor of the CEO. The options are most often “at the money”. In this case the exercise price is equal to the market price at the moment of the distribution of the CEO compensation for a given year. Fried and Bebchuk (2003) suggest the use of some goals (share price, EPS) which must be reached to get a certain part of the planned options. In 2001, only 5% of the 250 largest US companies used some kind of precaution to eliminate the random effect (Levinsohn, 2001).

### **III. Model**

Other authors’ models can be divided into two groups. In the first group there are authors who do not use an explicit model to empirically verify or falsify the managerial power hypothesis. Such authors have just focused on a historical trend in CEO pay, the instruments used in a compensation plan, etc. Murphy (2012) and Piketty (2014) can be considered proponents of this approach. Other authors in this group, for example Kaplan (2012), have aimed at the comparison of growth and the absolute value of top manager compensation in relation to other high income groups in the US. The authors in the second group are concerned with econometric analysis and try to model in the broadest sense the relationship between a firm’s performance and CEO pay using various control variables which represent the composition of a board of directors and its power, the effectiveness of stock options as an incentive instrument, etc. This kind of econometric analysis involves panel data models although the choice of estimation methods is not discussed in these papers (for example, Panayiotis et al., 2014 and Amran et al., 2013). Both groups are almost exclusively focused on publicly traded firms.

We focused on the relationship between managerial compensation and a firm’s performance in our model. Our dataset consists of 75 firms traded on the US stock market, out of which 23 companies operate in the sector of basic materials and 52 in the sector of consumer goods. The firms in our dataset belong to the largest companies in each industry. Our goal was to include at least one company from each industry in both sectors. The authors can, upon request, provide elementary descriptive statistics, or the whole

dataset. Complete 10-year time series and that the firm be headquartered in the US were additional requirements. Data on companies are available for a 10-year period from 2004 to 2013. Each firm in our panel dataset is defined by a set of financial ratios – ROA, EPS, 3-year moving average of change in revenue, and by a set of corporate governance and compensation policy characteristics, such as the firm’s age, duality of functions, and stock options exercise. Financial ratios were obtained from the investor service database, Morningstar. The values of the variables regarding corporate governance matters were obtained from DEF 14A forms. This proxy statement is required in the section 14 of the “Securities exchange act”. All such filings are available in the Securities and Exchange Commission database called Edgar.

The model was estimated in the following form:

$$\begin{aligned} \text{Log\_Compensation}_{it} = & \gamma_1 + \gamma_2 \text{CEO\_Chair}_{it} + \gamma_3 \text{CEO\_Exercised}_{it} + \\ & + \gamma_4 \text{Delta\_Rev\_3Y\_AVG}_{it} + \gamma_5 \text{EPS}_{it} + \\ & + \gamma_6 \text{ROA}_{it} + \gamma_7 \text{Age}_{it} + u_{it} \end{aligned} \quad (1)$$

### Variables description

In our model (1), the endogenous variable is expressed as decadic logarithm of total compensations. We have assumed that the appropriate representation is so-called “realized-pay”, which includes annual salary, bonus, and other non-equity compensations; restricted stock, and the realized value of exercised stock options in a given year. When we are interested in the relationship between a firm’s performance and managerial pay, this type of compensation is more useful, since it more realistically represents the true reward for the CEO. More detailed discussion can be found in Kaplan (2012, p. 1–3) and Murphy (2012, p. 5–18).

*CEO\_Chair* is a dummy variable taking on the value of 1 when the CEO was the chairman of the board of directors in a given year. The above-mentioned paper indicates (Cyert et al., 2002) that the duality of functions implies higher compensation. This relationship may confirm the “managerial power story”.

Next variable – *CEO\_Exercised* – is also a dummy variable. It is equal to 1 when the CEO exercised stock options in a given year. The value of exercised stock options represents a relatively important part of CEO pay. If options are exercised, the realized value represents more than 37% of the total compensation in a given year on average. This variable is included to capture the extent to which options contribute to total compensation. The variable *Age* represents the number of years since a company was established. Some authors (Gabaix, Landier, 2008) suggest that growth in CEO pay is simply the consequence of a company’s size growth. Our dataset consists of the largest and very often also the oldest companies in a given sector and industry. We are aware of the fact that the variable size, most often expressed as a logarithm of total assets, should be a natural choice to represent the size of a firm, but we found out that this variable is statistically insignificant. Furthermore, other authors (Panayiotis et al., 2014, Amran et al., 2013 and Ibrahimy and

Ahmad, 2012) used the variable age and formulated certain hypotheses regarding the interconnection between the age of a firm, its performance and compensation. To falsify such age-related hypotheses, we have decided to include the variable *Age* rather than the insignificant variable *Size* in our model.

*Delta\_Rev\_3Y\_AVG* is the 3-year moving average change in sales revenue. We expect that a capable CEO can affect a firm’s merchandising efficiency, which in turn results in an increased level of sales. The change in revenue is an appropriate measure of a firm’s performance, since it cannot be easily affected by varied accounting practices.

*EPS* represents earnings per share. This variable is often used as a performance goal set up by the board of directors. Such information regarding performance goals can be found in every DEF14A form, most often in the section “Compensation Committee Report”. A greater value for *EPS* in a given sector should lead to greater CEO pay.

*ROA* constitutes widely used measure of a firm’s performance, which is preferable since it is less vulnerable to accounting adjustments. On the other hand, *EPS* is subject to such artificial improvements. As a result, the performance of a firm is measured in three ways – the first is represented by the change in sales. Better than average growth in sales may indicate merchandising superiority. The second is the *ROA* as a measure of operating efficiency, because it uses operating profit in relation to total sources used in a transformation process. And finally, performance is represented by *EPS*, the figure in which owners-stockholders are interested the most and also the one which is often used as a goal set up by the board for the firm to reach. All of these three parameters can be influenced by the CEO. We included all of them in order to measure which is the most influential with regard to CEO pay. Is the “middle-run” sales revenue growth superiority relevant? Or rather the performance measured on the operating level? Or could the CEO’s goal expressed as a certain level of EPS in a given year be the most influential variable.

### Fixed-effect Estimator

Regressors used in our model are not correlated. We used non-parametric Spearman’s correlation coefficients because regressors are not normally distributed. Multicollinearity between regressors is not present in our sample. The correlation coefficients do not exceed 64% in both sectors. The highest correlation coefficient is between *EPS* and *ROA* in the sector of basic materials where Spearman’s rho is equal to 0,636. This value indicates that both, the high multicollinearity ( $r > 0,8$ ) and perfect multicollinearity ( $r = 1$ ), are not present.

According to both tests – the Breusch-Pagan test and F-test for differing group intercepts – whose p-values are very small, meaning that both null hypotheses are rejected, therefore the use of a simple pooled OLS model is inadequate and for the estimation of the slope coefficients of the regressors it is more suitable to use the fixed or random effect estimator. The random effect estimator is based on the assumption that unobserved heterogeneity can be considered uncorrelated with the variables included in the model. Then the group-specific effect is captured by the combined random term and its value is unknown. On the other hand, the fixed effect estimator (FEM) assumes that the unobserved heterogeneity, i.e. variables not included in the model, is correlated with regressors. More detailed

discussion regarding the panel data regression can be found in Gujarati (2004) and Green (2012). Moreover, the rejection of the null hypotheses of Breusch-Pagan test, stating that the variance of the unit-specific error is equal to zero, indicates the presence of heteroscedasticity, for that reason robust standard errors estimator should be used.

Finally, we used the fixed effect estimator to estimate the slope coefficients of our model, since the assumption of the residuals' independence of the regressors is violated,  $E(\mu_i|X_{it}) \neq 0$  (Hausman, 1978). This means that unobserved heterogeneity is correlated with regressors, therefore FEM was used. The p-value of the Hausman's test, which is also called the specification test, rejects the null hypothesis in both sectors (the p-values for basic materials and consumer goods sectors are very small, less than  $10^{-9}$ ). As a result, the random effect estimates are considered inconsistent and the fixed effect estimator is preferred. The robust estimator of the covariance matrix suggested by Arellano was used since it provides a tool to "calculate heteroscedasticity and serial correlation consistent standard errors for within-groups estimators of a linear regression models from panel data" (Arellano, 1987, p. 431).

**Estimated values of slope coefficients**

In both sectors the coefficient of determination exceeds 40%. Concretely the model explains 56% and 42% in the variability of the endogenous variable in the consumer goods sector and basic materials sector respectively across time.  $R^2 = 0,2$  in panel data model is worth mentioning according to Green (2012), therefore we consider our model to be relevant. The slope coefficients of the following variables are significant on the 10% significance level in the consumer goods sector – CEO\_chair, CEO\_exercised, Delta\_Rev\_3Y\_AVG, EPS, and ROA. In the sector of basic materials slope coefficients of all variables are significant on  $\alpha = 0,05$ , except EPS, which seems to be insignificant in this sector. Our model explains almost 56% of the variability in endogenous variable Log\_Compensation across time in the consumer goods sector and almost 42% of the variability across time in the sector of basic materials.

**Table 1: Slope coefficients of the exogenous variables in the consumer goods sector**

Consumer Goods				
Endogenous Variable:	Log_Compensation			
Variable	Coefficient $\gamma_i$	Standard deviation	T-test, p-value	Unit change results in
Constant	-0,4194	0,7466	0,5746	
CEO_chair	0,0750	0,0429	0,0815	1,1885
CEO_exercised	0,2595	0,0416	0,0000	1,8176
Delta_Rev_3Y_AVG	0,4602	0,1446	0,0016	1,0107
EPS	0,1609	0,0353	0,0000	1,4484
ROA	-3,3580	1,1260	0,0030	0,9256
Age	0,0108	0,0085	0,2054	1,0252
SSE				66,5532
MSE				0,3800
Within R-squared				0,5583

Source: Stockholder reports, DEF14 forms, and Morningstar.com database, own calculations



The variables *EPS*, *CEO\_Ex* and *CEO\_chair* are highly significant regarding total amount of CEO pay in the consumer goods sector.

$$\begin{aligned} \text{Log\_Compensation}_{it} = & -0,4194 + 0,075 * \text{CEO\_Chair}_{it} + \\ & + 0,2595 * \text{CEO\_Exercised}_{it} + 0,4602 * \Delta \text{Rev}_{it} + \\ & + 0,1609 * \text{EPS}_{it} - 3,358 * \text{ROA}_{it} + 0,0108 * \text{Age}_{it} \end{aligned} \quad (2)$$

If earnings per share increase by 1 dollar, total compensation goes up by 45% on average. This indicates that *EPS* is an important measure of CEO performance in the consumer goods sector. The exercise of stock options results in an increase in compensation of 81,78%. The duality of functions implies an almost 19% increase in CEO pay on average. The higher compensations resulting from the simple fact that the CEO is undertaking the function of chairman of the board simultaneously is unjustifiable on economic fundamentals and it supports the assumption of the managerial power approach that the CEO has a certain degree of power to affect the board in question regarding his or her own compensation. The impact of the two remaining variables (*ROA* and *Delta\_Rev*) is relatively unimportant and questionable, hence the expected relation between these variables and total compensation is in direct proportion. However, the slope coefficient of *ROA* indicates the relationship of reciprocal proportion. If *ROA* increases by one hundred basis points, our model indicates a 7,4% decrease in CEO pay. The reason for that relation is unclear. The increase of one hundred basis points in the middle-run revenues' growth implies almost exactly proportional growth in total compensation.

**Table 2: Slope coefficients of the exogenous variables in the basic materials sector**

Basic Materials				
Endogenous Variable:	Log_Compensation			
Variable	Coefficient $\gamma_i$	Standard deviation	T-test, p-value	Unit change results in
Constant	-2,3718	0,4465	0,0000	
CEO_chair	0,2321	0,0718	0,0014	1,7065
CEO_exercised	0,3043	0,0274	0,0000	2,0151
Delta_Rev_3Y_AVG	0,2372	0,1030	0,0244	1,0055
EPS	-0,0075	0,0057	0,1929	0,9829
ROA	0,8715	0,3452	0,0124	1,0203
Age	0,0455	0,0062	0,0000	1,1105
SSE				9,8062
MSE				0,2209
Within R-squared				0,4182

Source: Stockholders reports, DEF14 forms, and Morningstar.com database, own calculations

As well as in the consumer goods sector the variables *CEO\_chair* and *CEO\_Ex* significantly affect the amount of total compensation in the sector of basic materials. Furthermore, the contribution of these variables is much stronger.

$$\begin{aligned} \text{Log\_Compensation}_{it} = & -2,3718 + 0,2321 * \text{CEO\_Chair}_{it} + \\ & + 0,3043 * \text{CEO\_Exercised}_{it} + 0,2372 * \Delta \text{Rev}_{it} - \\ & - 0,0075 * \text{EPS}_{it} + 0,8715 * \text{ROA}_{it} + 0,0455 * \text{Age}_{it} \end{aligned} \quad (3)$$

If the CEO of a company operating in the basic materials sector exercises his or her stock options, the amount of compensation realized in a given year goes up by more than 100%. The influence of the duality of functions is much more important than in the consumer goods sector. If a CEO also undertakes the function of chairman, as a result his or her total compensation is higher of more than 70% on average. Furthermore, the slope coefficient of *EPS* is statistically insignificant according to t-test. It indicates that *EPS* is not an important factor taken into account by the board in decisions regarding CEO pay. In this light it is also interesting that one additional year since a company has been established implies an 11 percent increase in the amount of total compensation on average, whereas in the consumer goods sector the variable *Age* is insignificant. The impact of the two remaining statistically significant variables (*Delta\_Rev* and *ROA*) seems marginal in comparison with the impact of the duality of functions and the stock option exercise. The positive values of both slope coefficients are in line with expectations – higher return on assets and higher middle-run growth in revenues should lead to higher CEO pay. However, the contribution of each of these variables is relatively low. If *ROA* and change in revenues increase by one hundred basis points, CEO compensation increases by 2% and 0,5%, respectively.

#### IV. Results and discussion

Coefficient values differ significantly between both sectors. In the sector of basic materials, the duality of functions leads to an increase in compensation of nearly 71% on average. If options are exercised, CEO pay nearly doubles on average. On the other hand, in the consumer goods sector the duality results in an increase in CEO compensation of more than one fifth and the option exercise implies an increase of more than four fifths. In the sector of consumer goods, *EPS* seems to be an important factor affecting CEO pay. An increase of a single dollar in EPS results in a 45% increase in total compensation on average. These results confirm former findings (Cyert et al., 2002) and from our point of view they also support the idea that the CEO has the ability to affect his or her pay. However, Kaplan (2012) states that this is not a satisfactory explanation. According to him, one may also explain why the relationship between CEO pay and the other high income groups has remained unchanged for years and decades, especially if such groups are not suspected of managerial power effects (e.g. lawyers, athletes). We are not able to provide an explanation of this relatively constant relationship between CEO pay and other top income groups. On the other hand, it seems to us at least strange that the duality

of functions magnifies total compensation that much, especially in the sector of basic materials (71% in the basic materials and 19% in the consumer goods sector). The decision as to whether a CEO undertakes the position of chairman simultaneously is a corporate-governance decision and is not related to a company's performance. Figures A and B in the appendix of the subgroup comparison show that it is indifferent as to whether a CEO undertakes the position of chairman or not. The distribution of performance measures (*EPS*, *ROA*) is identical in those firms and years when the CEO does not undertake the position of chairman as well as in the same situations when the manager holds both offices. The graphical analysis is more conclusive in the sector of consumer goods than in the other sector. However, based on the graphical analysis using box plots and the subgroup comparison, this conclusion is supported by the result of the two-sample Kolmogorov-Smirnov test. In accordance with the null hypothesis, both samples come from a population with the same distribution. The null hypothesis cannot be rejected and therefore *EPS* and *ROA* classified into two groups (CEO is/is not a chairman) come from the same distribution. Also, the medians do not differ within the two categories of *CEO\_chair*. We obtained the same result for a three-year moving average of the revenue change in the basic materials sector. The null hypothesis for this variable is rejected in the sector of consumer goods. Mean is equal to 0,0798 when the CEO is not chairman simultaneously and 0,096 when he or she is. The medians are 0,0448 and 0,0746, respectively. This difference in the consumer goods sector may be affected by extreme values of revenue change in the period 2005–2007 in the company Jarden Corporation, which had experienced very high 3-year moving averages in revenues growth. Therefore, we conclude that this bias is not significant. As a result, the choice of certain corporate governance structure does not affect a firm's performance. We therefore consider “managerial power” an appropriate explanation of our finding of higher CEO pay in firms where the CEO simultaneously serves as chairman.

Gabaix and Landier (2008) conclude that the increase in CEO pay can be simply explained by the growth of companies' sizes across time. However, our model indicates that the variable *Age* is insignificant regarding its relation to the total compensation in the sector of consumer goods. On the other hand, the contribution of this variable to total CEO pay is relatively significant in the basic materials sector (one additional year implies an 11% increase in CEO pay on average). If we use logarithm of total assets to represent a company's size instead of the variable *Age*, its slope coefficient is insignificant, for that reason it was excluded from our model and only the variable *Age* represents the size of the company. It is assumed that successful firms will grow in size with the passage of time. When we look at the relationship between the logarithm of total assets and relative total compensation, which is expressed as the ratio of total compensation in a given year to the size of a firm measured by total assets, it also does not support the significance of a firm's size as an explanatory variable regarding CEO pay. Figures for both sectors can be found in the appendix (Fig. C, D).

Moreover, it is an interesting contrast that a CEO can significantly affect his or her compensation in a sector considered highly cyclical. In the basic materials sector a firm's performance is highly dependent on general economic conditions. So its performance is

highly dependent on factors beyond the influence of the CEO. On the other hand, the consumer goods sector includes industries predominantly considered noncyclical. We can expect that the CEO is able to affect the performance of such a firm using his or her capability; however, the increase in pay is more than three and half times lower if the CEO undertakes the chairman position in this sector.

## V. Conclusion

Murphy's summary of the managerial compensation problem provides an apologetic conclusion: "*Indeed, what makes CEO pay both interesting and complicated is the fact that the efficient contracting, managerial power, and political paradigms co-exist and interact*" (Murphy, 2012, p. 156). Our model indicates that a CEO's realized pay is significantly higher if the CEO simultaneously undertakes the position of chairman of the board of directors. However, this effect differs between sectors. In the sector of consumer goods, the increase in CEO pay is equal to 19%. In the basic materials sector, it increases CEO pay by more than 70% on average. The exercising of stock options causes a massive increase in total compensation (82% in the consumer goods and 101% in the basic materials sector). This confirms the importance of stock options in incentive plans; however, Murphy (2012) provides evidence that the share of stock options in total compensation has decreased and stock options are being replaced by restricted stocks. He also provides a figure of the long-run development of the amount of equity (restricted stock, options) and non-equity pay covering the period from the 1970s to 2010. Despite the fact that he uses "grant-date pay" and we use "realized pay", our model supports the conclusion that equity pay is becoming more and more important.

The reason for the increase in CEO pay is the combination of the above-mentioned facts – the support of equity based compensation by regulatory authorities, closer ties between compensation and performance required by legislation and stockholders, higher competition in the market for talents; the "managerial power story" also plays its role. We conclude that the higher compensation paid to CEOs who undertake the position of chairman cannot be simply explained by means of "market forces stories".

However, the endless contemplation of the optimal incentive plan setup results in potential failure being seen in every single aspect of human action. Should the performance related part of total compensation be adherent to a firm's performance linearly or nonlinearly? How should we even measure performance? Will our endeavors not be more likely to lead to a game with numbers and to an artificial improvement of certain indicators which are actually used as a criterion of performance assessment? Unfortunately, such an incentive plan eliminating the necessity of these questions can never be created. It seems to us as though trust has completely disappeared from our vocabulary. The cause may be the increase in the cost of failure. The cost of failure is much greater in highly specialized market-oriented societies – i.e. in modern capitalist societies – than in the past, when everyone's participation in the final output was greater. In those times top managers were also majority owners and taxpayers did not have to pay for the wrong estimates of someone else.

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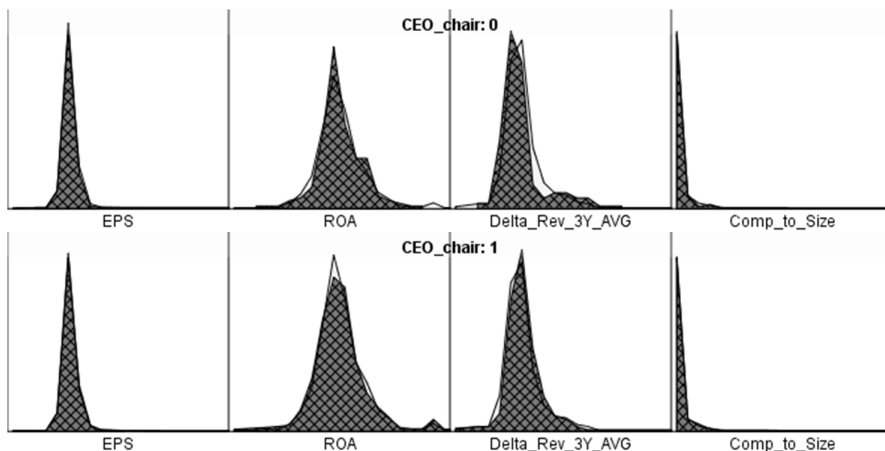
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**Appendix**

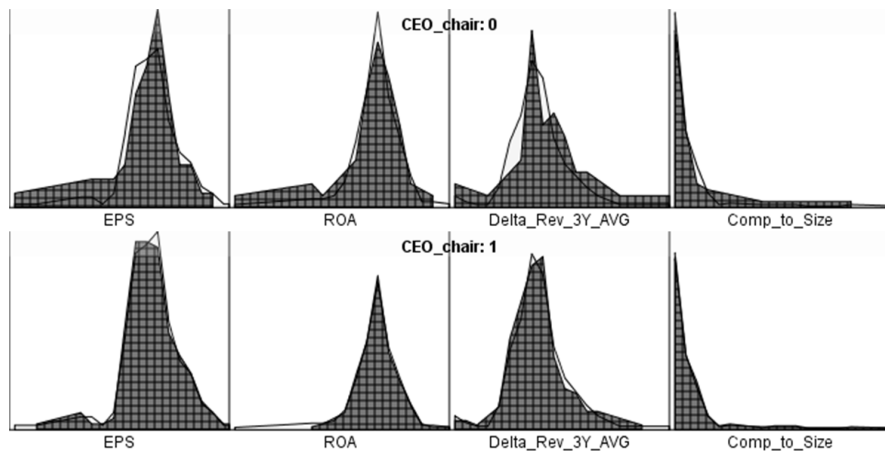
**Figure A: Subgroup comparison in the consumer goods sector**



Note: Subgroups are defined by the CEO\_chair variable where 1 stands for the duality of functions, the entire sample distribution is represented by the white area under the curve, whereas the dark grid area represents a given subgroup.

Source: Stockholder reports, DEF14 forms, and Morningstar.com database, own calculations

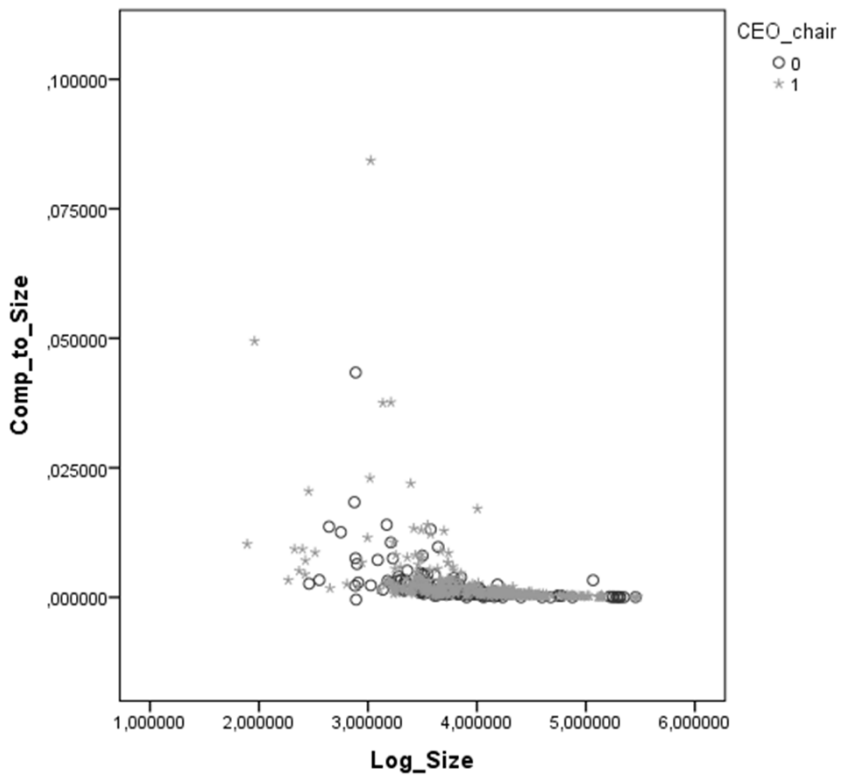
**Figure B: Subgroup comparison in the basic materials sector**



Note: Subgroups are defined by the CEO\_chair variable where 1 stands for the duality of functions, the entire sample distribution is represented by the white area under the curve, whereas the dark grid area represents a given subgroup.

Source: Stockholders reports, DEF14 forms, and Morningstar.com database, own calculations

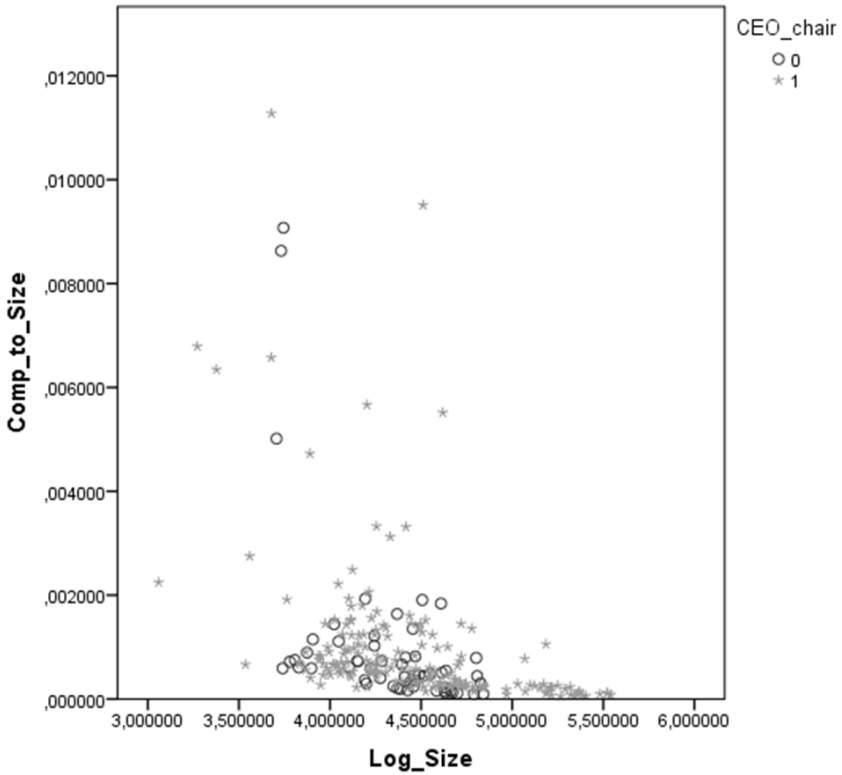
**Figure C: Relation between the size of a firm and relative compensation in the consumer goods sector**



Source: Stockholder reports, DEF14 forms, and Morningstar.com database, own calculations



**Figure D: Relation between the size of a firm and relative compensation in the basic materials sector**



Source: Stockholder reports, DEF14 forms, and Morningstar.com database, own calculations