

ERASMUS UNIVERSITY ROTTERDAM

Erasmus School of Economics

Master Thesis [programme Accounting, Auditing & Control]

The effect of peer performance on the performance-turnover relation.

Name student: Sander Zoodsma

Student ID number: 424660

Supervisor: Jingwen Zhang

Second assessor: dr. Ying Gan

The content of this thesis is the sole responsibility of the author and does not reflect the view of either the supervisor, second assessor, Erasmus School of Economics or Erasmus University.

Abstract

CEO turnover is a controversial topic and receives much attention from many stakeholders. Using a logit regression analysis with a sample of 10.000-panel data observations from the WRDS database from 2006 to 2019, I investigate the effect of peer performance on the performance-turnover relation. I found no statistical evidence of the increased probability of CEO turnover if the peer firms perform better than the focal firm. The focal firm does not choose peer firms for turnover purposes but compensation purposes. Higher-performing peers have a significant positive effect on the future compensation of the CEO. It is not an efficient policy to rely on the performance of peers to set CEO future compensation. Peer firms keep each other in balance in order to maintain their compensation advantage, regardless of the quality of the CEO. The increase in future compensation of the CEO, based on relative performance evaluation, is counter-productive and pointless.

Keywords:

Peer group analysis, Relative performance evaluation, CEO turnover, CEO compensation

Table of contents

Introduction..... 4

Literature review 7

 Hypothesis development 8

Research Design 12

 Peer group analysis 13

 Control variables 15

 Data Origin..... 16

 Data Composition..... 16

 Descriptive Statistics 18

Results 20

 Main Results 20

 Sensitivity Analysis 24

 Earnings per share (EPS)..... 24

 Return on Assets (ROA) 25

 Interpreting the Hypothesis & the Research Question 27

 Conclusion & Discussion..... 36

 Internal & External Validity 36

 Limitations 37

 Recommendations for Future Research..... 37

Appendix..... 38

Bibliography..... 45

Introduction

Recently, a trend has emerged towards the adoption of relative performance evaluation in Chief Executive Officer (CEO) compensation contracts (Bizjak et al., 2020). The amount of compensation the CEO receives increasingly depends on the performance of other firms in recent years. I am wondering if the performance of others influences CEO turnover decisions and to what extent relative performance evaluation has been used.

The likelihood of CEO turnover is sixteen per cent, indicating an average tenure of approximately six years (Kaplan & Minton, 2006). CEOs are responsible for the companies' reported financial statement and weak performance could lead to a replacement. Huson, Parrino and Starks (2001) showed that the frequency of CEO turnover has statistically increased over time. After the adoption of IFRS, firms document a higher CEO turnover sensitivity relative to firm performance. When companies report more extensive changes in accounting figures, the adoption of comparative performance evaluation in CEO dismissal decisions will be more substantial (Zhang & Wu, 2019). Peter and Wagner (2014) elaborate that CEO's of firms who are part of the volatile industry environment has a higher dismissal risk. Higher volatility leads to more substantial peaks and troughs in a company's performance. The turnover rate increases because of the greater downwards shocks. Downwards shocks increase the probability of CEO turnover. CEOs have been blamed for the adverse shocks, while it is an industry-wide issue. I am going to investigate whether the performance of firms in the same industry influences the CEO turnover decision. The effect of volatility in the market on CEO turnover will probably be filtered out if the performance of firms in the industry is taken in mind. CEOs will probably be less blamed in an unfavourable economic climate, because of the similar external financial situation of the peer firms.

The relation between firm performance and CEO turnover is well proved in prior literature, but a company's standalone performance does not explain much of the variation in CEO turnover. Brickley (2003) pointed out that the literature has reached a diminishing return effect on the performance-turnover relationship. Firm performance explains not much of the variation in CEO turnover. Other less-explored issues, such as CEO age, has to be considered to improve the understanding of the replacement of the CEO. A gap arises between the existing literature and the explanatory power of CEO turnover. This thesis jumps in the gap by adding the relative average performance of peer firms to the current theories in the performance-turnover context. Peer performance is a less-explored issue in previous literature. How peer performance affects the relation between firm performance and CEO

turnover is not ex-ante clear. This paper helps to understand the underlying reasoning of CEO turnover. It investigates what the underlying background reasoning is to fire a CEO, especially in comparing the focal firm with comparable peer firms.

The research question states as follows: 'What is the effect of peer performance on the performance-turnover relation?'

The composition of the peer group is constructed based on peer data for benchmarking compensation comparisons. Other characteristics for identifying firms in the peer group are the industry profile, the size and the market capitalization. The paper uses a logit regression to analyse the research design. The sample consists of 10.000-panel data observation from the different WRDS databases ranging from 2006 to 2019. Stock return is the performance indicator for the focal- and the peer firms. The results are robust for the Earnings per Share (EPS) sample and Return on Assets (ROA) sample. Four cases behind the differences in performance between the focal firm and the peer firms are expressed, which lead to the hypothesis. The paper test whether peer performance increases the probability of CEO turnover if the peer firms perform better than the focal firm. I found no statistically significant evidence of an effect of higher-performing peers on the CEO turnover decision of the focal firm. The focal firm does not choose peer firms for turnover purposes but compensation purposes. The linear regression analysis shows a statistically significant effect of peer performance on the future CEO compensation of the focal firm, both the stock return - and the EPS sample. It is not an efficient policy to rely on the performance of peers to set CEO future compensation contracts. Peer firms keep each other in balance in order to maintain their compensation advantage, regardless of the quality of the CEO.

The results give an insight into the underlying reasoning for CEO turnover, which affects real-world business operations. Firms ignore peer firms in making the CEO turnover decision. Weak performance could be out of the reach of the CEO due to external market conditions. The CEO is sacrificed, even though this had nothing to do with his performance. Besides, government policies may draw up rules for comparing the salary of the CEO with higher-paid CEOs in the peer group. Pay-for-performance should be introduced to measure the amount of compensation.

The rest of the paper is organised as follows. Section II consists of the literature review and the development of the hypothesis. In this section, I find theories supporting the hypothesis. Section III discusses the research design. The research design includes the methodology - and data section. The format of the peer group will be analysed in the methodology part. The data section consists of the origin of the data, the composition and the preparation of the data. The explanation of the moderator variables and the corresponding control variables are summarized in the descriptive statistics. The results are presented in section IV. The hypothesis will be interpreted and an answer is formed on the research question. The sensitivity tests are presented in the result section for the robustness of the tests. The Libby box, for an overview of the research design, is presented in the Appendix.

Literature review

Firms have been struggling with benchmarking CEO contracts for years. Firms use benchmarking for comparing the performance of the CEO with the performance of the peer group (Lee et al., 2015). Economic benchmarks could be based on relative performance goals, stock returns of firms or other accounting measures, such as EPS or ROA. Firms offset the performance of their CEO against the performance of other firms in the peer group in making the CEO replacement decision. Interactions between firms and their peers affect corporate investment decision-making. Firms consider their competitors when making investment decisions. Park and Yang (2017) argue that peer companies' behaviour plays an essential role in corporate capital decisions. They assert that peer firm interaction has to be further examined. For example, leveraged firms are more dependent on the investment decisions of peers than unleveraged firms. Peer firm dependency can be sketched as a U-shaped curve when there is more competition in the industry. Seventy per cent of the financial decisions are made based on the financial decisions of competitive companies (Leary & Roberts, 2014).

Firms tend to pay out dividends and do share repurchases in periods when they cannot afford it because of the pressure from shareholders. Shareholders threaten with a switch to a similar company who still pays out dividend and anticipate the effects of peer competition (Grennan, 2019). Companies copy the decisions of their peers to keep their competitive advantage. The pressure of peers is more significant when the competition is high and when information asymmetry is low (Adhikari & Agrawal, 2018). Firms could easily observe the performance of other firms, which leads to increased external pressure. However, if the amount of information of a particular firm is limited, the information of peers has a larger effect on the decision-making process of the firm. A publicly-traded company is its own best comparable in contrast to private firms, where information is scarce (Bhojraj & Lee, 2002). Firm information replaces peer information as the information environment increases (Matsumoto & Shaikh, 2017). When public business information increases, information asymmetry reduces among firms in the same peer group (Shroff et al. 2017). To conclude, decision-making based on peer performance varies over time.

Recent studies showed the influence of a peer group on the decision-making process of a firm. Nevertheless, the influence of a peer group on the position of the CEO has not been unambiguously investigated. This paper contributes to a growing literature whether companies are affected by other comparable company's when making corporate decisions. It fills the void in prior literature that paid no attention to relative performance evaluation decisions in the field of CEO turnover.

Hypothesis development

Peer performance should be considered because replacing a CEO is associated with three measures of firm performance; relative performance evaluations to the industry, the performance of the industry compared to the market and the aggregate stock market performance (Kaplan & Minton, 2006). They believe that if the focal firm performs better than the industry, but operates in a less profitable market, the CEO will be retained. Warner, Watts and Wruck (1988) argue that the market-adjusted stock return better predicts dismissal risk than the absolute performance. The evaluation decision of a CEO cannot be executed well if the performance of peers is not taking into account. Firms tend to evaluate the performance of the CEO relatively to other firms in the peer group. It is challenging to observe the output of the CEO most of the time. Peer input on performance reviews is valuable to evaluate the output of a CEO (Gravett, 2017). It provides insurance against uncontrollable external shocks, which are out of the reach of the CEO. Peer firm comparisons are an effective alternative measure when taking into account industry shocks within the company's fundamentals (Lee et al., 2015).

Besides, peers comparability reduces the agency cost of firms, because it is easier to observe the relative capability of the CEO. Relative performance evaluation reduces the information asymmetry between the agent, which is the CEO of the company, and the principal, the shareholders of the company. The poor performance of a CEO will be noticed by comparing the focal firm with its peers. Relative performance evaluation enhances management to identify appropriate CEOs (DeFond & Park, 1999). Relative performance evaluation in CEO contracts yields a more informative overview of the actions of the CEO (Albuquerque, 2009). The principal-agent relation suggests that firms use relative performance evaluation to filter out the risk in a CEO's contract (Dikolli et al., 2013). Common economic theories predict that companies will use a relative performance evaluation if a company has greater exposure to risk. Relative performance evaluation enhances the use of matched-firm performance at reflecting on the performance of an agent, in this case the CEO. Relative performance

evaluation leads to risk-sharing advantages in performance contracts. A risk-averse CEO bears less risk and the firm can better evaluate the effort of the CEO (Gong et al., 2011). Stockholders can measure the relative performance of their CEO and company by comparing their financial figures with the financial data of comparable company's when deciding about the resignation of the CEO.

Four cases should be considered when discussing the effects of peer performance on the performance-turnover relation. Weak performance of the focal firm combined with higher performance of the peer group affects the relation between firm performance and CEO turnover positively. The CEO of the focal firm has a higher probability of dismissal. On the other hand, the better performance of the focal firm compared to the peer group affects the relation negatively in a way that the probability of retention increases. The following cases are possible when comparing the performance of the focal firm with companies in the peer group.

1. Low performance of the focal firm & low performance of the peer firms

When both the focal firm and the peer firms have low performance, the prediction is that CEO's will not be replaced. CEO's of loss-making firms will not be replaced if the peer group underperformed as well. Although, Agrawal and Cooper (2016) argue that negative financial statements of firms lead to higher CEO turnover. Jenter and Kanaan (2015) elaborated that CEOs lose their job after weak performance of the firm. Factors outside their control influence the probability of dismissal negatively. Fisman, Khurana and Rhodes-Kropf (2014) reasoned that, despite the weak performance of the company is not the fault of the CEO, pressure from stakeholders may force companies to fire CEO's when the aggregate stock market performance is weak. However, the association between market- and accounting measures and CEO turnover are related by properties that the probability of turnover will raise with decreases in accounting profit in companies where accounting profit is relatively informative about the performance of the CEO (Engel et al., 2003). Despite the negative outlook presented in previous studies, I expect that firms are not firing the CEO if the industry is underperforming as well.

2. Low performance of the focal firm & high performance of the peer firms

The prediction is that if peer firms perform better than the focal firm, the CEO of the focal firm is more likely to be dismissed. Performance of peers and the likelihood of a CEO turnover are affected positively and the relation becomes stronger if the company performs worse compared to the industry (Chakraborty et al., 2009). CEO's have a higher probability of

being fired following weak performance if the market or industry performs well. It is easier to change the direction of the company after the resignation of the CEO (Jenter & Lewellen, 2010). Denis and Sarin (1997) argue that forced CEO turnover is the consequence of a statistical decrease in the operating performance of the company. Scapegoating could be the reason to fire a CEO to restore the confidence of stakeholders and improve the image of the firm (Schwartz & Menon, 2017).

3. High performance of the focal firm & low performance of the peer firms

I expect that the CEO is not fired if the focal firm outperforms the group peer firms on average. The CEO of the focal firm is not going to be dismissed because of the good performance of the company.

4. High performance of the focal firm & high performance of the peer firms

I expect that it will not affect the CEO's dismissal decision if both the focal firm and peer firms perform well. Both companies make a profit, which does not lead to an incentive to fire the CEO. Nevertheless, when peer firms perform better in high economic periods, the probability of turnover of the CEO of the focal firm increases, despite making a profit. Furthermore, investors and the board of directors may conflict about the company's optimal future direction, which could lead to the resignation of the CEO (Edmans et al., 2017). The board of directors wants to take a different approach to sustain the high performance of the company.

Peer performance should be considered to give a complete picture of the level of CEO performance. The information that a peer review contains is comprehensive and informative. This paper investigates the effect of higher-performing peers on the dismissal decision of the CEO at the focal firms. Based on the recent literature, the underlying hypothesis is proposed.

Hypothesis H1. *Peer performance increases the probability of CEO turnover if the peer firms perform better than the focal firm.*

The standard economic theory predicts that companies filter out external industry shocks from the performance of the firm before they decide about the retention of the CEO (Morck et al., 1989). To empirically test the hypothesis H1, the prediction will be that relative performance evaluations are considered in making the CEO replacement decision. My prediction is that higher peer performance increases the probability of CEO turnover. The alternative null hypothesis is that the performance of peers does not have any effect on the performance-turnover relation. The evaluation to fire a CEO is just based on the absolute standalone performance of a firm.

Companies weigh the advantages and disadvantages of peer comparisons when analysing whether relative performance evaluation will be used in CEO performance contracts (Gong et al., 2011). A disadvantage of peer performance might be that expectations of performance could not be apparent to a CEO. It may be less clear what objectives are required of a CEO if performance is set against the peer firms (Gravett, 2017). Another possible drawback of comparability with peers is that comparability based on accounting performance increases the risk-seeking behaviour of the CEO to take potential highly risky investments to increase firm performance (Lobo et al., 2018). Risk investment increases the probability of a negative net present value, which could affect the performance of a CEO and the probability of turnover. Furthermore, CEOs might have an incentive to increase accounting returns to meet or beat their peer firms. Relative performance contracts could create wrong incentives for CEO's to manipulate performance (Agrawal & Cooper, 2016). CEO's may report opportunistically to meet or beat peer performance. If the performance of peers is higher, companies are less likely to match consensus from analysts without earnings management. This evidence suggests pressure from shareholders.

Research Design¹

The first section entails the methodology. It contains an empirical overview to answer the research question and test the formulated hypotheses. It outlines the conceptual framework and explains the control variables. The final part discusses the data. The data section includes the data origin, the composition of the data and the preparation of the data. In the data section, I explain the required sample size and the data analysis steps to answer the research question. Finally, descriptive statistics are presented and discussed.

A logit regression method is used to measure the research design². The dependent variable is a dummy variable. The equation to measure the research design is as follows:

$$\text{CEO turnover}_{it} = \beta_0 + \beta_1 \text{ Stock return}_{it-1} + \beta_2 \text{ Relative peer performance}_{it-1} + \beta_3 \text{ Stock return}_{it-1} \\ * \text{ Relative peer performance}_{it-1} + \beta_4 \text{ CEO Age}_{it} + \beta_5 \text{ Equity}_{it} + \beta_6 \text{ Size}_{it} + \beta_7 \text{ Revenue} \\ \text{growth}_{it+1} + \beta_8 \text{ Leverage}_{it} + \beta_9 \text{ MTB} + \text{Year} * \Sigma\beta + \text{Industry} * \Sigma\beta + \varepsilon_{it}$$

CEO turnover is a dummy variable; one if the CEO left the company that year and zero otherwise. Stock return is used as a proxy for firm performance because the stock return gives an indication about a profit or a loss in that particular year and eliminates the difference in size between companies. Stock return is calculated as the percentage difference between the share price at the beginning of the year and the share price at the end of the year. Stock return is the primary independent variable of the regression and is a continuous variable. Accounting profits such as (EPS) and (ROA) will be used in the sensitivity analysis to control for measurement errors and to increase the robustness of the results. The probability of manipulating the accounting figures explains why accounting-based performance is not chosen as the first proxy for firm performance, but in the sensitivity analysis (Barro & Barro, 1990)³. For the empirical peer performance analysis, I use peer stock return as their peer performance measure. It measures the percentage increase (decrease) in stock return of the peer firms every year. 'Relative peer performance' is a dummy variable; one if the stock return of the peer firm is higher than the focal firm and zero otherwise.

¹ See Appendix *ii*. for the predictive validity framework for an overview of this research design (Libby, 1981).

² See Appendix *iii*. "Explanation Logit Regression" for a detailed explanation of the logit regression analysis.

³ See Results "Sensitivity Analysis" for a more extensive explanation of the sensitivity tests.

β_3 is the coefficient of interest in this Model. The hypothesis predicts a positive sign of the coefficient on the variable of interest. A positive sign implies a stronger relation between stock return and CEO turnover due to the influence of relative peer performance. Relative peer performance affects the relation positively because the higher performance of peers increases the probability of CEO turnover.

Fixed effects

A fixed-effect is included to account for all factors that are not directly observable, but that are constant for certain groups of observations. Fixed effects will produce unbiased estimates of the independent variable coefficients and controls for omitted variable biases. The fixed effects outline the with-in year variation of all variables. A year and industry fixed effects are dummy variables. Year fixed effect is included to control for factors that affect all firms but only in that specific year. Industry fixed effect controls for factors that do not change over time in a particular industry.

Peer group analysis

This paper examines a comparable group of firms that are used in the relative performance evaluation decision of the CEO. CEO performance contracts could be optimised by examining the performance of other CEOs in the peer group. Firms may want to know what the impact of a CEO is on the firm by comparing the firm with several other firms. Mercer (2009) emphasise the importance of accurate screening peers. Peer firms have to be chosen accurately instead of ‘cherry-picking’ (Lipman & Hall, 2008). A peer group consists of firms based on a firm’s characteristics instead of industry characteristics. Firms within the same industry could have different peers based on other external factors. Every company in the sample has its own group of peers.

Firms could choose their peer group based on the stock market or custom peer groups. Reasons, why companies chose peers based on the stock return/market index, are mixed. Firms tend to select peers based on comparability on the stock market or market indexes if their business is in complex activities. It is uncertain to determine what the comparable peer group is for this group of firms. A valuation multiple based on price to book ratio tracks the growth, profitability and risk determinants of peer firms. An advantage of the market-based valuation of peers is that peer firms can be quickly recovered from the market, especially in the valuation of private firms. The share price is informative, but noisy as a useful determinant for valuation purposes to control for characteristics of market valuation at

identifying peer firms (Bhojraj & Lee, 2002). Share prices are not always set rationally relative to the actual valuation of the firm.

Most of the firms choose custom peer groups. Custom peer groups include firms that are comparable based on geographical presence, operational structure, historical performance, leverage, industry and size (Bakke et al., 2020). Firm size is an essential criterion for identifying comparable firms. Firms that are in the first years of their existence are influenced by peers that are comparable to them in size (Adhikari & Agrawal, 2018). There is a statistical interaction between firm size and financial stability regarding relative performance goals such as ROA, Return on Investments (ROI) and Return on Sales (ROS). This indicates that there is a significant positive relation between financial stability and performance based on size (Hunton et al., 2003). Firms that are similar in size have the ability to be flexible in economic challenging periods. Firm size controls for the technology of the firm and the probability of obtaining credit in loans from the bank. Albuquerque (2009) found evidence that peer groups based on size have a higher correlation in stock returns. Most companies have formed a set of custom peers via efficient filtering properties and they do not indicate that stock returns or a market index peer group provide better filtering properties (Bizjak et al., 2020). They do not detect any bias for companies who use relative performance evaluation based on custom peer groups.

This paper uses the Institutional Shareholder Services (ISS) peer group selection method to determine which peer firms are included in the peer group of the focal firm. The ISS database measures the peer group based on the peer data for benchmarking compensation comparisons. This method is the most accurate measure to construct a comparable group of firms. The database used information from firms self-selected pay benchmarking peer groups for the fiscal year ending. The ISS peer group methodology focuses on identifying firms that are similar relative to the focal firm based on industry profile, size and market capitalisation. Size is measured by revenue, total assets and market value. The maximum deviation based on size is twenty per cent. Peer groups consist of a minimum of twelve firms to a maximum of 24 firms. A particular firm has an average of 78 per cent of ISS peer selections based on the firm's eight-digit Global Industry Classification Standard (GICS) group code of the self-selected peers. The database has a great similarity with the firm's selected peers. This method places a priority on the firm's self-selected peers, although a large deviation from other firm characteristics could lead to dropping the firm from the firm's peer group. Privately-held firms

and firms established abroad are not selected in the peer group (Institutional Shareholder Services, 2019).

Control variables

The paper includes a couple of variables to control for unidentified factors that previous literature recognises as having effects on CEO turnover in combination with the performance of peers. To avoid multicollinearity issues, this paper split up the control variables into two different aspects: CEO characteristics and firm characteristics.

CEO characteristic

Bizjak, Brickley and Coles (1993) explain the asymmetric differences in the hiring process of new CEO's. Older CEOs tend to be hired by larger, more complex firms, while young CEO's are hired by start-up firms and high-growth firms. The importance of the CEO's age in explaining turnover is higher among larger companies because larger companies have relatively older CEOs on average. The departure probability of a CEO increases from fifty years and is at the highest point around the retirement age of sixty-five. Although, remarkable is that the probability of departure decreases statistically with better performance (Barro & Barro, 1990). CEO equity ownership makes it more difficult for the board of directors to replace the CEO (Hennes et al., 2007). It is the firm's strategy to align CEO compensation with the success of the company to create long-term value. Equity ownership provides incentives to work harder and to work in the best interest of stakeholders. CEOs act more like owners of the company if they have a stake in the firm (Bebchuk & Fried, 2010). On the other hand, share options may cause CEOs to be focussed on short-term gains and it motivates earnings management to increase compensation (Li & Chii-Shyan, 2017). Equity is the portion of ownership the CEO has in the company in year t . Ownership is the aggregate percentage of the total firm's shares owned by the CEO including stock options.

Firm characteristic

The log of total assets is included as a firm characteristic control variable to control for the size of the company. The variability of turnover to firm performance is higher among smaller companies. There is a more direct relationship between the performance of the CEO and the performance of the company (Murphy, 1999). Managers predict future performance in terms of revenue growth, rather than considering the current performance, when deciding on CEO turnover. An opportunistic future perspective reduces the probability of turnover, while a negative outlook increases the probability of a turnover (Farel & Whidbee, 2003). Revenue

growth is the relative change in revenue from t-1 to t divided by sales in t-1. Leverage is as a control mechanism for financial distress, calculated by debt divided by total equity. CEO turnover will be higher for more distressed companies (Gilson, 1989). Finally, the Market-to-Book (MTB) ratio is included as a control variable to exhibit comparable accounting performances (Bizjak et al., 2011). Companies with comparable MTB ratio's show similarities in organisational structure and profitability. Companies with comparable profit models are likely to be exposed to comparable demand shocks (Watts & Smith, 1992). I expect the MTB ratio to be positive, because fast-growing companies are more likely to inflate their net income (Qianqian & Rui, 2018).

Data Origin

All the financial figures and companies' observations between 2006 and 2019 are collected from the WRDS database. Some variables are calculated based on other variables, such as stock return, leverage, ROA. The description and calculation of all variables are included in the data composition part.

The data for CEO turnover is obtained from Compustat-Execucomp. The accounting and stock return data comes from Standard and Poor's Compustat. The peer group is based on peers in the ISS database. The performance of the peer companies is reported in the Compustat database. Execucomp is used for the equity ownership data. Thomas Reuters 13 file collected the board characteristics institutional holdings data. IBES Summary reports the sales growth forecast data. The other firm characteristics financial statement data comes from Compustat.

Data Composition

The WRDS database provides annual fundamentals for North America stored in the Compustat database. The Compustat database includes firm characteristic financial statement data such as total assets, share price, common share outstanding, total debt, diluted EPS and net income. The Execucomp executive compensation database from WRDS is used to determine the date the CEO left the office. A dummy variable is made for the year the CEO left the office: one if the CEO left the office that year and zero if the CEO stays in the office. Equity ownership is the percentage of total shares owned by a CEO. The Compustat and Execucomp database is one to one merge based on GVKEY code and fiscal years.

The ISS peer group database measures peer data for benchmarking compensation purposes. The database outlines the peer firms for each specific firm in the dataset. Merging with the other databases is based on the CIK code and fiscal years. The share price for the focal firms (CIK codes) is matched when merging with the combined Compustat and Execucomp database. The paper measures a one-year revenue growth because of the increased probability of wrong future revenue estimates as the year's progress. The one-year revenue growth is reasonably accurate to predict. The outlook of all firms in the sample is positive due to the sustainability and continuity of the organizations. The fiscal year is derived from the forecast period end date. Table 1 shows a brief overview of the data composition used in this research. The descriptive statistics further explain the composition of the data⁴⁵.

Table 1: Data composition output for the regression analysis^a

| Variable | Mean | SD | Min | P25^b | P50^b | P75^b | Max |
|---------------------------|-------------|-----------|------------|------------------------|------------------------|------------------------|------------|
| Return Focal Firms | 0.10 | 0.41 | -0.74 | -0.13 | 0.08 | 0.29 | 1.78 |
| Return Peer Firms | 0.41 | 1.14 | -0.95 | -0.45 | 0.05 | 0.89 | 2.87 |
| Relative firm performance | 0.58 | 0.49 | 0 | 0 | 1 | 1 | 1 |
| CEO Age | 56.47 | 6.22 | 42 | 52 | 56 | 61 | 73 |
| CEO Equity Ownership | 1.29 | 2.96 | 0.01 | 0.13 | 0.36 | 1.05 | 19.24 |
| Size | 8.96 | 1.50 | 5.77 | 7.92 | 8.85 | 9.92 | 13.01 |
| Revenue Growth | 8.35 | 1.40 | 5.33 | 7.41 | 8.29 | 9.28 | 12.13 |
| Leverage | 0.27 | 0.20 | 0 | 0.12 | 0.24 | 0.39 | 0.98 |
| Market-to-Book ratio | 3.34 | 2.81 | 0.41 | 1.48 | 2.39 | 4.01 | 11.77 |
| Observations | 178568 | | | | | | |

^a The most extreme values (1%) for each variable are winsorised per year.

^b P25, P50 and P75 are the 25th, 50th and 75th percentile of the variable of interest.

⁴ The amount of observations deviates from Table 2 in the descriptive statistics.

⁵ Appendix *iv.* present an explanation of the data preparation used in this research.

Descriptive Statistics

The chapter provides an overview of the descriptive statistics to run the regression analysis.

Table 2 present the descriptive statistics for the stock return sample. The stock return average of the peer group has been taken, based on a fiscal year and CIK code, to compare the stock return of the focal firms with the peer firms.

Table 2 Descriptive statistics^a

| Variable | Mean | SD | Min | P25^b | P50^b | P75^b | Max |
|---------------------------|-------------|-----------|------------|------------------------|------------------------|------------------------|------------|
| Return Focal Firms | 0.10 | 0.41 | -0.74 | -0.13 | 0.08 | 0.29 | 1.78 |
| Return Peer Firms | 0.41 | 1.14 | -0.95 | -0.45 | 0.05 | 0.89 | 2.87 |
| Relative firm performance | 0.58 | 0.49 | 0 | 0 | 1 | 1 | 1 |
| CEO Age | 56.47 | 6.22 | 42 | 52 | 56 | 61 | 73 |
| CEO Equity Ownership | 1.29 | 2.96 | 0.01 | 0.13 | 0.36 | 1.05 | 19.24 |
| Size | 8.96 | 1.50 | 5.77 | 7.92 | 8.85 | 9.92 | 13.01 |
| Revenue Growth | 8.35 | 1.40 | 5.33 | 7.41 | 8.29 | 9.28 | 12.13 |
| Leverage | 0.27 | 0.20 | 0 | 0.12 | 0.24 | 0.39 | 0.98 |
| Market-to-Book ratio | 3.34 | 2.81 | 0.41 | 1.48 | 2.39 | 4.01 | 11.77 |
| Observations | 10.732 | | | | | | |

^a The most extreme values (1%) for each variable are winsorised per year.

^b P25, P50 and P75 are the 25th, 50th and 75th percentile of the variable of interest.

The average stock return of the focal firms is around ten per cent, while 41 per cent is the average stock return of the peer group. 58 Per cent of the firms in the peer group have a higher performance than the focal firms. The age of the CEO's in the dataset is between 42 and 73, but the average CEO is 56 years old. Equity ownership is the percentage of total shares owned by the CEO. There is a small percentage of firms in which the CEO has more than five per cent of the shares held by the company. Most of the CEO's own around one per cent of the shares on average. Size is based on the log of the total assets and is normally distributed. Revenue growth is the one-year revenue forecast. The average forecasted revenue is 8,35 per cent and can go up to a maximum of twelve per cent. Leverage is the ratio of total interest-bearing debt to the equity of the firm. The average leverage ratio is 27 per cent and almost every firm has a leverage ratio between twelve and 39 per cent. Businesses are

generally funded with equity capital, while debt holders fund the remainder. The market capitalisation is three times higher than the total book value of equity. Market capitalisation is the company's market value which is the share price multiplied by the number of shares outstanding. The (MTB) ratio is used to determine a firm's value by comparing the market value to its book value. The MTB ratio is also called the price-to-book ratio. Firms with an MTB ratio higher than one are overvalued, which can be interpreted as the market valuing the firm's equity expensively compared to the book value of equity. It indicates how much investors are willing to pay for every euro of book value in the financial statements. Most of the companies in the sample are overvalued.

Outliers

Browsing through the dataset showed the existence of outliers. Winsorization is used to adjust for extreme positive or negative values. The adjustments are made before the composition of the output tables. The descriptive statistics show the raw data after winsorisation. All variables are winsorised at the 1st and 99th percentile level.

Results

The result section provides an analysis of the main results and it gives an overview of the sensitivity tests, used in this research to increase the robustness of the logit regression test. After interpreting the hypothesis, the research question about the effect of peer performance on the performance-turnover relation will be answered.

Main Results

This chapter outlines the main results to answer the research question. It gives an overview of the main tables used in this paper to interpret the hypothesis whether peer performance increases the probability of CEO turnover if the peer firms perform better than the focal firm. Table 3 shows the output of the logit regression analysis related to the hypothesis. The Table outlines the relation between the relative average stock return of the peer group, compared to the focal firms, and the effect on CEO turnover. It shows the impact of higher-performing peers in the peer group on the probability of CEO turnover of the focal firm.

Table 3 Logit regression output for the relation between the relative average performance of peers, based on stock return, and CEO turnover

| Variable | Dependent variable |
|---|---|
| | CEO turnover <i>Logit regression</i> Coefficient ^a |
| Intercept | -0.79*** (0.00) |
| Relative peer performance | -0.23** (0.03) |
| Return focal firms | -0.61*** (0.01) |
| Relative peer performance * Return focal firms | 0.21 (0.47) |
| CEO Age | 0.24*** (0.00) |
| CEO equity ownership | 0.05 (0.27) |
| Size | -0.29 0.33 |
| Leverage | 0.77 0.29 |
| Market-to-book ratio | -0.10*** (0.01) |
| Revenue growth | 0.43 (0.15) |
| Observations | 4.879 |
| Pseudo R ² | 0.16 |
| Year fixed effect | Yes |
| Industry fixed effect | Yes |

Note. Standard errors are in parentheses. The coefficients of the independent variables are probabilities; * p<0.10, ** p<0.05, *** p<0.01.

^a The most extreme values (1%) for each variable are winsorised per year.

The stock return of the focal firms is significant on a one per cent significance level, indicating that the probability of turnover decreases if the stock return goes up. Margins have been used to get the predicted probabilities for the values of ‘Return focal firms’ while holding the other variables at its mean, as presented in Table 4. I use stock return between minus a half and one and a half per cent to predict the marginal effects based on the coefficients in the descriptive statistics output in Table 2. The value of the stock return decreases the probability of turnover being one is also decreasing from a probability of twelve to a probability of six per cent.

Table 4 The predicted probabilities for the level of ‘Return focal firms’ while holding the other variables at its mean

| Stock return focal firms | Dependent variable |
|---------------------------------|-------------------------------|
| | CEO turnover Margin |
| -0.5 | 0.12*** (0.00) |
| 1.5 | 0.06*** (0.00) |
| Observations | 10.732 |

Note. Standard errors are in parentheses. The coefficients of the independent variables are probabilities; * p<0.10, ** p<0.05, *** p<0.01. Year- and Industry fixed effects are included.

Relative peer performance has a significant negative influence on CEO turnover. Relative peer performance is one if the average stock return of the peer group is higher than the stock return of the focal firms and zero if the average peer group performance is lower than the focal firm performance. Table 5 shows the predicted probabilities for each level of Relative peer performance while holding the other variables at its mean. The predicted probability for Relative peer performance if one is eleven per cent. Higher-performing peers influence the likelihood of turnover by eleven per cent, while lower-performing peers influence the turnover decision by ten per cent. The difference between the two categories is too small to conclude that higher-performing peers have a more significant influence on CEO turnover than lower-performing firms on average.

Table 5 The predicted probabilities for each level of ‘Relative peer performance’ while holding the other variables at its mean

| Relative peer performance | Dependent variable |
|----------------------------------|-------------------------------|
| | CEO turnover Margin |
| 0 | 0.10*** (0.00) |
| 1 | 0.11*** (0.00) |
| Observations | 10.732 |

Note. Standard errors are in parentheses. The coefficients of the independent variables are probabilities; * p<0.10, ** p<0.05, *** p<0.01. Year- and Industry fixed effects are included.

Relative peer performance does not interact with stock return. The interaction effect is insignificant meaning that there is no moderating effect. The coefficient should not be interpreted, because the significance level is above the threshold of ten per cent. Higher-performing firms in the peer group do not affect the CEO turnover decision. This is inconsistent with the expectation of the hypothesis. Peer performance does not increase the probability of CEO turnover if the peer firms perform better than the focal firm.

When the age of a CEO increases, the probability of turnover increases proportionately. The MTB ratio has a positive effect on the turnover decision. A higher MTB ratio leads to a decrease in CEO turnover. Other control variables are insignificant and should not be interpreted. The pseudo/adjusted R^2 is sixteen per cent. The Model explains sixteen per cent of the variation in CEO turnover. Approximately one-sixth of the observed variation can be explained by the relative stock return of the focal- and peer firms and the corresponding control variables. Year - and Industry fixed effects are included to decrease the unobserved outside factors that might affect the logit regression model for the specific year and industry.

Concludingly, the stock return affects the dismissal decision of the CEO. However, the relative average performance of the peer group does not have the opposite effect as expected. Higher performing peers do not influence the decision to fire the CEO when considering the stock return. For the robustness of the analysis, (EPS) and (ROA) are taken into account to filter out a possible bias in the approach of firm performance.

Sensitivity Analysis

The sensitivity analysis is implemented to increase the robustness of the logit regression test. EPS and ROA are two other measures of firm performance. The data sample is the same as the stock return sample, except for the composition of the peer group. Year- and industry fixed effects are included in both sensitivity tests. The extreme values, on a one per cent level, for each variable are winsorised per year. Below a concise description of both sensitivity tests and the output results.

Earnings per share (EPS)

Earnings per share are the diluted eps including ordinary items. Peer performance is a dummy variable at which one if the average eps of the peer group is higher than the average eps of the focal firm and zero otherwise. The R-squared of the logit regression model is 8 per cent. Both the EPS of the focal firm and the correlating moderating variable have a statistically insignificant effect on turnover in the wrong direction. The moderating variable shows the same picture as the stock return regression output. Higher performing peers based on EPS, on average, do not statistically influence the dismissal decision of the CEO. The marginal effect of Relative peer performance is comparable with the results from Table 5⁶. The age of a CEO and the leverage ratio increase the probability of firing the CEO. Relatively more debt, compared to equity, in the firm increases the risk of bankruptcy, which affects the position of the CEO negatively. A higher MTB ratio reduces the probability of CEO turnover, as expected. After all, the regression output is consistent with the results in Table 5.

⁶ Appendix v shows the marginal effect output of 'Relative peer performance' of the EPS database.

Table 6 Logit regression results for the relation between the relative average performance of peers, based on EPS, and the CEO turnover

| Variable | Dependent variable |
|--|---|
| | CEO turnover <i>Logit regression</i> Coefficient ^a |
| Intercept | -0.79*** (0.00) |
| Relative peer performance | 0.38*** (0.00) |
| EPS focal firms | -0.01 (0.14) |
| Relative peer performance * EPS focal firms | -0.03 (0.13) |
| CEO Age | 0.10*** (0.00) |
| CEO equity ownership | -0.07 (0.27) |
| Size | -0.12 (0.27) |
| Leverage | 0.69** (0.05) |
| Market-to-book ratio | -0.07*** (0.01) |
| Revenue growth | 0.10 (0.41) |
| Observations | 7.567 |
| Pseudo R ² | 0.08 |
| Year fixed effect | Yes |
| Industry fixed effect | Yes |

Note. Standard errors are in parentheses. The coefficients of the independent variables are probabilities; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

^a The most extreme values (1%) for each variable are winsorised per year.

Return on Assets (ROA)

The other sensitivity test is about ROA as a measure of firm performance. Peer performance is a dummy variable; one if the average ROA of the peer group is higher than the average ROA of the focal firm and zero if the average ROA of the focal firm is higher than the average ROA of the peer group. The difference in size between the two databases is because of the missing values. ROA is measured by net income divided by lagged total assets. The assets are measured at the end of the fiscal year. A return on these assets is made in the following year. The R-squared is sixteen per cent, indicating that sixteen per cent of CEO

turnover can be explained by the independent- and control variables. The ROA effect on CEO turnover is statistically significant in the desired direction. An increase in the ROA of the focal firm leads to a decrease in CEO turnover. The marginal effect of ‘Relative peer performance’ and ‘ROA focal firms’ is comparable with the results from Table 5⁷. The moderator coefficient is insignificant. No conclusions can be drawn from the moderator variable in the logit regression analysis presented in Table 7. The coefficients of the control variables CEO age and MTB ratio are consistent with the stock return regression output. The results are consistent with the regression output in Table 3 on the stock return. Higher-performing peers, based on ROA, do not affect the dismissal decision of the CEO.

Table 7 Logit regression result for the relation between the relative average performance of peers, based on ROA, and CEO turnover

| Variable | Dependent variable |
|--|---|
| | CEO turnover <i>Logit regression</i> Coefficient ^a |
| Intercept | -0.79*** (0.00) |
| Relative peer performance | 0.28* (0.08) |
| ROA focal firms | -2.35** (0.05) |
| Relative peer performance * ROA focal firms | 1.41 (0.35) |
| CEO Age | 0.23*** (0.00) |
| CEO equity ownership | -0.01 (0.83) |
| Size | -0.49* (0.08) |
| Leverage | 0.01 (0.99) |
| Market-to-book ratio | -0.10*** (0.01) |
| Revenue growth | 0.64** (0.02) |
| Observations | 5.313 |
| Pseudo R ² | 0.16 |
| Year fixed effect | Yes |
| Industry fixed effect | Yes |

⁷ Appendix vi and vii show the marginal output of ‘Relative peer performance’ and ‘ROA focal firm’.

Note. Standard errors are in parentheses. The coefficients of the independent variables are probabilities; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

^a The most extreme values (1%) for each variable are winsorised per year.

Interpreting the Hypothesis & the Research Question

Hypothesis H1. *Peer performance increases the probability of CEO turnover if the peer firms perform better than the focal firm.*

The hypothesis is rejected. Better performance of peers does not increase the probability of CEO turnover significantly. Higher-performing firms in the peer group do not influence the decision to fire the CEO of the focal firm. In conclusion, better performance of the focal firm leads to a statistically significant lower probability of CEO turnover, but higher-performing peer firms do not influence the dismissal decision of the CEO negatively.

Research Question. *'What is the effect of peer performance on the performance-turnover relation?'*

The answer to the research question is in the inference of hypothesis one. The performance of peers does not have a statistically significant effect on the performance-turnover relation of the focal firm. The performance-turnover relation is not affected by a combination of different firms that represents the peer group of the focal firm. So, there is no effect of peer performance on the performance-turnover relation resulting from the presented logit regression analysis.

The firms in the peer group are self-selected by the firm. Firms may not choose the most comparable firms in their peer group for some reason. If they do not choose the most comparable peer group for a kind of reason, peer group comparisons should not be used for turnover decisions appropriately. However, if the peer group does not affect turnover, what could be a reason why a peer group of firms is formalised. In the following paragraphs, I am going to investigate why peer groups are introduced and what the effect is of the way peer groups are formatted. Basically, I will answer the following question: *'Why does the focal firm choose peer firms if it does not affect turnover?'*

The U.S. regulators, the SEC, introduced a principle concerning the disclosure of peer firms in the annual statements. Firms have to explain the background rationale behind their comparable peer group and disclose the benchmarks. Bizjak, Lemmon and Nguyen (2011) found evidence that disclosure regulations by SEC have decreased biases in similar firms

group selections over time. The analysis of comparable firms has become more transparent after the adoption of mandatory disclosure procedures through the information combination in share prices at the trading market (Shroff et al., 2017). Companies should give a glimpse of what firms are included in their peer group. Hannes (2004) continues that peer comparisons are an advantage for each company in a way that extended disclosure makes it easier to select comparable firms and observe the performance of the firms. Stockholders of the company can do more detailed research about the selection procedure of new peer firms, because of the improved transparency due to more strict disclosure procedures (Faulkender & Yang, 2010).

Despite the stricter regulations of the SEC, companies tend to custom a group of peers that performs better than their actual performance. Firms with a lower MTB ratio are more likely to exclude from the peer group (Bizjak et al., 2011). Opportunism lurks with a wide pool of potential peer firms. One reason for including better performing firms in the peer group may be future compensation. The influence of peers is more pronounced for compensation purposes than for turnover purposes (Qianqian & Rui, 2018). The selection procedure of a peer group might be opportunistically biased to increase CEO compensation (Cadman & Carter, 2014).

Relative performance evaluation used in CEO compensation contracts offers mixed evidence. Relative performance evaluation based on the stock market return and accounting earnings exist, but the relation to the peer group returns has not been statistically observed and is controversial. Twenty-five per cent of all firms uses relative performance evaluation in CEO compensation settings (Gong et al., 2011). The market salary could be used as a significant benchmark for CEO pay. Many listed companies in the U.S. determine the compensation of the CEO by comparing the salary of the CEO with the salary of the CEOs in the peer group (Pittinsky & DiPrete, 2013). CEO pay is affected by, not only characteristics at the firm level, but also through the company's immediate peers and the organisation of the CEO's network in general. Companies tend to set a benchmark against peer firms that pay their CEO a higher total compensation. Especially in more prominent companies, deviations from the optimal peer group, based on size and industry characteristics, are commonly used. Self-serving behaviour shows that this is in their self-interest to receive higher compensation in the future. Budsaratagoon, Lhaopadchan and Thomsen (2020) agree that peer effects account for almost half of the variation in CEO compensation and the CEO salary converges to the average level of the peer group over time. Although, Lui and Stark (2009) showed that CEO compensation is positively associated with accounting earnings and the returns on the stock market in the

first place, nevertheless it has a negative correlation with the accounting earnings of the peer group. They provided evidence that CEO compensation is not affected by the stock market return of the peer group. Companies argue that increased future pay is due to the unobserved talent of the CEO (Albuquerque et al., 2013). Larcker, McClure and Zhu (2019) emphasise that this is a controversial statement. It is difficult to determine whether firms are chosen in the peer group to retain and extract high CEO talent or to enable hire extraction by an improper increase in CEO compensation. They estimated that sixty-one per cent of the board's choices on average appear to be related to retaining and attracting high-quality human capital. Peer review might be an efficient method to measure salary to keep high-quality CEO talent. These firms are likely to select peer firms for ambitious labour market reasons.

The use of peer benchmarking for compensation purposes explains a pay-for-luck asymmetry relation (Garvey & Milbourn, 2006). 'Luck' could be described as the overall favourable industry conditions that drive the company's performance up and is not attributable to the skill of the CEO. The asymmetry exists if CEOs are rewarded for good performance based on luck, but partially experience the negative consequences to the same extent of bad luck. The study explains the stronger asymmetry in weakly governed companies. They conclude that CEO compensation is not optimal, because of the pay-for-luck asymmetry. However, Bizjak, Lemmon and Naveen (2008) explain that dismissal reasons could be the cause for the asymmetry in CEO pay to the performance of a firm if the external opportunities are different from industry and market conditions. Naveen and Li (2019) elaborate that they found no evidence for asymmetry in pay-for-luck and they argue that testing for asymmetry in firms with a weak corporate governance structure is intuitively appealing.

The future compensation of the CEO may be the reason why the focal firms choose peer firms if it does not affect turnover. Peer firms may influence the amount of future compensation to the CEO. The composition of the peer group is crucial to this process. Table 8 present the descriptive statistics for the EPS linear regression analysis. The descriptive statistics of the stock return analysis are almost the same as presented in Table 2, except for CEO compensation. The compensation variable, presented in Table 8, is the logarithm of the total CEO compensation. Total compensation includes salary, bonus, restricted stock grants, long-term incentive plans payout and the value of option grants and other annual⁸. The average EPS for the focal firms and peer firms is substantially the same. Each outstanding share yields

⁸ The Libby box, for an overview of the compensation research design, is presented in Appendix *viii*.

an average profit of 2.4. A small group of companies has peaks up- and downwards. The most extreme values are winsorised at a one per cent level. The control variables have generally remained the same.

Table 8 Descriptive Statistics for the compensation analysis^{ad}

| Variable | Mean | SD | Min | P25^b | P50^b | P75^b | Max |
|---------------------------|-------------|-----------|------------|------------------------|------------------------|------------------------|------------|
| Compensation ^c | 8.73 | 0.80 | 6.29 | 8.28 | 8.79 | 9.28 | 10.48 |
| EPS focal firm | 2.37 | 3.46 | -9.92 | 0.78 | 2.01 | 3.67 | 15.73 |
| EPS peer firms | 2.39 | 1.80 | -9.23 | 1.34 | 2.39 | 3.39 | 15.46 |
| Relative peer performance | 0.54 | 0.50 | 0 | 0 | 1 | 1 | 1 |
| CEO Age | 56.33 | 6.25 | 42 | 52 | 56 | 60 | 73 |
| CEO Equity Ownership | 1.42 | 3.23 | 0.01 | 0.14 | 0.38 | 1.16 | 21.04 |
| Size | 8.94 | 1.50 | 5.76 | 7.89 | 8.82 | 9.90 | 13.07 |
| ROA | 0.05 | 0.08 | -.22 | 0.01 | 0.05 | 0.09 | 0.31 |
| Revenue Growth | 8.33 | 1.40 | 5.31 | 7.39 | 8.27 | 9.25 | 12.09 |
| Leverage | 0.27 | 0.20 | 0 | 0.11 | 0.24 | 0.39 | 0.97 |
| Market-to-Book ratio | 3.33 | 2.74 | 0.43 | 1.51 | 2.41 | 4.02 | 11.46 |
| Observations | 12239 | | | | | | |

^a The most extreme values (1%) for each variable are winsorised per year.

^b P25, P50 and P75 are the 25th, 50th and 75th percentile of the variable of interest.

^c The logarithm of compensation is taken to increase the interpretability of the output results.

^d The coefficients are presented in U.S. Dollars.

In the following ordinary least square (OLS) linear regression output in table 9, I try to determine whether the relative performance of the peer group has an impact on the compensation of the CEO in the upcoming year. The performance of the peer group is expressed in the stock market return and EPS. Year- and Industry fixed effects are included in the linear regression analysis. The second column shows the coefficient output of the dependent variable compensation, based on the stock market return of the focal firms. The third column shows the OLS regression output of the independent variable EPS on CEO compensation. The other variables are the same as the regression outputs before.

Table 9 Linear regression output for the relation between the dependent variable Compensation and the independent variables Stock return & EPS of the focal firms moderated with the Relative performance of the peer group

| Variable | Dependent variable | |
|---|--|---|
| | Compensation (Stock return ^b) <i>OLS</i> Coefficient ^a | Compensation (EPS ^c) <i>OLS</i> Coefficient ^a |
| Intercept | 6.06*** (0.00) | 5.77*** (0.00) |
| Relative peer performance | -0.01 (0.47) | -0.02*** (0.00) |
| Return focal firms | 0.05** (0.04) | |
| EPS focal firms | | -0.01** (0.03) |
| Relative peer performance * Return focal firms | 0.07** (0.03) | |
| Relative peer performance * EPS focal firms | | 0.06*** (0.00) |
| CEO age | 0.01*** (0.00) | 0.01*** (0.01) |
| CEO equity ownership | -0.01*** (0.00) | -0.03*** (0.00) |
| Size | 0.21*** (0.00) | 0.21*** (0.00) |
| ROA | 0.48*** (0.00) | -0.01 (0.96) |
| Leverage | -0.31*** (0.00) | -0.01 (0.82) |
| Market-to-book ratio | 0.02*** (0.00) | 0.02*** (0.00) |
| Revenue growth | 0.11*** (0.00) | 0.011*** (0.00) |
| Observations | 7.393 | 7.950 |
| R-squared | 0.72 | 0.47 |
| Adjusted R-squared | 0.67 | 0.45 |
| Year fixed effect | Yes | Yes |
| Industry fixed effect | Yes | Yes |

Note. Standard errors are in parentheses. The coefficients of the independent variables are in absolute values;

* p<0.10, ** p<0.05, *** p<0.01.

^a The most extreme values (1%) for each variable are winsorized per year.

^b $CEO\ compensation_{it} = \beta_0 + \beta_1 Stock\ return_{it-1} + \beta_2 Relative\ peer\ performance_{it-1} + \beta_3 Stock\ return_{it-1} * Relative\ peer\ performance_{it-1} + \beta_4 CEO\ Age_{it} + \beta_5 Equity_{it} + \beta_6 Size_{it} + \beta_7 Revenue\ growth_{it+1} + \beta_8 Leverage_{it} + \beta_9 MTB + \beta_{10} ROA_{it} + Year * \Sigma\beta + Industry * \Sigma\beta + \epsilon_{it}$

^c $CEO\ compensation_{it} = \beta_0 + \beta_1 EPS_{it-1} + \beta_2 Relative\ peer\ performance_{it-1} + \beta_3 EPS_{it-1} * Relative\ peer\ performance_{it-1} + \beta_4 CEO\ Age_{it} + \beta_5 Equity_{it} + \beta_6 Size_{it} + \beta_7 Revenue\ growth_{it+1} + \beta_8 Leverage_{it} + \beta_9 MTB + \beta_{10} ROA_{it} + Year * \Sigma\beta + Industry * \Sigma\beta + \epsilon_{it}$

The regression output shows several interesting observations. The (adjusted) R-squared is higher than the R-squared in the previous regression analysis on CEO turnover. No conclusions could be derived from the R-squared, but it indicates that the explanatory power of the Model is higher than the other models. Apparently, the same variables have a more significant impact on CEO compensation than CEO turnover. That is in line with the prediction of (Qianqian & Rui, 2018). The market return regression analysis provides an adjusted R-squared of 67 per cent. The coefficient of determination (R^2) of the stock return regression predictions almost perfectly fits the corresponding independent and control variables. The proportion of variance of CEO compensation that is predicted by the EPS data is forty-five per cent.

Both groups of peers show a statistically significant positive relation between the stock return and the future CEO compensation. When the focal firm performs better than the peer firms, the increase in compensation is 0.05 if the stock return increases by 1. If the peer firms perform better than the focal firm, the relation is even more pronounced. When the stock return increase by 1, the future CEO compensation increases by 0.12. The difference in the effect on compensation is 0.07. CEO future compensation is 6.17 when the peer firms perform better than the focal firm and the CEO compensation is 6.11 when the focal firm performs better than the peer group.

When the focal firm performs better than the peer firms, the EPS has a significant adverse effect on the future compensation of the CEO. However, when the peer firms perform better than the focal firm, the total future compensation of the CEO increases by 0.05 if the EPS increases by 1. CEO future compensation is 5.80 when the peer firms perform better than the focal firm and the CEO compensation is 5.76 when the focal firm performs better than the peer group. The effect of eps on future compensation is less pronounced than the effect of stock return on future compensation. Altogether, CEO future compensation is influenced by higher-performing peers.

Table 9 shows that older CEOs earn more than a younger comparable on average. Contrary to what I expected, CEO equity compensation is on a small economic difference inverse related to future compensation⁹. The more shares owned by the CEO, the lower the compensation in the future. As expected, more prominent companies pay higher salaries on average than smaller companies based on size. Future CEO compensation increases if the ROA of the focal firm increases, for the stock return performance sample. ROA does not affect CEO future compensation when taking the EPS as a performance indicator. An increase in leverage in the firm leads to a lower-paid CEO in the future. Debt could generate profit but is also risky for the long-term sustainability of the company. A high MTB ratio means that the company is performing well, which leads to an increase in CEO compensation. The market value of equity exceeds the book value of equity. Finally, a bright perspective leads to a higher pay-check in the future. The outlook is measured by the growth of revenue in the coming year.

Opposite to the results of the previous regression analysis on turnover, the moderator ‘Relative peer performance’ is statistically significant in the right direction on future CEO compensation, for the stock return- and the EPS sample. Higher-performing peers influence the decision to increase CEO future compensation significantly. It has a significant positive impact on the performance-compensation relation. The findings are in line with the results from (Liang, 2016). She states that CEO compensation is positively related to the performance of peers from the same industry. CEO compensation is positively affected by the profit of the industry, indicating the use of strategic group performance evaluation (SGPE) in CEO compensation (Joh, 1999). The positive influence of industry profit on CEO compensation is higher in competitive markets and in saturated markets. So, higher peer performance leads to higher CEO pay in the future.

However, is it an efficient policy to rely on the performance of peers to set the compensation targets for CEOs? First of all, formatting the right peer group is of vital importance in this case. Benchmarking with higher-performing peers leads to biased future compensation. The peer group is self-selected by the focal firm, so they may not choose the most appropriate firms for some reason. Firms have a preference for selecting higher-paying firms, which perform better, in their peer group as an anchor point (Laschever, 2013). Companies may choose better performing firms in the peer group, under the pressure of the CEO, to

⁹ Omitted variables-bias (endogeneity) is avoided, because previous years (equity) compensation is significant positively related to (equity) compensation in the current period (Conyon & He, 2012).

benchmark the current salary of the CEO and to increase the total compensation in the future. The compensation of peers exceeds the compensation of the focal companies within the S&P 500 firms on average (Byrd et al., 1998). The executives have to provide justifications to shareholders for CEO compensation by law. Although, Porac, Wade & Pollock (1999) suggest that executives selectively anchor peer firms for self-protecting purposes. They found that when an industry is performing well, but the focal firm is underperforming, CEOs stay at the same level of compensation if institutional shareholders are active and influential. The findings are in line with the results appearing in Table 9. Regardless of the performance of the focal firm, industry conditions are interpreted as a benchmark for CEO compensation. The composition of the peer group influences the amount of compensation.

Secondly, the quality of the CEO of the focal firm will be nullified. Pay-for-performance is reduced by comparing the salary with higher-performing peers. CEO quality is undervalued in this structure. Nevertheless, Kwon (2016) suggests that CEOs receive more compensation for outperforming their peers. This indicates that the quality of the CEO matters. But including higher performing peers in the peer group makes it more difficult to outperform CEOs of better-performing companies and therefore may have negative consequences for the future salary of the CEO.

Finally, earnings management could play a role within companies who want to compete with higher-performing firms. To be on the same level as actually better-performing firms, companies may manage earnings positively, to cover the fair value of the company. Discretionary accruals are used as a proxy for earnings management, the quality of earnings. Discretionary accruals are not the result of normal operating activities, but are influenced by managers. Baker, Collins and Reitinga (2003) argue that relatively high stock option compensation leads to greater discretionary accruals. It creates opportunistic behaviour for executives to manage earnings (Cornet et al., 2008). Kedia, Koh and Rajgopal (2015) conclude that peer firm behaviour influences the decision to manage earnings. Earnings news of the peer firms will affect the performance expectations of the focal firm. When the firms in the peer group miss the expectations of analysts, the focal firm reports lower earnings management in terms of discretionary accruals and vice versa (Bratten et al., 2016).

It is not an efficient policy to rely on the performance of peers to set CEO future compensation. If the composition of the peer group contains especially higher-performing peer firms, it can be concluded that firms choose for higher-performing firms in the peer group to increase the total compensation of the CEO in the future. The peer group is self-selected by the focal firm, so they may not choose the most comparable firm to increase future compensation. Earnings management play a role to beat or meet the performance of the peer group. Besides, the quality of the CEO is not taken into account. Including higher performing peers in the peer group for compensation purposes could be the reason why relative peer performance has not a significant influence on the turnover decision. The peer group constructed by higher performance companies for compensation purposes cannot be used for CEO dismissal reasons appropriately. Concludingly, the effect of peer performance on the performance-turnover relation cannot be determined, because the focal firm chooses the peer firms for compensation purposes. The higher-performing firms in the peer group have a statistically positive effect on the performance-compensation relation. An increase in the performance of the higher-performing firms in the peer group leads to higher CEO compensation of the focal firm soon.

Conclusion & Discussion

Using a sample of 10,000-panel data observations from the WRDS database from 2006 to 2019, I found no statistical evidence of the increased probability of CEO turnover if the peer firms perform better than the focal firm. The performance of the focal firm is inversely related to the probability of CEO turnover, but the performance of peers does not influence the dismissal decision negatively. Peer performance has no impact on the performance-turnover relation and peer group comparisons has not to be used for turnover decisions. Firms ignore peer performance in making turnover decisions. The question is why the focal firm chooses peer firms if it does not affect turnover?

In further analysis, I have demonstrated that the focal firm chooses peer firms for compensation purposes. Higher-performing peers have a statistically significant positive relation to the future compensation of the CEO. One of the reasons for the difference in output results between the two-regression analysis is that peer firms are self-selected by the focal firm. They may not choose the most comparable firm in the peer group. Previous studies showed an upward bias in the construction of the peer group, which could lead to the skewed logit regression analysis on turnover. The upward bias is the result of especially including higher-performing firms in the peer group of the focal firm. It decreases the impact of CEO quality on future compensation and increases the use of earnings management. It is not an efficient policy to evaluate the performance of the CEO to the inappropriate peer groups. Relative performance evaluation decisions in CEO compensation contracts lead to benchmarking the compensation of the CEO against higher-performing peers. So, the effect of peer performance on the performance-turnover relation cannot be determined, because the focal firm chooses the peer firms for compensation purposes. Altogether, the increase in future compensation of the CEO based on relative performance evaluation decisions is counter-productive and pointless.

Internal & External Validity

Large cross-sectional panel data swap internal for external validity in many cases (Vrettos, 2013), but the research design of this paper guarantees the causality of the variables. The research design captures causality between the performance of the two groups and CEO turnover and CEO compensation at a later stage. The dataset has been adjusted in such a way that the internal validity is maintained. Outliers, duplicates and missing items are deleted or winsorised and the data has been checked on conspicuous items. The expectation is that the findings apply to many other settings.

The results of the paper are relevant in a way the peer interaction has on the performance-turnover/compensation relation. The results give an insight into the underlying reasoning of CEO turnover and CEO future compensation, which could affect the real-world business operations. Besides, shareholders of the focal firm could use the information to reassess the approval of the composition of the peer group and read the additional effects of comparing the firm with its peers. Managers of firms could use the paper to find out that it is not an efficient policy to equalise their salary to higher-performing peers in the construction of the peer group.

Limitations

A possible limitation of this paper is that the companies may include peers in their peer group that have different performance based on other external economic factors. Focal firms include firms in their peer group based on a couple of performance indicators¹⁰. Inappropriate peer group composition could lead to a skewed performance evaluation.

Recommendations for Future Research

Alternative peer groups can be constructed to increase the robustness of the tests. Alternative peer groups can also be constructed by comparing the performance of the focal firms with all firms that belong to the same industry. A single-industry analysis provides a controlled research design and could be a better way to optimise the theoretical constructs. The disadvantage of a single industry analysis is generalizability, but small sample sizes offer more interaction between variables and firms (Ittner & Larcker, 2001).

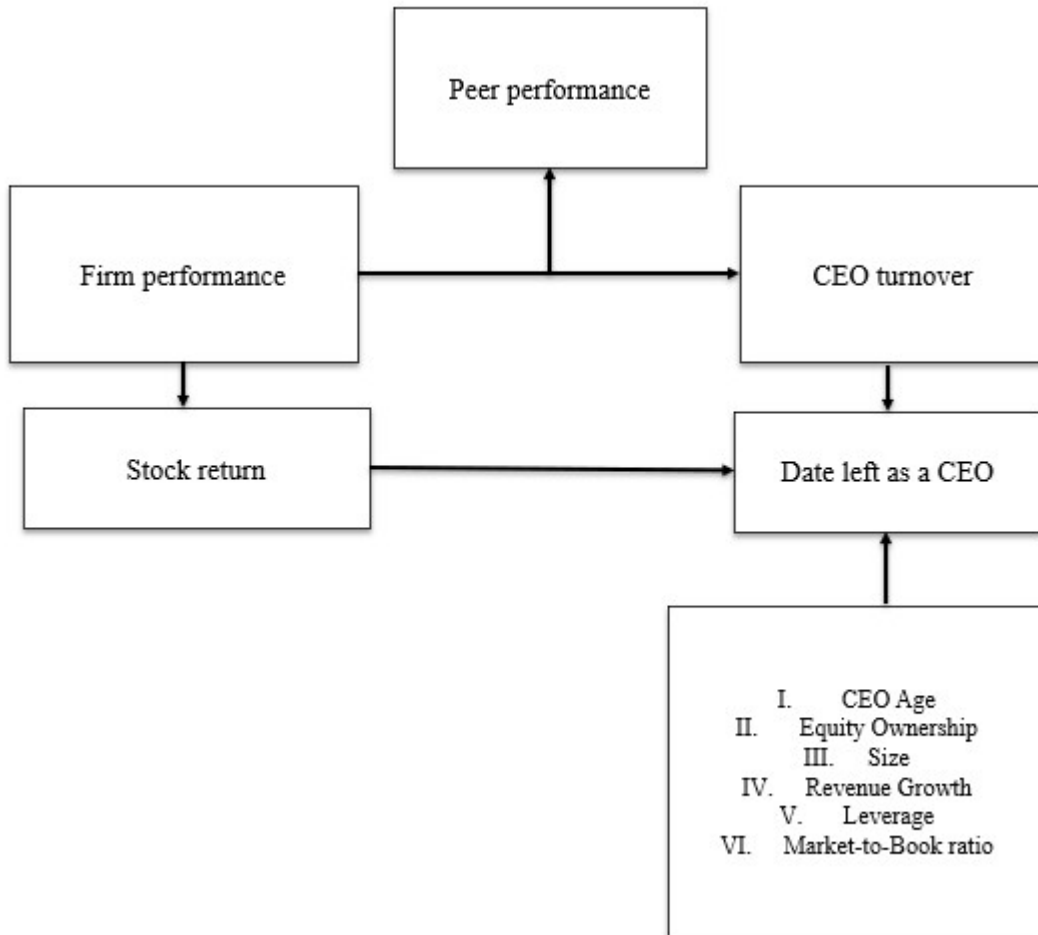
¹⁰ In the chapter 'Research Design' under 'Peer group analysis' a detailed explanation of the relevant indicators is presented.

Appendix

i. Variable Definitions

| | |
|---------------------------------|--|
| CEO turnover | A dummy variable for the year the CEO left the office: one if the CEO left the office that year and zero if the CEO stays in the office in year t. |
| EPS | Earnings per Share / The firm's net profit divided by common shares outstanding. The diluted eps, including ordinary items. The measure of firm performance. |
| Equity ownership | The portion of ownership the CEO has in the company in year t. |
| Leverage | The ratio of total interest-bearing debt to the total equity of the firm. The use of borrowed capital to increase the expected return on equity, also called 'gearing'. |
| MTB ratio | Market-to-Book ratio / The ratio is used to determine a firm's value by comparing the market value of a company to the book value of the company. The ratio is also called the price-to-book ratio. |
| Peer group | Comparable group of firms of the focal firm. Firm chosen peers could be used for comparable compensation analysis. |
| Revenue growth | Log of sales / The relative change in sales from t-1 to t divided by sales in t-1. The forecast period is one year. |
| Relative performance evaluation | Assessing the performance of the focal firm to other comparable firms. Dummy variable; one if the average performance of the peer group is higher than the performance of the focal firms and zero if the average peer group performance is worse than the focal firms' performance. |
| ROA | Return on Assets / Net income divided by lagged total assets. It determines how profitable a firm is compared to the total assets. |
| Size | Log of total assets. |
| Stock return | The share price of year t divided by the share price of year t-1. |

ii. Predictive validity framework for an overview of the CEO turnover research design (Libby, 1981).



iii. Explanation Logit Regression

Logit regression is a regression method of reporting research data after analysing the data. The logit regression provides a minimal bias and less loss of information relative to other comparable techniques. The OLS method requires the outcome of the regression to be fitted as a straight line, while the data output of a logit regression has a non-linear S-shaped curve. OLS regressions are not allowed to use in combination with a dependent binary variable, because of homoscedasticity, the normality of the error term and the predicted values of probability should lie within the zero to one range (Swamy, 2019). Although, the betas are calculated in the same way as in the OLS method.

Logit regression analysis a group of independent variables on a dichotomous variable rather than a continuous variable. The dichotomous dependent variable is categorical/binary variable that forces the predicted values to be either zero or one. Logit regressions estimate the probability of the dependent variable to be one. The output answers the question: "What is the probability that an event happens?". The presentation of the results is in terms of odds given several conditions. $P(Y=1)$ is the probability of occurrence of an event (Walsh, 1987).

Basically the same as the logit regression is the probit regression. The difference is in the distribution of both. The probit output follows a cumulative standard normal distribution, while the logit predicted values follow a cumulative standard logit distribution. The models provide similar output results (Torres-Reyna, 2012). This paper uses the logit regression method to analyse the data.

iv. Data Preparation

After merging the datasets, many new variables are derived from existing variables. The log of total assets is taken to measure the size and the log of revenue growth is taken to centralise the growth observations. Leverage and stock return, based on the lagged share price, are the other variables that have been created. Prior year's performance influences the CEO turnover of this year. Lagged variables are included to account for past performance. Peer performance has been created as a dummy variable; one if the average of the peer group performance is higher than the performance of the focal firms and zero if the average peer group performance is worse than the focal firms' performance. The dummy variable measures the unobserved factors that are changing between the groups.

Values or Percentages

This paper focuses on the hypothesised effect of continuous and dichotomous variables. Some data variables require transformation to show a change between the different years. To ensure the comparability and the robustness of the results, I have checked that all variables which embody a difference over time are formatted in percentage values.

- v. Marginal effect output of ‘Relative peer performance’ on the EPS analysis on CEO turnover

Table 10 The predicted probabilities for each level of ‘Relative peer performance’ while holding the other variables at its mean

| Relative peer performance | Dependent variable | |
|----------------------------------|---------------------------|--------|
| | CEO turnover | Margin |
| 0 | 0.09*** | (0.00) |
| 1 | 0.11*** | (0.00) |
| Observations | 12.143 | |

Note. Standard errors are in parentheses. The coefficients of the independent variables are probabilities; * p<0.10, ** p<0.05, *** p<0.01. Year- and Industry fixed effects are included.

- vi. Marginal effects output of ‘Relative peer performance’ on the ROA analysis on CEO turnover.

Table 11 The predicted probabilities for each level of ‘Relative peer performance’ while holding the other variables at its mean

| Relative peer performance | Dependent variable | |
|----------------------------------|---------------------------|--------|
| | CEO turnover | Margin |
| 0 | 0.09*** (0.00) | |
| 1 | 0.11*** (0.00) | |
| Observations | 12.143 | |

Note. Standard errors are in parentheses. The coefficients of the independent variables are probabilities; * p<0.10, ** p<0.05, *** p<0.01. Year- and Industry fixed effects are included.

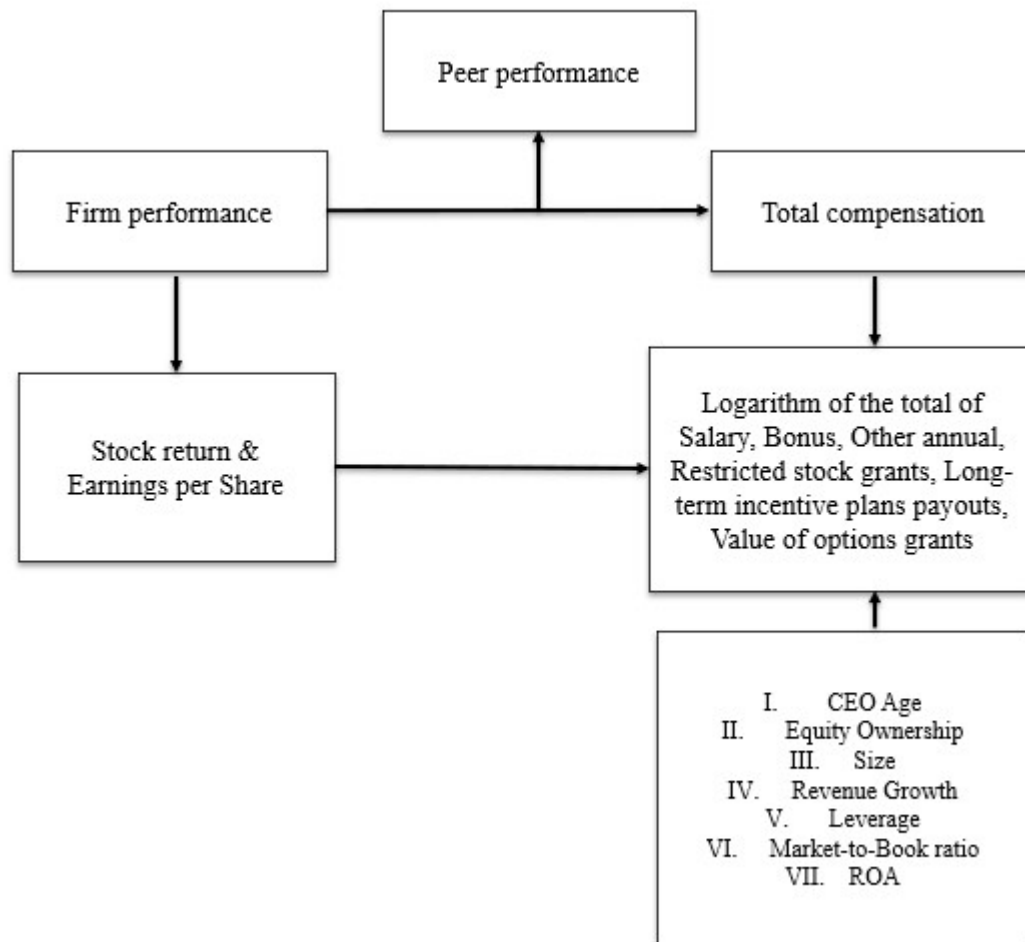
- vii. Marginal effects output of ‘ROA focal firm’ on the ROA analysis on CEO turnover.

Table 12 The predicted probabilities for the level of ‘ROA focal firms’ while holding the other variables at its mean

| ROA focal firms | Dependent variable | |
|------------------------|---------------------------|--------|
| | CEO turnover | Margin |
| -0.2 | 0.12*** (0.00) | |
| 0.3 | 0.08*** (0.00) | |
| Observations | 12.143 | |

Note. Standard errors are in parentheses. The coefficients of the independent variables are probabilities; * p<0.10, ** p<0.05, *** p<0.01. Year- and Industry fixed effects are included.

viii. Predictive validity framework for an overview of the compensation research design (Libby, 1981).



Bibliography

- Adhikari, B. K., & Agrawal, A. (2018). Peer influence on payout policies. *Journal of Corporate Finance*, 615-637.
- Agrawal, A., & Cooper, T. (2016). Corporate governance consequences of accounting scandals: Evidence from top management, CFO and auditor turnover. *Quarterly journal of finance*.
- Albuquerque, A. (2009). Peer firms in relative performance evaluation. *Journal of Accounting and Economics*, 69-89.
- Albuquerque, A. M., De France, G., & Verdi, R. S. (2013). Peer choice in CEO compensation. *Journal of Financial Economics* 108, 160-181.
- Baker, T., Collins, D., & Reitinga, A. (2003). Stock Option Compensation and Earnings Management Incentives. *Journal of Accounting, Auditing & Finance*.
- Bakke, T.-E., Mahmudi, H., & Newton, A. (2020). Performance peer groups in CEO compensation. *Financial Management*, 1-31.
- Barro, J. R., & Barro, R. J. (1990). Pay, performance and turnover of bank CEOs. *Journal of labor economics*, Vol. 8, no. 4, 448 - 481.
- Bebchuk, L. A., & Fried, J. M. (2010). How to Tie Equity Compensation to Long-Term Results. *Journal of Applied Corporate Finance* 22, 99-106.
- Bhojraj, S., & Lee, C. M. (2002). Who Is My Peer? A Valuation-Based Approach to the Selection of Comparable Firms. *Journal of Accounting Research*, 407-439.
- Bizjak, J. M., Kalpathy, S. L., Li, Z. F., & Young, B. (2020). The role of peer firm selection and award design in explicit relative performance awards. *SSRN*, 1-77.
- Bizjak, J. M., Lemmon, M. L., & Naveen, L. (2008). Does the use of peer groups contribute to higher pay and less efficient compensation? *Journal of Financial Economics*, 152-168.
- Bizjak, J., Brickley, J., & Coles, J. (1993). Stock-based incentive compensation and investment behavior. *Journal of Accounting and Economics* 16, 349 - 372.
- Bizjak, J., Lemmon, M., & Nguyen, T. (2011). Are all CEOs above average? An empirical analysis of compensation peer groups and pay design. *Journal of Financial Economics*, 538-555.
- Bratten, B., Payne, J. L., & Thomas, W. B. (2016). Earnings Management: Do Firms Play "Follow the Leader"? *Contemporary Accounting Research* 33, 616-643.
- Brickley, J. A. (2003). Empirical research on CEO turnover and firm-performance: a discussion. *Journal of accounting and economics* 36, 227 - 233.
- Budsaratagoon, P., Lhaopadchan, S., & Thomsen, S. (2020). Community and compensation: Director remuneration in Thailand. *Research in International Business and Finance* 52, 101124.
- Byrd, J. W., Johnson, M. F., & Porter, S. L. (1998). Discretion in Financial Reporting: The Voluntary Disclosure of Compensation Peer Groups in Proxy Statement Performance Graphs. *Contemporary Accounting Research* 15, 25-52.
- Cadman, B., & Carter, M. E. (2014). Compensation Peer Groups and Their Relation with CEO Pay. *Journal of management accounting research* 26, 57-82.

- Chakraborty, A., Sheikh, S., & Subramanian, N. (2009). The relationship between incentive compensation and performance related CEO turnover. *Journal of economics and business*, Volume 61, Issue 4, 295 - 311.
- Chung, K. H., & Zhang, H. (2009). Corporate governance and institutional ownership. *Journal of Financial and Quantitative Analysis* 46, 247 - 273.
- Conyon, M. J., & He, L. (2012). CEO Compensation and Corporate Governance in China. *Corporate Governance: An International Review* 20, 575-592.
- Cornett, M. M., Marcus, A. J., & Tehranian, H. (2008). Corporate governance and pay-for-performance: The impact of earnings management. *Journal of Financial Economics* 87, 357-373.
- DeFond, M. L., & Park, C. W. (1999). The effect of competition on CEO turnover. *Journal of Accounting and Economics*, 35-56.
- Denis, D., Denis, D., & Sarin, A. (1997). Ownership structure and top executive turnover. *Journal of Financial Economics*, 193-221.
- Dikolli, S. S., Hofmann, C., & Pfeiffer, T. (2013). Relative performance evaluation and peer-performance summarization errors. *Review of Accounting Studies*, 34-65.
- Edmans, A., Gabaix, X., & Jenter, D. (2017). Executive Compensation: A Survey of Theory and Evidence. *NBER Working Paper No. 23596*.
- Engel, E., Hayes, R., & Wang, X. (2003). CEO turnover and properties of accounting information. *Journal of accounting and economics* 36 (1-3).
- Farel, W., & Whidbee, D. (2003). The impact of firm performance expectation on CEO turnover and replacement decisions. *Journal of Accounting and Economics* 36 .
- Faulkender, M., & Yang, J. (2010). Inside the black box: The role and composition of compensation peer groups. *Journal of Financial Economics*, 257-270.
- Fisman, R., Khurana, R., & Rhodes-Kropf, M. (2014). Governance and CEO turnover: Do something or do the right thing? *Management Science* 60, 319 - 337.
- Garvey, G., & Milbourn, T. (2006). Asymmetric benchmarking in compensation: executives are rewarded for good luck but not penalized for bad. *Journal of Financial Economics*, 197-225.
- Gilson, S. (1989). Management turnover and financial distress. *Journal of financial economics* 25, 241 - 262.
- Gong, G., Li, L. Y., & Shin, J. Y. (2011). Relative performance evaluation and related peer groups in executive compensation contracts. *The Accounting Review*, 1007-1043.
- Gravett, L. (2017, September 26). *The Advantages and Disadvantages of a 360 Feedback Process*. Retrieved from e-HResources.com
- Grennan, J. (2019). Dividend payments as a response to peer influence. *Journal of Financial Economics*, 549-570.
- Hannes, S. (2004). Comparisons Among Firms: (When) do they justify mandatory disclosure? *J. Corp. L.*

- Hennes, K., Leone, A., & Miller, B. (2007). Management intent and CEO and CFO turnover around earnings restatement: Evidence from the post-Enron era. *The accounting review*, Vol. 83, No. 6, 1487 - 1519.
- Hunton, J. E., Lippincott, B., & Reck, J. L. (2003). Enterprise resource planning systems: comparing firm performance of adopters and nonadopters. *International journal of accounting information systems*, 165-184.
- Huson, M. R. (1997). Does corporate governance matter? Evidence from CalPERS interventions. *Univeristy of Alberta*.
- Huson, M. R., Parrino, R., & Starks, L. T. (2001). Internal monitoring mechanisms and CEO turnover: A long-term perspective. *The journal of finance*, No. 6.
- Institutional Shareholder Services. (2019, December 6). ISS. Retrieved from Company Peer Group Feedback: <https://www.issgovernance.com/file/policy/active/americas/US-Peer-Group-FAQ.pdf>
- Ittner, C., & Larcker, D. (2001). Assessing empirical research in managerial accounting: A value-based management perspective. *Journal of Accounting and Economics*, 349-410.
- Jensen, M. C. (1993). The modern industrial revolution, exit and the failure of internal control systems. *Journal of Finance* 48, 831 - 880.
- Jenter, D., & Kanaan, F. (2015). CEO turnover and relative performance evaluation. *The journal of finance*, Volume 70, Issue 5, 2155 - 2184.
- Jenter, D., & Lewellen, K. (2010). Performance induced CEO turnover. *SSRN Electronic journal*.
- Joh, S. W. (1999). Strategic Managerial Incentive Compensation in Japan: Relative Performance Evaluation and Product Market Collusion. *Review of Economics and Statistics* 81, 303-313.
- Kaplan, S. N., & Minton, B. (2006). How has CEO turnover changed? Increasingly performance sensitive boards and increasingly uneasy CEOs. *Corporate finance program*, no. 12465.
- Kaustia, M., & Rantala, V. (2013). Common Analyst - Based Method for Defining Peer Firms.
- Kaustia, M., & Rantala, V. (2015). Social learnings and corporate peer effects. *Journal of Financial Economics*, 653.
- Kedia, S., Koh, K., & Rajgopal, S. (2015). Evidence on Contagion in Earnings Management. *The Accounting Review* 90, 2337-2373.
- Kwon, H. J. (2016). Executive Compensation under Common Ownership. *Department of Economics, University of Chicago*.
- Larcker, D. F., McClure, C., & Zhu, C. (2019). Peer Group Choice and Chief Executive Officer Compensation. *Rock Center for Corporate Governance at Stanford University Working Paper No. 240*, 60.
- Laschever, R. A. (2013). Keeping up with CEO Jones: Benchmarking and executive compensation. *Journal of Economics Behaviour & Organization* 93, 78-100.
- Leary, M. T., & Roberts, M. R. (2014). Do Peer Firms Affect Corporate Financial Policy? *The journal of finance*, 139-178.

- Lee, C. M., Ma, P., & Wang, C. C. (2015). Search-based peer firms: Aggregating investor perceptions through internet co-searches. *Journal of Financial Economics*, 410-431.
- Li, L., & Chii-Shyan, K. (2017). CEO equity compensation and earnings management: The role of growth opportunities. *Finance Research Letters* 20, 289-295.
- Liang, L. (2016). Common Ownership and Executive Compensation. *Naveen Jindal School of Management, University of Texas at Dallas*.
- Libby, R. (1981). Accounting and human information processing: theory and applications. *Englewood Cliffs, N.J. : Prentice Hall*.
- Lipman, F., & Hall, S. (2008). Executive Compensation Best Practise. *Wiley*.
- Liu, L. S., & Stark, A. W. (2009). Relative performance evaluation in board cash compensation: UK empirical evidence. *The British Accounting Review* 41, 21-30.
- Lobo, G. J., Neel, M., & Rhodes, A. (2018). Accounting comparability and relative performance evaluation in CEO compensation. *Review of accounting studies*, Volume 23, Issue 3, 1137 - 1176.
- Matsumoto, D. A., & Shaikh, S. (2017). Discussino of 'When does peer information environment matter?'. *Journal of Accounting and Economics*, 215-220.
- Mercer. (2009). Pay for results: Aligning Executive Compensation with Business performance. *MMC*.
- Morck, Randall, Shleifer, A., & Vishny, R. W. (1989). Alternative mechanism for corporate control. *American economic review* 79, 842 - 852.
- Murphy, K. (1999). Executive compensation. *Handbook of labor economics*, 2485 - 2563.
- Naveen, D. D., Li, L., & Naveen, L. (2019). Symmetry in Pay for Luck. *Review of financial studies* , 43.
- Park, K., Yang, I., & Yang, T. (2017). The peer-firm effect on firm's investment decisions. *The North Americal journal of economics and finance*, 178-199.
- Parrino, R. (1997). CEO turnover and outside succession A cross-sectional analysis. *Journal of Financial Economics*, 165-197.
- Peters, F. S., & Wagner, A. F. (2014). The executive turnover risk premium. *The journal of finance*, Volume 69, Issue 4, 1529 - 1563.
- Pittinsky, M., & DiPrete, T. A. (2013). Peer group ties and executive compensation networks. *Social Science Research* 42, 1675-1692.
- Porac, J. F., Wade, J. B., & Pollock, T. G. (1999). Industry Categories and the Politics of the Comparable Firm in CEO Compensation. *Administrative Science Quarterly* .
- Qianqian, D., & Rui, S. (2018). Peer performance and earnings management. *Journal of Banking & Finance*, 125-137.
- Schwartz, K. B., & Menon, K. (2017). Executive Succession in Failing Firms. *Academy of Management Journal*, Vol. 28, No. 3.
- Shroff, N., Verdi, R. S., & Yost, B. P. (2017). When does the peer information environment matter? *Journal of Accounting and Economics*, 183-214.

- Swamy, H. (2019, August 5). *A Medium Corporation - Analytics Vidhya*. Retrieved from How to Deploy a Logistic Regression Model in GCP: <https://medium.com/analytics-vidhya/insiders-view-on-logistic-regression-and-how-do-we-deploy-regression-model-in-gcp-as-batch-c62a64563210>
- Torres-Reyna, O. (2012). Getting started in logit and ordered logit regression. *Princeton University*, 14.
- Vrettos, D. (2013). Are Relative Performance Measures in CEO Incentive Contracts Used for Risk Reduction or for Strategic Interaction? *The Accounting Review*, 2179-2212.
- Walsh, A. (1987). Teaching understanding and interpretation of logit regression. *Teaching Sociology*, 178-183.
- Warner, J. B., Watts, R. L., & Wruck, K. H. (1988). Stock prices and stock management changes. *Journal of financial economics* 20, 461 - 492.
- Watts, R., & Smith, C. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics* 32, 263 -292.
- Zhang, I. X., & Wu, J. S. (2019). Mandatory IFRS adoption and the role of accounting earnings in CEO turnover. *Contemporary accounting research*, Volume 36, Issue 1, 168 - 197.