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Do The Corporate Governance Mechanisms Still Affect The CEO Replacement Decision in The Market Competition?

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Abstract

The U.S market has become more competitive and it seems as if there is no other way to keep a company profitable and able to survive in the current market other than executing a significant change of strategy and action. Chief Executive Officer (CEO) replacement is one of company's strategies aimed at triggering a positive change in the future firm performance in order to survive in the market competition. This strategy has become common practice and has gained interest from listed companies in U.S business. Empirical research that relates to CEO replacement only shows the corporate governance impact on the CEO turnover in market competition using the G-index. Additionally, empirical research has not thoroughly investigated the effect of corporate governance mechanisms, specifically outside directors on boards and institutional ownership on CEO replacement decision with regard to market competition. This thesis aims to ensure that the outside directors and institutional ownership still affect the decisions of the CEO replacement for firms in market competition and provide direct evidence in the extent to which corporate governance mechanisms have vigorous influence in the decision whether to retain or dismiss the CEOs. This study uses archival data of U.S 500 S&P index companies from 2007 to 2014. This study found that firms in less competitive market with high portion of outsiders are more likely to replace their CEOs and the proportion of institutional ownership when the firm is well-performed in more competitive market does not necessarily affect the decision of CEO retention. In conclusion, the replacement of the CEO can be explained by its firm performance, the level of competition in the industry where the firm operates, and the corporate governance structures.

Keywords: Corporate governance, Market competition, Firm performance, Outside directors, Institutional ownership.

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CHAPTER 1
INTRODUCTION

Chief Executive Officer (CEO) turnover is a common occurrence and has gained attention in many companies around the world; especially it has gained interest from listed companies. Because of the increased demands of institutional investors to improve management practices and increased pressure for company accountability from the public, boards of directors are frequently responding to a perceived downturn in performance by replacing CEOs (Bommer and Ellstrand 1996; Farrel and Whidbee 2002). The replacement of a CEO of a company is likely to be followed by a redefinition of the mission, vision, and business strategy of the company. This often requires organizational restructuring in accordance with the formulation of the mission, vision, and the new strategy. This is expected to trigger a positive change in the future firm performance. From a shareholders' point of view, firm performance in terms of stock price is important as it provides shareholders the return on their investment. It thus provides insight for the shareholders and investors in analyzing and establishing their investment choices, so as to optimize the benefits and minimize the risk of their investments in response to CEO turnover.

In most of the theoretical literature on CEO turnover, a corporate board deduces the quality of its CEO from a CEO's managerial ability, the CEO productivity in the firm, which is reflected in firm performance. If the board's assessment of CEO quality falls below a certain threshold, the board often dismisses the CEO (Hermalin and Weisbach, 1998,). This raises the questions; do firms always fire the CEO after performing poorly? Are there other factors that have an important role in replacing a CEO? There are several examples that show the real case, namely in 2015, the Barclays CEO, Antony Jenkins was fired because of his lack of investment banking understanding. As the result of his lacking ability, the profit of the organization fell because of litigation costs and fines. A corporate's board also learns the quality of its CEO from industry competition and market performance that may lead to the dismissal of the CEO. At the end of 2015, Nokia performed quite well in the market but because of market competition, Nokia could not compete with its peers in term of innovation. This leads to Nokia being unable to survive in the current market, and consequently Nokia was acquired by Microsoft and the former CEO of Nokia was dismissed.

Furthermore, firms in need of finance seek investors willingly providing the required financing. Market competition forces these firms to find ways to increase capital at the lowest cost. In doing so, firms adjust their policies, such as a reform of corporate governance

mechanisms, that enables firms to increase external financing at lower costs. In turn, the providers of capital need to be assured of a return on their investment. According to Shleifer and Vishny (1997), corporate governance involves many ways that providers of capital could assure themselves to get a return on their investment. In this case, the corporate governance mechanisms may provide an increase in the assurance that this return on investment is attained.

The principal-agent conflict between shareholders and management is intensified in less competitive market that encourages opportunistic behavior from the management (Buchwald, 2015). Management may show opportunistic behavior in reporting information on the performance and economic resources of the company to investors and shareholders which in turn may affect the performance and sustainability of a company. Warther (1998) shows that the effective-boards viewpoint concentrates on the board's disciplinary effect. In such a market, outside directors and institutional ownership role in monitoring and advising a CEO should be of particular importance for a firm's corporate governance. If the CEO indicates a poor performance and fails to implement corporate governance it may leads to the dismissal of the CEO. Hence, the market competition acts as an external mechanism to discipline management (Chou et. al, 2011).

1.1. Research question

In summary, since there is limited evidence on this topic, this study is motivated to examine other factors that may influence the CEO turnover with respect to market competition and thus, the research question that guides this study is:

"Do the corporate governance mechanisms (outside boards of directors and institutional ownership) still affect the decision of CEO replacement in the market competition?"

1.2. Theoretical and practical relevance

This thesis contributes to the research related to the decision of CEO replacement. The aim of this study is to analyze other important factors that may affect the CEO turnover other than the poor financial performance of a company.

The focus of this thesis is on the relation between CEO turnover and firm performance with respect to the level of competition that forms the base of this study, before further examining the relation with CEO turnover in particular. The role of governance mechanisms is also taken into account - outside directors and institutional investors are used

as variables - to examine the relation between market competition and CEO turnover, whether this concerns voluntary or forced CEO replacement, considering that outside directors' and institutional investors' monitoring and advising competencies also have a particular role in the decisions of whether to retain or fire CEO after showing poor performance related to market competition, which might be fruitful for the existing CEO turnover literature. The theoretical relevance of this thesis lies in the importance to answer the research question, because there are only limited studies in this literature that examine CEO turnover in market competition. Specifically this thesis contributes to provide evidence of the role of the corporate governance mechanism in the CEO replacement decision with regard to market competition and it is also able to ensure which corporate governance mechanisms may influence the CEO replacement decision in the market competition.

This study is relevant and beneficial for management as it provides knowledge of the role of governance mechanisms in market competition; management will have better knowledge about corporate governance mechanism structure. It is also relevant for academia to understand the other important factors that may influence the CEO replacement decision.

1.3. Research method

In order to answer the research question, a quantitative analysis of U.S listed companies on the Standard & Poor's (S&P) 500 index during the period between 2007 and 2014 was conducted to understand whether the corporate governance mechanisms play an important role in CEO replacement decision of a company. A quantitative analysis was chosen instead of a qualitative analysis, as a qualitative study could not deliver the empirical evidence required to adequately address the research objectives proposed in this thesis. Moreover this study splits into two main analyses. The first analysis is univariate analysis of all variable. The second analysis is multivariate analysis that incorporates CEO replacement-firm performance relation with the effect of the corporate governance mechanisms with regard of the level of competition of industry. Therefore, this study uses the logit regression analysis to see the probability of CEO replacement in market competition when corporate governance mechanisms are examined and to see how corporate governance mechanisms affect the decision of CEO replacement.

1.4. Thesis outline

The remainder of the paper is structured as follows. Chapter 2 describes the prevailing theories that underlie the research question in this study. The research methodology is discussed in Chapter 3 which elaborates on the hypothesis development, the sample selection; and the methodology used to test the hypothesis. Chapter 4 provides the results and data analysis and Chapter 5 reports the conclusion, discussion and limitation of the study.

CHAPTER 2
LITERATURE REVIEW

2.1. Purpose of the literature review

Most of the literature on CEO turnover examines the relation between firm performance and CEO turnover with focused on poor firm performance influencing the CEO dismissal (Murphy and Zimmerman 1993; Warner, et. al. 1988; Weisbach 1988; Coughlan and Schmidt 1985). Other studies examine the effect of competition on CEO turnover (Defond and Park, 1998; Eisfeldt and Kuhnen, 2013). Numerous studies have found the market competition solves the corporate governance problem (Hart, 1983; Nickell, 1996; Chou et. al, 2008). Meanwhile, others argue that market competition alone cannot solve the issue of corporate governance (Shleifer and Vishny, 1997). Hence, outside directors' and institutional investors' monitoring and advising competencies hold an important role in the decisions of the CEO replacement.

This section explains theoretical concepts underlying the research question, by examining empirical findings with regard to the topic. First, this thesis incorporates empirical findings to explain how the intensity of market competition affects CEO turnover. By analyzing prior findings, this study is able to assess the effect of market competition and its impact on the decision of CEO replacement, which further can be used as a basis of for the development of hypotheses. Second, this thesis explains the underlying theory on how corporate governance mechanisms influence the CEO replacement decision in market competition. Furthermore, this study pays attention to the corporate governance mechanisms, specifically the role of outside members on board and the fraction of stock owned by institutional investors, also the effects of political connection on the CEO dismissal of firms within the market competition To provide a comprehensive literature review, this study includes not only empirical studies that have been mentioned in prior studies but also other studies that are related to corporate governance mechanisms influence on CEO turnover with regard to the level market competition. The first subsection explains CEO turnover theory and prior studies. The next subsection explains market competition that may influence the CEO replacement decision. The last subsection explains corporate governance mechanisms which affect CEO turnover in regard to the impact of market competition.

2.2. CEO turnover and prior studies

CEO turnover in listed companies around the world has increased over the past decades. The transformation in the CEO's world has profound consequences for everyone in and around the business. CEO-driven changes in management behavior affect the employees, customers, and shareholders. CEO turnover is the bridge between the behavior of the management team and returns to shareholders. Therefore, the replacement of CEO also can be seen as an internal corporate governance mechanism. The turnover of the CEOs increased over the time; the consulting firm, Booz, Allen, and Hamilton[1] hypothesizes this event; sustaining the trend they have observed from 1995 to 2001. They consider four reasons that drive this increase: first, CEO turnover is a means to link management to the creation of shareholder; second, all CEOs perform preferable during the first half of their tenure; third, the public is increasingly demanding that CEOs bear responsibility for their company's problems, and last; more experienced CEOs are available to run the companies.

In general, Price (1977) defines a turnover as the degree of individual movement across the membership boundaries of a social system. This turnover can be classified into two parts, which are routine/voluntary and non-routine/dismissal (Kang and Shivdasani, 1995; Maury, 2006). Numbers of studies have been conducted to investigate the CEO turnover in many frameworks. Although the performance of CEO has been the subject of the extensive research, most of the research examines the relation between firm performance and CEO turnover with focused on poor firm performance influenced by CEO dismissal (Murphy and Zimmerman 1993; Warner, et. al. 1988; Weisbach 1988; Coughlan and Schmidt 1985).

The relation between company's performance and CEO turnover has been investigated massively over the years. Coughlan and Schmidt (1985) are the first authors who investigated this relation. In their research, stock price performance and the probability of a CEO turnover is inversely related and Warner et al. (1988) supported this finding too. Years after, Puffer and Weintrop (1991) find there is a negative relation between CEO turnover and firm performance. To test their study, they use three performance criteria which are firm's stock price performance, accounting ratios, and earnings targets, where these earnings targets are defined by analysts' forecast of earnings per share as a proxy of the board of directors' expectations for company's earnings targets. The main finding of their study is that a change in CEO occurs when reported annual earnings per share fails to meet the expectations. They provide evidence that firm performance has a strong relation with CEO turnover, where the

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[1] http://www.booz.com/media/uploads/BoozCo_CEO-Succession-Study-2011-3.pdf

decision of the turnover is one of the boards of directors' discretion. Meanwhile, Bommer and Ellstrand 1996; Farrel and Whidbee 2002 find that boards of directors are frequently responding to perceived downturn in performance by replacing CEOs.

Furthermore, Brickley (2003) also shows that CEO turnover is inversely related to firm performance and the sensitivity of turnover to performance is highest among smaller firms. He also suggests that both accounting performance and stock price have incremental predictive capability in explaining CEO turnover. In addition, Engel et al. (2003) show that the relationship between some performance measures and CEO turnover is affected by properties of the firm's accounting system. In their paper, they examine how the weights on accounting- and market-based performance measures in the decisions to CEO replacement are related to their features as measures of managerial performance. In line with prior studies, Kaplan and Minton (2008) conduct a study in the U.S firms between 1992 and 2005 about how CEO turnover changed and its effects on stock performance. They find that the boards are more likely to switch CEO when the firm's stock is performing poorly; they also find that high CEO turnover is positively correlated with bad stock performance.

Besides numerous studies examining the relation between CEO turnover and firm performance, there are also studies that discover the sensitivity of CEO turnover to firm performance. Bushman et. al (2010) examine the role of performance risk is indirectly affecting CEO turnover decisions and determining the sensitivity of CEO turnover to firm performance. They argue that a key factor in boards of directors' decision whether to retain or dismiss an incumbent CEO is the board's assessment of the CEO's expertise relative to the assessed talent of potential replacement CEOs. They find that CEO turnover becomes more responsive to performance as the variance of the distribution of the CEO's talent increases and becomes less responsive to performance as performance risk beyond the CEO's control increases. Two other papers that examine the sensitivity of CEO turnover to firm performance are from Jenter and Kanaan (2010) and Kaplan and Minton (2012), both papers find that CEO turnover is negatively related to market-adjusted stock performance.

Previous studies indicate that the boards are trying to change the negative performance by changing the CEOs, where there is a belief that changing a CEO is a remedy for poor performance. The theory from strategic leadership perspective supports this belief; this perspective claims that the importance of the CEO as the CEO's cognitive base affects his decisions and will be reflected in the company. Changing CEO would, therefore, mean a different cognitive base, and thus lead to a change in the company (Finkelstein and

Hambrick, 1996). Another theory that supports this belief is the strategic choice perspective. This theory states that the top level management can determine the structure of the company by selecting from a range of structural configurations to suit the business environment of a company. Therefore, these can enhance or deteriorate firm performance (Child, 1972). There is a theory which states the opposite, the population ecology perspective states that companies in the business situation functions like individuals in the nature. Only the strongest would survive and the strength is decided by the characteristics (Hanan and Freeman, 1977). In other words, only the companies which from the beginning have the right characteristics to fulfill the requirements of the business situation will survive. The theory further argues that adaption to the business situation is not possible because the pressure from company's weakness is too large. This means that managers have no opportunity to affect company performance according to this perspective.

2.3. Conclusion with regard to CEO turnover

In summary, a large part of previous studies on CEO turnover focuses on the relation between the performance and the probability of CEO turnover (e.g. Coughlan and Schmidt, 1985; Weisbach, 1988; Parrino, 1997; Kaplan and Minton, 2008; Jenter and Kanaan, 2010). This strand of literature comes to the conclusion that there is a negative relation between the firm performance and the probability of a CEO turnover. CEOs are more likely to dismiss from the firm when stock-price and accounting performance is not good than when it is good, where there is a belief that changing a CEO is a remedy for poor firm performance. The sensitivity of turnover to performance varies systematically across firms; it depends on many factors, namely the variance of the distribution of the CEO's talent, the board's structure, the size and the complexity of the firms. Moreover, CEO turnover is sensitive to the company's stock performance relative to the industry, the industry's stock performance relative to the stock market (under certain specifications), and the overall performance of the stock market (Jenter and Kanaan, 2015).

2.4. Market Competition

Over few decades, the U.S market has become more competitive and it seems as if there is no other way to keep a company profitable and able to survive in the current market other than executing a significant change of strategy and action. Not only the industry and technology development has rapidly changed but also the customer's tastes and preferences

of a product, which at the same time causes a company to inevitably adjust to these changing economic conditions. These customers' choices in products directly affect the firm value and therefore, firms will try to make their products different from the rest, which results in greater choice so consumers can select the product that offers the right balance between price and quality in competitive market. Competition also encourages companies to improve the quality of goods and services they provide or offer in order to attract more customers and expand their market share and thus more profit, results in increased firms' value.

Competition within firms can be generally defined as rivalry among firms, where every firm will put high effort to achieve such objectives as increasing profits and greater market shares. The effect of market competition is visible by including the level of competition on industries. Market competition not only imposes efficient allocation of the firm's resources but also forces firms to increase their capital at the lowest cost, this leaves less opportunity for disparity behavior of the firm's CEO (Hart, 1983; Nickell, 1996; Giroud and Mueller, 2008) because competition itself is a source of discipline; it reduces the amount of slack in the system due to individuals' not maximizing costs (Hart, 1983). Brickely (2003) also concludes that the sensitivity of CEO turnover increases with the product market competition. Firms in less competitive industries or non-competitive industries have to face lack of pressure to reduce slack and to improve efficiency, which fails to enforce to discipline the management.

A number of studies related to competition and CEO turnover-performance relation have been conducted. The empirical evidence shows that CEOs are more likely to be dismissed if overall industry performance is poor, even after taking into account the impact of relative performance (Kaplan and Minton, 2006). They argue that CEO turnover is significantly related to firm stock performance relative to industry, industry performance relative to the overall market, and the performance of overall stock market. According to Jenter and Kanaan (2015), CEOs are significantly more likely to be dismissed after bad industry and, to the lesser extent, after a bad market performance. They conclude that peer group performance may effect CEO replacement decision because boards do not behave optimally to the CEO. The main result of their analysis is that peer performance has large effects on underperforming CEOs, and thus leads to CEO dismissal.

DeFond and Park (1999) also point out that industry competition also should affect the nature of accounting measure used to evaluate CEOs. They examine how relative performance evaluation (RPE) is more useful for firms in competitive industries to evaluate

CEO's performance as a base for a decision whether to retain or dismiss a CEO. Their evidence shows that the frequency of CEO replacement is higher in high-competition industries, which represent the indirect evidence on the use of RPE. They also find that RPE based accounting measures are more associated with competition in high competitive industries than in low competition industries. Moreover, Eisfeldt and Kuhnen (2013) examine whether the relation between the CEO labor market and industry conditions occurs in a competitive assignment. The main finding of their research is a negative relationship between industry performance and the likelihood of forced CEO turnover. They develop a competitive assignment model of CEO turnover to explain the effects of both relative and absolute performances on turnover based on two ideas: industry shocks will drive turnover and fixed firing cost leads to threshold rule for termination at the firm level. They show how the competitive assignment can be used to understand the dynamics of CEO turnover. Eventually, the overall finding from prior studies show that market competition does have an influence on CEO turnover, where the frequency of this turnover is higher in the competitive market.

2.5.   Market Competition and Corporate Governance Mechanisms

Effective corporate governance is needed if a company wants to achieve its strategic goals. A corporate governance structure combines policies and controls that drive a company towards its objectives and also satisfy the shareholders' needs; hence, there are two mechanisms in a corporate governance structure. The first is internal mechanism; this mechanism includes the structure of the board of directors into levels of responsibility, segregation of control and policy development. The second is external control mechanisms, which are controlled by those outside a company and serve the purposes of the entities such as financial institutions and the governments. The corporate governance mechanisms work if the dismissal of CEO leads to better disciplining in poorly performing management and thus, the disciplinary effect ensures that the management acts according to the interest of the shareholders.

As discussed in the previous subsection, market competition not only imposes efficient allocation of the firm's resources but also forces firms to increase their capital at the lowest cost, this leaves less opportunity for disparity behavior of the firm's CEO (Hart, 1983; Nickell, 1996; Giroud and Mueller, 2008) because competition itself is a source of discipline; it reduces the amount of slack in the system due to individuals' not maximizing costs (Hart,

1983). These firms would adjust their specific policies, including the corporate governance reforms, which thus could increase the effectiveness of board monitoring in market competition to ensure that the firm will efficiently and effectively handle threats from market competition that could threaten the sustainability of the company. Corporate governance is actually the way in which investors and shareholders assure themselves of getting a return on their capital (Shleifler and Vishny, 1997).

In market competition, firms in high competitive industries tend to have weaker corporate governance than firms in monopolistic industries or less intense competition; in other words, in non-competitive industries, firms benefit more from corporate governance (Chou et. al, 2008; Giroud and Mueller, 2008). Karuna (2007) finds that firms in competitive industries have better corporate governance frameworks. He argues that managers in competitive industries have expediency policies to deciding the effective strategies for the company. Therefore, the managers have to be well monitored. When the competition is intense, well-governed firms do not earn supreme abnormal return than poorly governed firms (Chou et. al., 2011). Nevertheless, Cremers et al. (2008) find that firms in competitive industries have weaker shareholder rights, and they argue that the effect of industry on corporate governance is caused by long-term customer relationships. Prior literature argues that more market competition would substitute for costly monitoring in firms; hence, market competition can be an option for corporate governance because market competition itself acts as an external governance mechanism (Fama and Jensen, 1983; Hart. 1983; Allen and Gale; 2000). Meanwhile, Shleifler and Vishny (1997) argue that the economic efficiency in market competition does not fully resolve the corporate governance problem, as this problem arises when there is a conflict of interest between the management and the shareholders.

A study by Chou et. al (2008) provides evidence that market competition does have an influence on corporate governance. They examine the relation between market competition and corporate governance, whether market competition acts as an external mechanism for disciplining management and whether there is a relationship between the level of competition and the corporate governance. They find that market competition has a disciplining effect on management; they also find that the higher the level of competition in industries is, the weaker corporate governance structure of firms will be. They show that corporate governance quality has a significant effect on firm performance only when market competition is weak; in other words, in more intense market competition, the level of corporate governance is less important.

At the same year, Giroud and Mueller (2008) also examine the relation between corporate governance and market competition. They identify not all firms benefit from corporate governance as in competitive industries; managers are under pressure to improve firms' efficiency and to reduce slack. They also figure out that firms in competitive industries benefit relatively less from corporate governance. Conversely, firms in less competitive industries and firms in non-competitive industries benefit relatively more from corporate governance because in these industries, lack of competitive pressure fails to discipline the managers.

Nevertheless, firms use various governance mechanisms to monitor and control management to alleviate agency problems. An important outcome of these mechanisms is CEO turnover following poor firm performance (Huson et. al, 2001). Therefore, corporate governance mechanisms may still play an important role in monitoring and controlling firms, particularly the decisions whether to retain or dismiss CEO in a competitive market. Since governance mechanisms, namely the boards of directors and institutional investors, as monitoring and disciplining mechanism can significantly affect company's policies, and may take disciplinary actions by removing inefficient CEOs regardless the firm's performance. Brickley (2003) draws the conclusion from existing literature that the sensitivity of turnover to performance increases with the fraction of outsiders on the board and concentrated outside stock holdings. Hermalin and Weisbach (2003) find evidence that the existence of outside directors on the board increases the risk of CEO dismissal. Coles et. al. (2008) also state that outside directors on boards affect discrete task, including hiring and firing of the CEO. Some might argue that in the market with weak competition, the monitoring proficiency of the board is mainly important to discipline the top level of management. On the other side, in the market environment with high competition, the CEOs should be disciplined by high market pressure (Hart, 1983; and Aghion et. al., 2013).

Regarding to the institutional ownership, prior studies have documented the role of institutional investors in corporate governance to monitoring management. For example, Aggarwal et. al. (2010) examine the role of institutional investors in corporate governance by analyzing portfolio holdings of institutions in companies from 23 countries during the period 2003– 2008 find evidence that firms with higher institutional ownerships are more likely to dismiss the CEOs. They also find that changes in institutional ownership over the time positively influence subsequent internal governance improvements within firms. Furthermore, Demilrap (2011) examines whether institutional monitoring has an impact on

overall operating performance of a firm by analyzing the impact of institutional ownership on stock price and operating performance of firms. They use several measures to capture the magnitude of institutional monitoring; namely, the fraction of outstanding shares owned by institutions, and the concentration institutional ownership. The result shows that different types of institutions positively affect the operation and governance in firms and they also find that announcement returns are significantly related to the total ownership level and concentration.

On the other hand, Aghion et al. (2013) examine the relation between institutional ownership and innovation. They argue that there is causal positive effect of institutions on innovation. They have done a test with a model where institutional investors increase innovation incentives through minimazing career risks. Therefore, they conclude that complementary between institutional ownership and market competition and CEOs are less likely to be fired in firm profit downturns when institutional ownership is higher. Moreover, Aghion et. al. (2005) stated that competition may foster innovation and growth since competition may increase the incremental profits from innovating, and thereby encouraging research and development investment aimed at escaping competition. Clearly, from the prior literature, institutional ownership have an important role to play in monitoring firms because institutional investors increase the innovation in the firms so they are able to meet the market demand, even though they represent only one small part of an effective corporate governance system.

2.6.   Conclusions from the literature review

To summarize, previous studies with regard to the topic of this study did not specifically investigate the effect of corporate governance mechanism on CEO replacement decision related to market competition. Prior studies indicate that high CEO turnover is positively correlated with poor firm performance and most of the prior literature only shows the corporate governance impact on the CEO turnover using the G-index. According to Padilla (2000), competition may not be the one and only solution to solve the management's issues, implying that better governance structures still have an effect on management, even under intense market competition. Thus, corporate governance mechanisms may still play an important role in monitoring and controlling firms, specifically decisions to retain or dismiss CEO in a competitive market, even though market competition itself can be seen as an external mechanism Since the boards of directors and institutional investors, act as

monitoring and disciplining mechanism can significantly affect company's policies, and may take disciplinary actions by removing inefficient CEO. Therefore, outside board of directors and the fraction of institutional investors are chosen as proxies of corporate governance mechanisms.

The objective of this thesis is to show other factors that influence in the CEO replacement. Consequently, this study is able to ensure and provide direct evidence that the corporate governance mechanisms used in this study, namely outside directors and institutional ownership still affect the CEO replacement decision for the firms within the market competition. Lastly, it can also be concluded the extent to which the corporate governance mechanisms play an important role in the decision on whether to retain or dismiss a CEO in a market competition.

CHAPTER 3
RESEARCH METHOD AND HYPOTHESIS DEVELOPMENT

3.1. Research Method

This study pays attention on the influence of governance mechanisms on the CEO replacement decisions in market competition, using the firm performance as a base for the analysis. Theory shows that firm performance can be determined by accounting-based measures and stock-based measures; this study uses both of the measures to determine the firm performance. This thesis investigates how corporate governance mechanisms, more specifically outside directors on board and institutional investors influence the decision to replace CEOs of firms in market competition. Details about measurement and sample selection are explained in the next subsection.

Data was obtained from Compustat, Center for Research in Security Prices (CRSP), and Thomson Reuters. Therefore, this study is categorized as archival study, where the process of the sample selection is not random. The benefit from archival study is high external validity due to the use of a real-time data and a large number of samples, so it can be generalized to the population (Mitchel and Jolley, 2010). Different from lab experiment, in archival study treatment to the sample happen naturally and cannot be manipulated; hence, the result can be generalized to real world setting.

This study uses the logistic regression analysis to see the probability of CEO replacement in market competition when corporate governance mechanisms are examined. A regression analysis is an approach that is used to analyze the relation between predictor variables (independent/X) and response variables (dependent/Y). The response variable in this study has a binary value, assigning 1 if the company experiences CEO replacement and 0 otherwise. According to Fitzmaurice et. al. (1996), the general model for logit analysis with binary panel data is as follows:

$$\log\left(\frac{\mu_{it}}{1 - \mu_{it}}\right) = x'_{it}\beta_t \; ; \; \mu_{it} = \Pr(Y_{it} = 1|x_{it}, \beta_t) \; ; i = 1,2,\dots,n \; ; t = 1,2,\dots,m$$

The equation above is the logit link function for the regression model with binary value of 1 or 0. X and Y represent the independent and dependent variables, respectively. The value of is the number of respondents in the cross-section dataset, is the number of time observations in the dataset, and is the number of independent variables used in the regression

model. is the probability of success (i.e., the probability of $Y = 1$ in an observation). In a logit link function, the dependent variable is stated in a logit form:

$$\log\left(\frac{\mu_{it}}{1 - \mu_{it}}\right) = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \cdots + \beta_p X_{p,it} + \varepsilon_{it}$$

While, the value of the dependent variable in a normal or continuous data will be Y . Based on the model above, this study employs the following panellogisitic regression models to analyze the influences of corporate governance mechanisms, firm performance, CEO age, firm size and stock volatility on the probability of a firm replacing its CEO in market competition.

$$\log\left(\frac{\mu_{it}}{1 - \mu_{it}}\right) = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \cdots + \beta_9 X_{9,it} + \varepsilon_{it}$$

The dependent variable has a binary value; 1 if a firm replaces its CEO and 0 otherwise. Thus, the regression model is as follows:

$$CEOturnover_t = \alpha + \beta_1\,ROA_{it} + \beta_2\,MASR_{it} + \beta_3\,COMP_{it} + \beta_4 OUTDIR_{it} + \beta_5\,INSTOWN_{it} + \beta_6\,AGE_{it} + \beta_7\,FIRMSIZE_{it} + \beta_8\,RISK_{it} + \varepsilon_{it}$$

The description variables and operationalization of variables used in this study are explained further in the next section. To study corporate governance mechanisms impact on CEO replacement in the market competition, this thesis proposes five hypotheses, which are elaborated in the next subsection. Therefore, the predictive validity framework (Libby, 1981) is presented in the following Figure 1 to show the conceptual relations that are examined in this thesis.
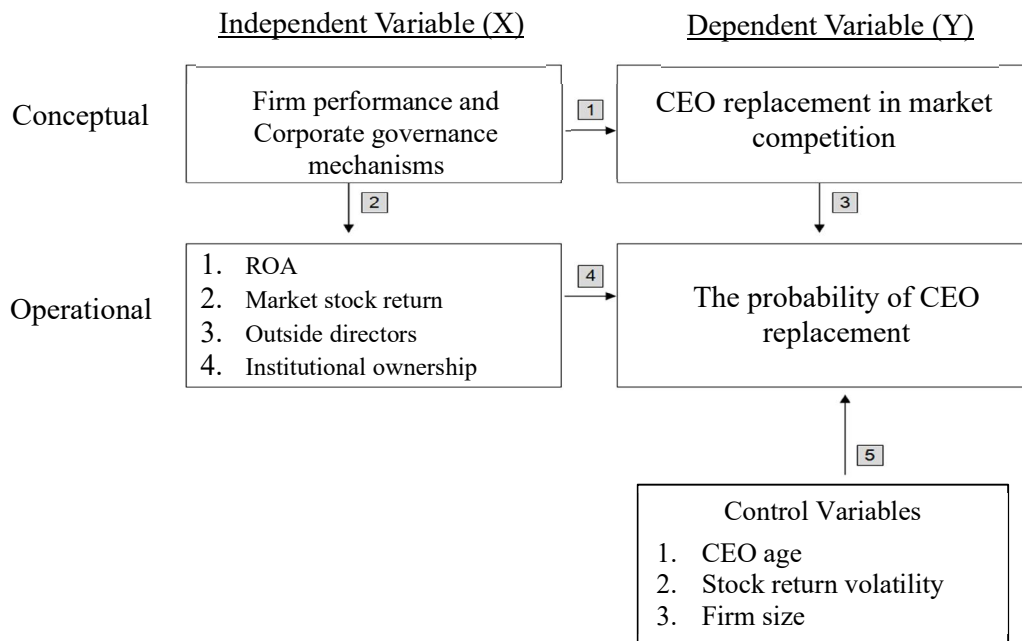
Figure 1 The Predictive Validity Framework: Libby's (1981) boxes

This thesis studies how corporate governance mechanisms, more specifically outside directors on board and institutional investors influence the management's decision whether to retain or dismiss a CEO in market competition. In other words, this thesis examines the correlation between CEO turnover-firm performance relation and corporate governance mechanisms in market competition. In order to investigate this relationship, the CEO replacement in market competition is employed as the dependent variable, measured through the probability of CEO replacement. While the independent variable is represented by the firm performance and corporate governance mechanisms, measured through Return on Assets (ROA), market stock return, the proportion of outside directors on boards and the proportion of institutional ownership in a firm. Moreover, CEO age, stock return volatility and firm size are included as control variables.

According to Libby (1981), the two Libby boxes from the conceptual level, i.e. firm performance and corporate governance mechanisms, and CEO replacement in market competition, reflect the theoretical sector. While the boxes from operational level, i.e. (ROA), market stock return and the proportion of outside directors on boards and the proportion of institutional ownership in a firm, and the probability of CEO replacement reflect the empirical sector.

Furthermore, one of the important parts of a research design is ensuring the validity. The validity of a research reflects how effectively the research answers the research question (Libby et. al., 2002). There are three validity features of empirical research, namely construct validity, internal validity, and external validity which are elaborated in the next paragraph. As mentioned in Libby et. al. (2002) "both internal and external validity are keys to effectiveness. An experiment that lacks internal validity fails by providing a misleading indication of the relation between the dependent and independent variable, while an experiment that lacks external validity produces results that are (or at least should be) divorced from the motivation of the study" (p.794).

The first validity features is construct validity, this validity reflects to whether the operational definition of a variable actually reflect the true theoretical meaning of a concept that is supposed to measure. The construct validity can be represented through arrows 2 and 3 in Figure 1. Measuring the dependent variable in this study, i.e. CEO replacement in market competition, implies the possibility of the CEO replacement in market competition for each firm-year observation. In order to identify the CEO turnover, the name of the CEO for each firm-year observation is collected from Execucomp. Since the name of CEO is observable in Execucomp, this measurement is performed without any issues. Hence, the construct validity regarding the dependent variable is relatively high.

On the other hand, measuring the independent variables, i.e., ROA, market stock return, the proportion outside directors, and the proportion of institutional investors are not directly observable; this implies to calculate the estimation of the amount of every variable and thus, an estimation model is used. These estimates used for determining the amount of every independent variable cause certain construct validity issues. Therefore, the construct validity regarding the dependent variable is relatively low.

Regarding the internal validity, this validity refers the extent to which the dependent variable can be attributed to the independent variable (Libby et. al., 2002). The internal validity can be visibly represented through arrow 4 in Figure 1. As it was mentioned before in this chapter, this thesis is an archival study. Because the data used for CEO turnover, and calculating the ROA, market stock return, the proportion outside directors, and the proportion of institutional investors are collected from various external sources, namely Compustat, the Center for Research in Security Prices (CRSP) and Thomson Reuters database, the accuracy and the reliability of the data in this study are considered to be valid. Consequently, this

indicates that this study has a relatively high internal validity. However, the selection of control variables should strengthen the internal validity of this study.

Furthermore, external validity reflects the extent to which the results of a study can be generalized to other tasks, measurement methods, and participant (Libby et. al., 2002). In Figure 1, the external validity can be visibly represented through arrow 1. This study used real world data and a sample selection of U.S companies listed in S&P 500 index for 8 years periods, from 2007 to 2014. The sample was randomly selected from the Compustat database and Thomson Reuters. Consequently, the results of this study can only generalized within companies in the Unites States.

3.2. Hypothesis Development
3.2.1. Firm Performance and Market Competition

The viewpoint on the correlation between CEO turnover and firm performance (i.e., accounting- and market-based performance) in market competition remains deficient. There is a lack of supporting evidence on CEO turnover influenced by market competition as prior literature discussed in previous section mainly focuses on the poor firm performance in CEO replacement decision.

Most prior studies provide evidence that boards filter industry and market shocks from firm performance before deciding whether to retain or dismiss their CEOs. For example, Morck et. al. (1989) find that turnovers of entire top management teams to be equally likely in troubled and healthy industries, suggesting that industry performance is filtered from dismissal decisions. And Gibbons and Murphy (1990) find that both market and industry shocks are filtered out in a large sample of CEO succession. One of the CEO responsibilities is to maximize the value of shareholders, which can affect the firm value in terms of stock prices and thus, can affect the investor's perceptions about the company. Jenter and Kanaan (2015) also pointed out that increased pressure from shareholders may enforce boards to act against CEOs when stock prices are down, even if the firm poor performance is not the CEOs' fault.

Moreover, CEO turnover is more sensitive to both firm-specific and industry-induced performance when industry performance is poorer (Jenter and Kanaan, 2010; Kaplan and Minton, 2012). This could reflect the fact that boards learn more about CEO type when the environment is tougher or that they misattribute poor firm performance to poor CEO ability when it represents an adverse industry shock (Jenter and Kanaan, 2010). The effect of market competition is visible by including the level of competition on industries. Firms in less

competitive industries or non-competitive industries have to face lack of pressure to reduce slack and to improve efficiency, which fails to enforce to discipline the management. Since market competition acts as an external mechanism to discipline the management (Chou et. al., 2011), conflicts of interest between management and shareholders are less intensified in a competitive market that can reduce the opportunistic behavior of the management (Buchwald, 2015), which in turn may lessen the probability of the company's poor performance. This leads to a lesser probability to replace the CEOs. Consequently, this thesis predicts the probability of CEO turnover is more likely to occur in companies which have poor performance in a less competitive market than a more intense market, which leads to the first hypothesis:

H1a: Poor firm performance leads more often to CEO replacement when a market is more competitive.

H1b: Poor firm performance does not lead to CEO replacement when a market is less competitive.

To test the first hypothesis, this thesis includes CEO turnover as dependent variable, Return on Assets (ROA), market-adjusted stock return and market competition as independent variables. Although there is no literature mentioning the optimal way to measure performance of the company; using stock return can reflect the true value of discounted value of future cash flows (McWilliams and Siegel, 1997). Warner et. al. (1988) also find that market-adjusted stock returns are better predictors of CEO dismissals than absolute performance and also there is no evidence that industry shocks are filtered from CEO dismissal decisions. Thus, market-adjusted stock returns are chosen as a proxy for firm market-based performance as used in most CEO turnover-firm performance relation literature (e.g., Murphy and Zimmerman, 1993; Defond and Park, 1998; Engel et. al., 2003). For firm accounting-based performance, ROA is used because it is standard accounting measure that used in most studies that not only investigate CEO turnover-firm performance relation but also studies with regard to firm value (e.g., Chou et. al., 2011; Giroud and Mueller, 2011; Bushman, et. al., 2010; Taylor, 2010; Buchwald, 2015).

Additionally, the model consists of CEO age, stock-price volatility and firm size as control variable. According to Zimmerman (1993) and Weisbach (1988), CEO age is significantly associated with turnover. Defond and Park (1998) also point out that stock-price

volatility can influence CEO turnover. Moreover, Bennedsen et. al. (2011) have figured out that more profitable and larger firms are less likely to replace their CEOs. The first hypothesis is tasted with the following model:

$$CEOturnover_t = \alpha + \beta_1 \, ROA_{it} + \beta_2 \, MASR_{it} + \beta_3 \, COMP_{it} + \beta_4 \, AGE_{it} + \beta_5 \, FIRMSIZE_{it} + \beta_6 \, RISK_{it} + \varepsilon_{it}$$

3.2.2. Outside Directors on Boards

The agency theory proposes that independent members of board should dominate the boards of director to increase the monitoring quality of the firm and its board of directors because outside directors are perceived to be more objective than inside directors (Weisbach, 1988). Conversely, the stewardship theory argues that board of directors should be composed mainly of inside board members because they are considered to have better firm-specific information than non-executive board members (Fama and Jensen, 1983; Donaldson and Davis, 1991). Moreover, a discussion on CEO turnover and firm performance conducts by Brickley (2003) draws conclusion from existing literatures that the sensitivity of turnover to performance increases with the proportion of outside directors on the board, concentrated outside stock holdings, and product market competition. Mintzberg (1983) also states that the board of directors makes the CEO dismissal decisions. Furthermore, many literature show that boards controlled by outside directors do a better job in monitoring the CEO than the boards controlled by inside directors; the greater level of outside board allows more effective monitoring, thus improves firm performance, where complex firms are more likely to have larger boards with more outside directors (Weisbach, 1988; Laux, 2007; and Coles et. al, 2008). This effective monitoring; will help firms to react efficiently to market changes and threats. Hermalin and Weisbach (2003) also suggest that CEO turnovers are more sensitive to performance when the boards are more independent as the independent boards may lead to a more effective managerial decision-making process.

However, the empirical results clearly suggest that outside directors and market competition are substitute; the presence of outside directors on the board increases the risk of executives' turnover (Hermalin and Weisbach, 2003). Some might argue that in a market with low competition, the monitoring proficiency of the board is mainly important to discipline the top level management. On the other side, in the environment with high competition, the CEOs are expected be disciplined by high market pressure (Hart, 1983; and Aghion et. al., 2013). High competitive market result in better management quality, leading

to improved firm performance and thus, the probability of the replacement of CEOs would be lower and the necessity of monitoring by outside board of directors is would also be lower. Supposing that outside directors enhance the efficiency of board monitoring, this thesis predicts that the proportion of outside directors is larger in market that is characterized by relatively low competition. This leads to the second hypothesis:

H2a: Firms in a competitive market are more likely to have a better firm performance that have a small proportion of outside directors than firms in a less competitive market.

H2b: Firms with a small proportion of outside directors on the board are less likely to dismiss CEOs in a competitive market.

In the second hypothesis, this thesis used the proportion of outside directors on the board to see the effect of corporate governance mechanism on CEO turnover in market competition. Therefore, the proportion of outside directors on board is added in independent variable. All independent variables for second hypothesis are the same with first hypothesis, as well as dependent variable and control variables. Second hypothesis is tested with the following model:

$$CEOturnover_t = \alpha + \beta_1\,ROA_{it} + \beta_2\,MASR_{it} + \beta_3\,COMP_{it} + \beta_4 OUTDIR_{it} + \beta_5\,AGE_{it} + \beta_6\,FIRMSIZE_{it} + \beta_7\,RISK_{it} + \varepsilon_{it}$$

3.2.3. Institutional ownership

It has been a common belief that the substantial stake in a firm is owned by an institution such as banks, mutual funds, insurance companies, pension funds or a large institutional investor. Companies that have large percentage of institutional ownership are believed to have better prospects for long-term earnings growth. Institutional investor is more significant in larger companies; they monitor the corporate governance in the company and will provide advice to its board and they are encouraged to actively participate in the firm to ensure good corporate governance. Shleifler and Vishny (1986) state that institutional investors encourage a greater monitoring function over executives. The presence of institutional investors can improve the ability of poorly performing CEOs and force CEO turnover (Gillan and Starks, 2003; Aggarwal et. al, 2009).

Additionally, to be able to survive in the market competition, specifically in the competitive market, a firm has to be more innovative than other firms, where innovation is the main engine of growth of the firm. In this case, the role of the institutional investors is significant, they force CEOs to innovate and ultimately, the CEOs would put their best effort to innovate more in order to not get fire. If a firm cannot innovate more to pursue market demands, the customer's tastes and preferences of a product, the institutional investors will see this as an incapability of the CEO. Consequently, they will make decision to dismiss the CEO. Aghion et. al. (2013) examine this relation, they conclude that complementary between institutional ownership and market competition and CEOs are less likely to be fired in firm profit downturns when institutional ownership is higher. They also show that institutional ownership is associated with more innovation. When the market competition is more intense, the influence of institutional investors will be higher or stronger and leads to an increase of firm performance. Therefore this study predicts that CEO replacement in a company will be lesser. It leads to the third hypothesis:

H3: Firms with high proportion of institutional ownership are more likely to retain the CEO when the market is more competitive.

In the third hypothesis, the institutional ownership is added as independent variables and replaced the proportion outside directors. Similar to previous hypothesis, this hypothesis also consist the same dependent, independent and control variables. Third hypothesis is tested with the following model:

$$CEOturnover_t = \alpha + \beta_1\ ROA_{it} + \beta_2\ MASR_{it} + \beta_3\ COMP_{it} + \beta_4\ INSTOWN_{it} + \beta_5\ AGE_{it} + \beta_6\ FIRMSIZE_{it} + \beta_7\ RISK_{it} + \varepsilon_{it}$$

3.3. Measurement

3.3.1. Dependent Variable

This study chooses to measure CEO turnover within firms by using S&P 500 firms[2] from the Execucomp database from 2007 to 2014, employed from Bushman et. al. (2008).

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[2] The Standard and Poor's (S&P) 500 includes 500 leading companies in leading industries of the U.S economy. The S&P 500 not only refers to the index, but also to the 500 companies that have common stock included in the index. Although the S&P 500 focuses on large segment of market, it is also an ideal proxy for the total market because some mutual funds and other managed funds, such as pension funds are designed to emulate the performace of the S&P index. (http://www.standardandpoors.com)

Firstly, this study identifies a CEO turnover for each year t of the 8 years and for every firm i, when the CEO listed at firm i at the end of the year t is not same as CEO listed at firm i at the end of year t+1. The sample consists of data of firm i CEO listed as CEO for the full fiscal year prior to the turnover. Secondly, this study uses binary variable to differentiate between firms with non-CEO replacement (the CEO is still on the job) and firms with CEO replacement; equals to 1 if the firm i at the end of year t different from year t-1 listed CEO, and 0 if there is no change in CEO.

3.3.2. Independent Variable

The first independent variable is Return on Assets (ROA) to examine the influence of firm performance on CEO turnover based on accounting measure, measured by dividing a company's net income by total assets. ROA is an indicator for how much profit that company generates for money they invested in assets, when the ROA is relatively high this indicates a higher profitability. The measure is calculated for year t-1 following firm i CEO replacement to see the impact of the corporate governance mechanisms and to calculate ROA; this study obtained net income from Compustat under income statement option and also total assets from Compustat under balance sheet items.

The second variable is market competition. It is a dummy variable indicating whether industry-specific competition intensity is above the median (high competition) or otherwise. To determine the intensity of market competition, this study uses the Herfindahl-Hirsch Index (HHI)[3] according to Defond and Park (1998); and Cremers (2007). Giroud and Mueller (2007) also found that non-competitiveness industries have significant more agency problems and management slack. This method uses the squared sum of market share of sales of a firm in an industry to measure the level of market competition in the industry, where market share can be calculated by a firm's sales revenue divided by the total sales revenue in the market. For every company i in the sample with market share s in the industry j in the year t, the HHI is computed as following:

$$HHI = \sum_{i=1}^{n} s^2{}_{ijt}$$

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[3] Herfindahl-Hirchman Index (HHI): , where is the market share of a company i and the summation is over the total number of firms in the industry. A HHI level between 1000 and 1800 (0.1 to 0.18) indicates moderate concentration market and 1800 or greater (≥ 0.18) indicates high concentration market.

Market with HHI results of less than 1,000 consider to be a competitive marketplace. The higher HHI the more concentrated the industry and thus, the market are less competitive, vice versa. The industries are defines using Standard Industry Classification (SIC) codes. SIC codes are four-digit numerical codes assigned by the U.S. government to identify the primary line of business of a firm. To identify the industry, this study used two-digit SIC codes to avoid having too many specific industry groups, which represent the major industry to which a business of a firm belongs. There are 10 industry classifications based on two-digit SIC codes, those are agriculture, forestry and fishing; mining, construction, manufacturing, transportation and public utility; wholesale trade, retail trade, finance, insurance and real estate; service, and public administration. To measure the level of competitiveness a dummy variable is used, thus the sample is split into three groups. One group has a HHI > 33%; these firms operate in a more concentrated/non-competitive industry. The second group has an HHI > 18 % - ≤ 33%, which means the firms have a more distributed market share and there is highly concentrated market, the last group has an HHI ≤ 18%, which consider to be competitive market. The values are chosen from the merger guidelines (McAfee, 2005) and because Giroud and Mueller (2007) state that a concentration of industries above 33% already leads to a drop in market pressure on the quality of governance. In the multivariate analysis the dummy variable COMP has the value 1 when the firm is active in a non-competitive industry (HHI > 33%), the value 2 for companies in a less competitive industry (HHI > 18 % - ≤ 33%) and the value 3 for companies in a more competitive industry (HHI ≤ 18%).

The last independent variable is market-adjusted stock returns, where found to be significantly associated with CEO turnovers by Murphy and Zimmerman (1993). According to DeFond and Park (1998), market-adjusted returns are calculated as the stock return minus the return on the equal-weighted portfolio of all CRSP firms accumulated over the 12 months that ends one month prior to the CEO turnover month.

Moreover, to see corporate governance mechanisms effect on CEO turnover for firms within market competition, this study chooses two variables of corporate governance mechanisms as independent variables, namely outside directors on boards and institutional ownership.

The first corporate governance mechanism is outside directors' variable, which is the ratio of outside director in the company, measured by the number of outside director divided by total directors in the company. This study obtained boards data for observed firms from

Execucomp. The next variable is institutional ownership, referring to Demiralp et. al. (2011)'s study, this study obtained data on institutional ownership from the Thomson Reuters database under Institutional Holdings (13F) on Wharton Research Data Services (WRDS). Institutional holdings are defined as shares held by registered institutions such as, pension funds, insurance companies, investment companies and banks. To measure institutional ownership, this study used total institutional ownership of a firm, which is defined as the number of shares held by institutional investors divided by the total number shares outstanding in the firm.

3.3.3. Control Variable

All hypotheses are tested with the same control variables; there are four control variables that are included in this study. The first control variable is CEO age. This control variable has been frequently used in most CEO turnover literature. For example, Murphy and Zimmerman (1993) and Weisbach (1988) find evidence that CEO age is significantly associated with turnover. Moreover, Murphy and Zimmerman have identified that a dummy variable for CEOs aged 64 or 65 is significantly associated with turnover, measured as 1 if CEO age is 65, and 0 otherwise.

The second control variable is firm risk, by using the monthly stock-price volatility. This control variable is included because based on the study by Defond and Park (1998), stock-price volatility can influence CEO turnover. They argue that companies showing volatile performance are more likely to experience severe shocks that lead to CEO turnover. The last control variable is firm size. The size of a company can be an explanation for the differences across the population. Firm size is defined as the log of firm total assets at the end of the year and chosen based on previous literature (Denis and Denis, 1995; Creamers et. al., 2007; Bushman et. al., 2008; Coles et. al. (2008); Chou, et, al., 2011; Bennedsen et. al., 2010). For example, Bennedsen et. al. (2010) have figured out that more profitable and larger firms are less likely to replace their CEOs. Moreover, as stated by Coles et. al. (2008), complex firms, such as those are large and diversified have greater advising requirements, and therefore should have more outsiders on the board who then serve to provide advice and expertise to the CEO which can affect discrete tasks, including hiring and firing the CEO.

3.4. Sample

In order to test the hypotheses, a sample for CEOs is extracted from the Execucomp under Compustat database. The Execucomp contains executive compensation data on over 39,000 executives, which includes names of executives, age, gender, compensation (salary, bonuses, stock options and shares owned), most recently held title, when an executive became the CEO or left the position, when an executive joined or left the company. Since this study focus on U.S listed companies on the Standard & Poor's (S&P) 500 index for 8 years period, from 2007 to 2014, the annual report data is extracted from the Compustat North America database. Furthermore, other data for stock return and stock volatility are gathered from the Center for Research in Security Prices (CRSP) and data regarding institutional ownership is gathered from Thomson Reuters database. A detailed presentation of the data collection from these sources is presented in the next subsection.

To create an industry dummy this thesis obtained the SIC codes for each firm to classify the firms according to its main business activities into primary-industry segmentation. Using two-digit SIC codes for every company in the database and assign it into 10 industry classifications as explained in the previous subsection.

3.4.1. Sample Selection

Data on CEO performance and CEO dismissal are assembled based on resources of Compustat and Execucomp. The raw sample consists of 683 firms listed on the S&P index 500, the number of raw observation consists the companies that belonged to the S&P 500 for the entire period, and also companies that belonged to the S&P 500 for only a couple of weeks. Of all data collected, after determining only companies that belong to the S&P 500 for the entire period, there were 27,355 years of information recorded (firm-years) from 495 listed firms. Only data showing that the person was indeed the CEO of the company for all or most of a fiscal year is needed, and then the CEO data that is not needed also the blank observations were deleted. Furthermore, all CEOs who left their position before 2007 and all CEOs that became CEO after 2014 were also deleted from sample. Consequently, 21,042 firm-year observations are removed from the total dataset, which reduced the final sample to 5,107firm-year observations. Moreover, from the final total of firm-year observations, from 2007 to 2014 there are 383 CEO turnovers recorded. The next table presents the description all the numbers of the final sample.

Table 1 Sample Description

	Firm-year observations
Original sample	27,355
Observations removed	22,248
FINAL SAMPLE	**5,107**

CHAPTER 4
RESULTS AND DATA ANALYSIS

This section presents the empirical results, not only the data analysis but also the information about the correlation between the variables. Firstly, the descriptive statistics provide the number of observations and the values of the total samples, including the mean, standard deviation, as well as the maximum and the minimum vales of all variables, which are presented in table 2. Next, in table 3 there is a description of the trend of CEO replacement over the sample period and an industry distribution of the CEO turnover per year in each industry major group is presented in table 4. The last part of the descriptive statistics is the Pearson correlation method, which is used to analyze the inter-correlation between the variables.

The second part of this section is the univariate and multivariate analysis by conducting logit regressions and there is also the regression result tables, followed by an analysis of the results in order to see whether the corporate governance mechanisms (outside directors and institutional ownership) still have a significant impact on the decisions of CEO replacement in market competition during the eight-year period and therefore, this study shows which corporate governance mechanism has more influence on CEO turnover in market competition.

4.1.   Descriptive statistics

Table 2 presents the descriptive statistics of each model over the period of 2007-2014. The mean and the standard deviation of the variables provide information on how the variables are distributed and whether there are abnormal values. The mean can also be used to compare the different groups of industries to look for possible patterns that can be explained by theories. The first variable CEO turnover is dependent variable. ROA, MASR, dCOMP1 – dCOMP3 (level of competition dummy variable), OUTDIR, and INSTOWN are independent variables. dAGE1 – dAGE2 (age group dummy variable), FIRMSIZE and RISK are control variables. The table 2 shows that the CEO turnover has 39,901 observations and comprises 495 firms listed in S&P500, with a mean 0.061 or amount to 6.1% of the total sample.

Table 2 Descriptive statistics

Variables	Observation	Mean	Std. Dev.	Min	Max
CEOturnover	39,901	0.061	0.239	0.000	1.000
ROA	35,740	0.064	0.070	-0.651	0.409
MASR	39,901	-0.001	0.023	-0.335	0.111
OUTDIR	39,901	0.879	0.069	0.545	1.000
INSTOWN	39,901	0.740	0.145	0.000	1.334
dCOMP1	39,901	0.024	0.152	0.000	1.000
dCOMP2	39,901	0.459	0.498	0.000	1.000
dCOMP3	39,901	0.518	0.500	0.000	1.000
dAGE1	39,901	0.719	0.450	0.000	1.000
dAGE2	39,901	0.281	0.450	0.000	1.000
FIRMSIZE	39,851	9.779	1.391	6.189	14.761
RISK	39,901	0.009	0.017	0.000	0.365

Moreover, Table 3 presents an overview of the total CEO turnovers each year and also shows the number of firms that experienced the CEO turnover over the sample period. The table shows that the number of CEO turnovers and the number of firms varied over the years with the number of CEOs decreasing over the years. This CEO trend is reflected in Diagram 1.

Table 3 CEO turnovers in the period 2007 - 2014

Year	CEO turnover	Number of CEOs	Number of firms	%
2007	50	718	480	6.96
2008	43	712	482	6.04
2009	45	695	480	6.47
2010	37	668	483	5.54
2011	52	661	488	7.87
2012	57	636	485	8.96
2013	46	606	486	7.59
2014	53	566	486	9.36
Total	**383**	**5,262**	**3,870**	

Diagram 1 CEO turnover trend over the period of 2007 - 2014
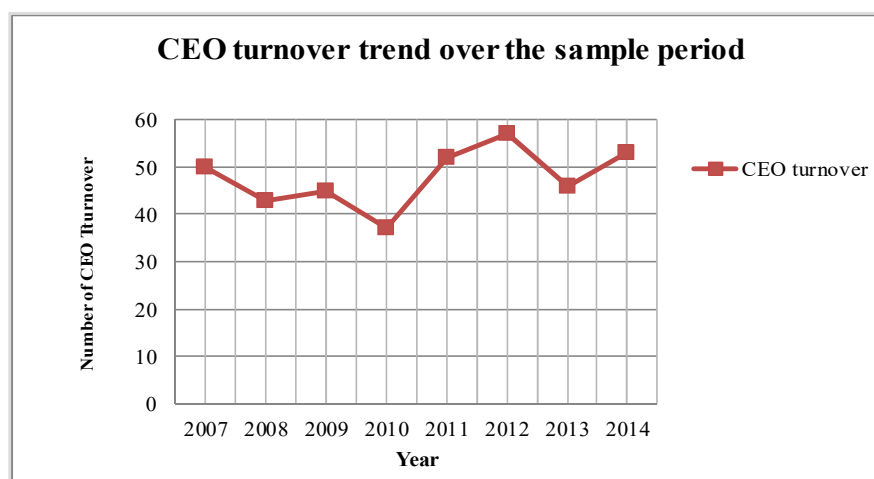
From the diagram, it can also be seen that the trend of CEO turnover varied and it slightly decreased after 2007. However, in 2011, there was an increase in the CEO turnovers, with an increase of 15 CEO replacements recorded higher from the year of 2010. This might be due to the fact that 2011 is the year in which there was an ongoing political debate in the United States Congress about the appropriate level of government spending and its effect on the national debt and deficit, making it earn the title of United States debt-ceiling crisis. Moreover, the number of turnovers in 2012 was the highest in the 8-year period (57 CEO turnovers), considering that 2012 is the year of global economic crisis.

In addition, after assigning every firm's two-digits SIC code to each firm to classify the firms according to their main business activities into primary-industry segmentations, most of industry major group classifications had recorded the number of turnover, Only two groups of industries did not experience CEO turnover during the period of 2007–2014, namely agriculture, forestry and fishing (SIC 01-09) and public administration (SIC 91-98). Moreover, Table 4 shows that the group manufacturing industry had recorded more CEO replacements than any other industries, with 155 turnovers recorded over the sample period, which is also reflected in Diagram 2.

Table 4 CEO turnovers over the sample period per industry major group classification

SIC 2-digit	Group Industry Classification	2007	2008	2009	2010	2011	2012	2013	2014
01-09	Agriculture, Forestry & Fishing	-	-	-	-	-	-	-	-
10-14	Mining	1	2	3	1	4	4	5	6
15-17	Construction	-	-	-	-	2	-	-	2
20-39	Manufacturing	20	16	18	15	21	22	19	24
40-49	Transportation & Public Utilities	5	3	6	7	11	5	7	6
50-51	Wholesale Trade	-	1	2	-	1	1	-	-
52-59	Retail Trade	3	6	3	2	1	4	4	6
60-67	Finance, Insurance & Real Estate	13	13	9	10	5	13	7	5
70-89	Services	8	2	4	2	7	8	4	4
91-98	Public Administration	-	-	-	-	-	-	-	-
	Total	50	43	45	37	52	57	46	53

Diagram 2 CEO turnovers in industry major group over the period of 2007 - 2014

CEO turnover per industry major group

- 01-09
- 10-14
- 15-17
- 20-39
- 40-49
- 50-51
- 52-59
- 60-67
- 70-89
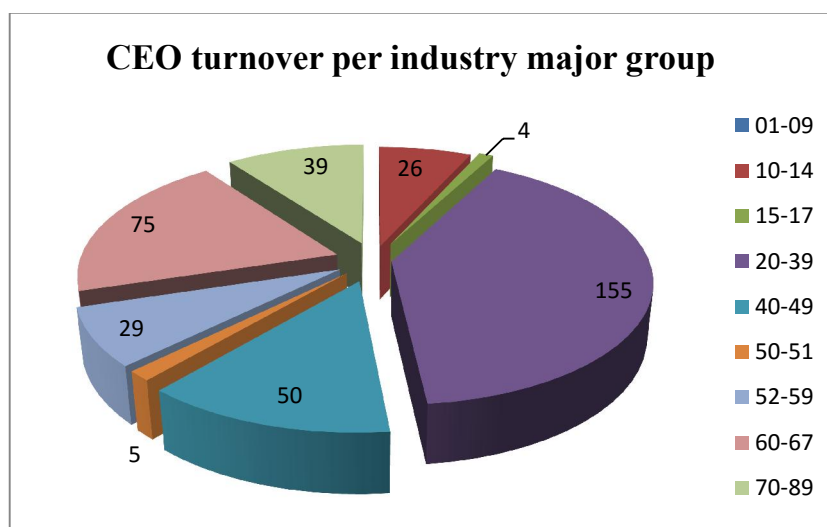
4.2. Correlation test

In this subsection, a Pearson correlation test was conducted to measure the linear correlation between two variables that is important for identifying possible highly inter-correlated variables. The results of the correlation test are between -1 and +1, where 1 is interpreted as a positive correlation, 0 is no correlation and -1 is a negative correlation. Table

5 presents the Pearson correlations for each model. This table has two values, the first of which shows how much the variables are correlated and the other one is the p-value, which shows the significance of the correlation. Moreover, the table 5 shows that only one independent variable does not have significant correlation, namely MASR with correlation -0.004, p>0.05) and all of control variables have a significant correlation.

Table 5 Correlation matrix

The table presents the Pearson correlation between all variables. ROA is the ratio of net income divided by total assets. MASR is the stock return minus the return on the equal-weighted portfolio of all CRSP firms accumulated over the period of 12 months that ends one month prior to the CEO turnover month. COMP is a dummy variable indicating whether industry-specific competition. First row shows the Pearson correlation coefficient. Second row shows the level of statistical significance. Asterisk (*, **) denotes statistical significance at 5% level and 1% level, respectively.

Correlation	ROA	MASR	COMP	OUTDIR	INSTOWN	AGE	FIRMSIZE	RISK
CEOturnover	-0.033**	-0.004	0.015*	0.029**	-0.025**	0.158**	0.034**	-0.037**
	0.000	0.427	0.004	0.000	0.000	0.000	0.000	0.000
ROA		-0.006	0.096**	-0.086**	0.019**	-0.031**	-0.241**	-0.010
		0.229	0.000	0.000	0.000	0.000	0.000	0.057
MASR			-0.005	0.009	0.018**	0.011*	-0.002	0.1741**
			0.283	0.070	0.000	0.035	0.735	0.000
COMP				0.045**	-0.172**	0.030**	-0.112**	0.025
				0.000	0.000	0.000	0.000	0.192
OUTDIR					0.014*	-0.018**	0.157**	0.030**
					0.005	0.000	0.000	0.000
INSTOWN						-0.057**	-0.389**	0.002
						0.000	0.000	0.653
AGE							0.028**	-0.045**
							0.000	0.000
FIRMSIZE								0.076**
								0.000
** Correlation is significant at the 0.01 level.								
* Correlation is significant at the 0.05 level.								

All firm performance measurement variables (ROA and market-adjusted stock return) show a significant negative correlation with the dependent variable. This is in accordance to earlier mentioned literature; CEO turnover and firm performance are inversely related. Table 5 also shows that the level of industry competition (COMP) correlates positively with CEO turnover. This is because, higher COMP indicates more concentrated industry and thus, with less or no market competition, more CEOs are replaced. The proportion of outside directors on boards (OUTDIR) also has a significant positive correlation with CEO turnover; this suggests that the larger the fraction of outside directors on boards, the more CEOs are

replaced. Meanwhile, a proportion institutional ownership (INSTOWN) has a negative correlation with CEO turnover. The intuition is when a firm has higher institutional ownership, the influence of institutional investors will be higher, leading to an increase firm performance and therefore, lesser CEOs are replaced. Meanwhile, the control variables CEO age (AGE) and firm size (FIRMSIZE) have positive correlation with CEO turnover and the stock-price volatility (RISK) is negatively correlated with CEO turnover.

4.3. Multivariate Analysis

This subsection presents results from the regression analysis, where the main analysis is by conducting logit regressions. The reason is that the CEO turnover is a categorical dependent variable which is equal to 1 if there is a turnover and equal to 0 otherwise and therefore, the logit regression analysis is considered more appropriate. Table 6 shows the results of all models to see whether both firm performance and corporate governance mechanisms influence CEO turnover. The control variable CEO age is split into two groups and the independent variable competition is split into three different level of competition are applied for the regression of each model. For different levels of competition, dCOMP1 is when the firms in a non-competitive industry, dCOMP2 for companies in a less competitive industry and dCOMP3 for companies in a more competitive industry. Furthermore, due to multicollinearity, some samples were omitted from the regression models. In all models, a dCOMP3 which comprises manufacturing and transportation industry was omitted and, thus these two industries had to be excluded from the analysis. In this table, the pseudo R-square is included to see what the explanatory power of the model.

Table 6 Logit Regression

The table presents the regression of all models. The sample consists of 35,740 firm-year observations from 2007 to 2014. The dependent variables are the Retun on Assets (ROA). Market-adjusted stocks return (MASR) the stock return minus the return on the equal-weighted portfolio of all CRSP. OUTDIR is the fraction of outside directors on boards of a firm; INSTOWN is a proportion of institutional ownership in a firm. dCOMP is a dummy variable of industry differences. AGE is an indicator variable that is equal to 1 CEO age above 65 years and zero otherwise. The firmsize is the logarithm of the total assets. Stock return volatility (RISK) is a control variable of the variance of returns during the 24 months prior to the event year. **, *** are significant at 0.05 level and 0.01 level, respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
ROA	-1.582**	-1.493**		-1.600**		-1.515**
MASR	-1.415**	-1.434**		-1.417**		-1.437**
OUTDIR		1.694**	1.905**			1.735**
INSTOWN				-0.165	- 0.144	-0.248
dCOMP1	-0.831**	-0.808**	-0.734**	-0.819**	-0.743**	-0.789**
dCOMP2	0.039**	0.064	0.072	0.047	-0.026	0.077
AGE	1.216**	1.228**	-1.236**	1.213**	1.281**	-1.225**
FIRMSIZE	0.070**	0.059*	0.080***	0.062***	0.089***	0.046**
RISK	-0.888**	-0.913**	-0.353**	-0.893**	-0.354**	-0.921**
Constant	-3.752**	-5.159**	-5.705**	-3.558**	-3.992**	-3.676**
Observation	35,740	35,740	35,740	35,740	35,740	35,740
Pseudo R2	0.052	0.054	0.051	0.052	0.050	0.052

There are 6 regressions; the third and the fifth columns are exclude the performance measurements to see the correlation between each corporate governance variables and CEO turnover, and the last column is a full logit regression with all independent and control variables included in the model in order to see whether there is a change in statistically significance between corporate governance variables and whether there is a change in the relation with the CEO turnover. Table 6 shows that all performance measurements have a negative correlation to COE turnover. ROA has a significant negative impact on CEO turnover as model 1 ($\beta = 1.582$, $p<0.05$), model 2 ($\beta = 1.493$, $p<0.05$), and model 4 ($\beta = 1.600$, $p<0.05$) indicate and MASR also has a significant negative impact on CEO turnover as model 1 ($\beta = 1.425$, $p<0.05$), model 2 ($\beta = 1.434$, $p<0.05$), and model 4 ($\beta = 1.417$, $p<0.05$) indicate. This all indicate that ROA and MASR are inversely related to CEO turnover. While the dCOMP1 has a significant negative relation on CEO turnover ($\beta = 0.831$, $p<0.05$), the dCOMP2 has a significant positive relation on CEO turnover ($\beta = 0.039$, $p<0.05$). This indicates that the lesser competitive is the market; the poor firm performance does not lead to CEO dismissal. The intuition is that poor firm performance in a less competitive industry, the more CEOs are dismissed. These results are aligned with Hypothesis 1a and 1b.

Furthermore, corporate governance mechanism variables have different impact on CEO turnover. OUTDIR has a significant positive impact on CEO turnover ($\beta = 1.694$, $p<0.05$) with a significant negative relation on dCOMP1 ($\beta = 0.808$, $p<0.05$). The model indicates that competition and governance mechanism of outside directors do explain the

dismissal of the CEO. This indicates that the larger the proportion of outside directors on boards, the more CEO replacement when in lesser or even in no competition in market The intuition is that the poorer firm performance in a less competitive industry and the higher the proportion of outside directors on boards, the more CEOs are dismissed. Meanwhile, INSTOWN does not exhibit a significant relation on CEO turnover, even though it has negative relation on CEO turnover as shown in model 7 (β = 0.165) and a significant negative relation with dCOMP1 (β = 0.819, p<0.05). The regression in model 7 shows an inverse relation of the independent variables with the dependent variable, this means that higher proportion of institutional ownership is less likely to lead to CEO turnover when a market is more competitive.

Overall, all firm performance measurement (ROA and market-adjusted stock return) did explain the possibility of CEO turnover, emphasizing the predictive power of firm performance in explaining CEO replacement decision in market competition and all of the control variables also explain this possibility. In line with theory, all firm performance measurements show a negative relation and statistically significant at 5% level, indicating that poor firm performance results in more CEO turnovers. The control variable firm size has a significant negative impact on CEO turnover in all models, with an example shown in model 1 (β = 0.070, p<0.05), indicating that the size of the firms does necessarily affect the CEO turnover, it suggests that the larger the firms the less likely to replace their CEOs. The coefficient of RISK is -0.888 and statistically significant; it suggests that the more the firm is exposed to risk or high stock-price volatility, the more CEO replacement occur. This result is aligned with Defond and Park (1999)'s finding.

Additionally, the control variable of CEO age is significantly associated with turnover; in line with Murphy and Zimmerman (1993). The CEO age above 65 years old has a negative relation with CEO turnover; CEO age below 65 years old has a positive relation with CEO turnover. This shows that most of CEO replacement events in the sample are CEOs that is below 65 years old. The last regression includes all the corporate governance variables OUTDIR and INSTOWN with similar results to those of the other regressions mentioned above. Outside directors has a significant positive impact on CEO turnover, whereas institutional ownership has negative relation but does not have a significant impact on CEO replacement decision in market competition.

In conclusion, this test attempted to test whether corporate governance mechanisms still have significant influence to support the original hypotheses. This study found that only

one corporate governance mechanism has a significant impact on the decision whether to retain or dismiss CEOs in market competition which is outside directors on boards. However, it does not support the hypotheses where when deteriorated firm performance is detected for a firm in a low concentrated industry; hence, the more competitive the market, the higher the proportion of outside directors, and the higher the proportion of institutional ownership, the more CEOs are dismissed.

4.4. Multicollinearity test

In a logit regression analysis, it is possible that multicollinearity between the variables cause biases that affect the robustness of the results. This bias can be measured by looking at the tolerance and the VIF value, VIF provides a coefficient that measures how much variance of estimated regression increases because of multicollinearity. As stated by Allison (2012), a variable has multicollinearity problems or the VIF value concerns when it is greater than 2.5 and when a variable with the value of tolerance is below 0.10.

The results of the multicollinearity test show that the original model contains variables with a tolerance value below 0.10 and a VIF value above 2.5. These variables are dummy variables of dCOMP1, dCOMP2, and dCOMP3. An explanation for these results is that the variables are highly inter-correlated, which can result in a bias and therefore competition is the problem for the model. In order to deal with this problem the competition level variables are separated into nine models to see if the multicollinearity problem disappears. As expected the results of the separated models in table 7 show that all tolerance values are above 0.1 and the VIF values are below 2.5 and thus, there is no collinearity issue any more.

Table 7 Adjusted logit regression

The table presents adjusted logit regression after competition level variables are separated into nine models. Each of the models only includes one variable of industry level. Coefficients are significant at *** p<0.01, ** p<0.05.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ROA	-1.593**	-1.340**	-1.355**	-1.516**	-1.257**	-1.269**	-1.609**	-1.375**	-1.378**
MASR	-1.421**	-1.436**	-1.449**	-1.434**	-1.455**	-1.469**	-1.423**	-1.438**	-1.451**
OUTDIR				1.643**	1.657**	1.690**			
INSTOWN							-0.132	-0.248	-0.142
dCOMP1	-0.847**	Excl.	Excl.	-0.833**	Excl.	Excl.	-0.840**	Excl.	Excl.
dCOMP2	Excl.	0.072**	Excl.	Excl.	1.752**	Excl.	Excl.	0.083***	Excl.
dCOMP3	Excl.	Excl.	0.010	Excl.	Excl.	-0.413	Excl.	Excl.	-0.0001
AGE	1.213**	1.206**	1.201**	1.224**	1.222**	1.215**	1.211**	1.203**	1.199**
FIRMSIZE	0.071**	0.072**	0.075**	0.060**	0.061***	0.064**	0.065***	0.061***	0.066***
RISK	-0.888**	-0.871**	-0.462**	-0.913**	-0.898**	-0.897**	-0.893**	-0.880**	-0.878**
Constant	-3.744**	-3.823**	-2.872**	-5.103**	-5.278**	-5.198**	-3.587**	-3.530**	-3.578**
Observation	35,740	35,740	35,740	35,740	35,740	35,740	35,740	35,740	35,740
Pseudo R2	0.052	0.051	0.051	0.054	0.051	0.052	0.052	0.051	0.051

After running multicollinearity tests, it is figured out that indeed, there is a multicollinearity problem found in the models, which are the dCOMP1, dCOMP2, and dCOMP3. These three variables have high tolerance value below 0.1 (all tolerance values are 0) and VIF values greater than 2.5. The new logit regression results (after the correction based on the collinearity test) are presented in table 7. These regression models are slightly different because the highly inter-correlated variables dCOMP1, dCOMP2 and dCOMP3 are separated into new regression equations. As expected the results of the CEO turnover regression have changed and the most relevant difference is that dCOMP3 in each different models do not have a significant correlation with CEO turnover, as shown in model 3 which it has a positive relation ($\beta = 0.010$), in model 6 and in model 9 have negative correlation with CEO turnover ($\beta = 0.413$ and $\beta = 0.0001$, respectively), while in the results of the original model in Table 6, this variable is omitted due to multicollinearity among competition variables, which caused a possibility of bias in the results.

Table 7 also shows that there are different correlations between market competition levels. Firms in low or no-competition in market (dCOMP1) have a negative relation with CEO turnover, and firms in high and more competition in market (dCOMP2 and dCOMP3) have a positive relation with CEO turnover, meaning that these firms exhibited more CEO replacements. Moreover, after fixing the model from multicollinearity by separating the

dummy variable COMP into different models, the tests suggest the similar results as the previous ones. Only the values of the statistics have slightly changed, but that does not lead to any different findings in comparison with table 6. Therefore, multicollinearity not significantly biased the results. The results of multicollinearity tests (VIF test) are presented in Appendix 2.

CHAPTER 5
CONCLUSION AND DISCUSSION

5.1.   Conclusion

This study shows that the firm performance has a profound influence on the CEO replacement decision, which is consistent with prior multiple studies related to CEO turnover. Literature on all performance measurements is mixed. Some only use accounting-based performance measurement, some only include stock-based performance measurement, and some others incorporate both performance measurements. Furthermore, the sensitivity of turnover to firm performance increases with the fraction of concentrated outside stock holdings, outsiders on the board, and product market competition, while the sensitivity decreases with the management stock holdings. This is in line with Brickley (2003), who reviewed the CEO turnover literature that claimed that the sensitivity of turnover to performance varies systematically across firms. Beside enormous studies that examine the influence of corporate governance on CEO replacement decision, there are also several studies that investigated the relationship between corporate governance and CEO turnover with respect to market competition. Most of these studies used the G-index as a measurement for corporate governance. Several studies have been conducted and they found that market competition already substitutes the corporate governance, as prior literature argues that more market competition would substitute for costly monitoring in firms (Hermalin and Weisbach, 2003); hence, market competition can be an option for corporate governance because market competition itself acts as an external governance mechanism. Therefore, this study attempted to examine whether the corporate governance mechanisms such as boards of directors and institutional ownership, still have important role on CEO turnover in market competition.

To test the influence of corporate governance mechanisms, this study focuses on the following research question:

"Do the corporate governance mechanisms (boards of directors and institutional ownership) still affect the decision of CEO replacement in the market competition?"

Firstly, this thesis observed whether firm performance that determined by accounting-based measurement and stock-based measurement explain the decision of the CEO retention and dismissal. A firm operating in a certain industry with important characteristics could influence the relation investigated, which is one of main variables in this study. Therefore, Herfindahl-Hirschman Index (HHI) has been included to see the level of competition. A high level of HHI corresponds with highly concentrated industry, and hence low or even no

market competition. Moreover, this study used two proxies of corporate governance mechanisms, such as the proportion of outside directors on boards and institutional ownership in firms to examine how these corporate governance mechanisms affect the CEO retention or replacement decision in market competition.

There are several findings in this study. First, this study uses both performance measurements and found that both accounting- and stock-based measurements have a significant inverse correlation with CEO turnover, which is in accordance with previous studies from Coughlan and Schmidt (1985), Warner et al. (1988), Puffer and Weintrop (1991), Engel et al. (2003), and Kaplan and Minton (2008). Engel et al. (2003) used both stock- and accounting-based performance measurements. The explanatory power of accounting-based performance measurement in their study is greater than stock-based performance measurement and both of the performance measurements have an inverse correlation with CEO turnover. Furthermore, this study found all regressions for CEO turnover show any statistical significance for the industry concentration, meaning that the level of industry concentration does explain the CEO turnover. This is line with DeFond and Park (1999) that provides HHI to measure market concentration. They include a dummy variable for high and statistically significant HHI. Therefore, these results support hypothesis H1a and reject hypothesis H1b.

Regarding to corporate governance mechanisms, multiple studies that are related to corporate governance have been conducted to examine its effect on CEO replacement decision, showing that corporate governance mechanisms, especially boards of directors and institutional ownership, have an influence to the retention and dismissal of CEOs. Bommer and Ellstrand (1996); and Farrel and Whidbee (2002) find that boards of directors are frequently responding to perceived downturn in performance by replacing CEOs because the decision whether to retain or dismiss CEOs is one of the board's discretions. Prior studies also have documented the role of institutional investors in corporate governance to monitoring management. Aggarwal et. al. (2010) found that firms with higher institutional ownership are more likely to dismiss the CEOs.

However, not many studies documented the role of outside directors on boards and institutional ownership on CEO replacement decision for firms within market competition. This study found that outside directors has a significant negative impact on CEO turnover, suggesting that high proportion of outside directors on boards leads to more CEO turnovers; more specifically this study found that firms that have poor performance in less competitive

market with high portion of outsiders are more likely to replace their CEOs. These results do not support hypotheses H2a and H2b. A possible explanation for this is firms in a less competitive market or no-competition in market; hence, firms in monopolistic market are usually complex and diversified which have greater advising requirements, have more outside directors on the boards who then serve to provide advice and expertise to the CEO (Hermalin and Weisbach, 1988; Agrawal and Knoeber, 2001; Coles, 2008).

On the other hand, this study found that institutional ownership has a negative correlation with CEO turnover, but not significant. This suggests that the magnitude of institutional ownership in the firms has no impact on the decision of CEO replacement. Therefore, the result failed to support the negative relationship between CEO turnover and institutional ownership. The possible explanation for this is although the role of institutional ownership is to monitor the corporate governance in the company and will provide advice to its board and they are encouraged to actively participate in the firm to ensure good corporate governance, the high fraction of institutional ownership in a firm does not necessarily affect the decision of CEO retention when the firm is well-performed in more competitive market. Lastly, this study also found that the size of a firm and CEO age also have a significant impact on the CEO replacement decision. One of the intuitions is the larger firms poorly performed in market with less or no competition, the more CEO replacement occurred.

This study, thus, concludes that the replacement of the CEO can be explained by its firm performance, the level of competition in the industry where the firm operates, and the corporate governance structures. For a CEO with its firms operating in highly concentrated markets, more governance provisions do not necessarily protect a CEO from being fired. Furthermore, considering that corporate governance mechanisms still play an important role in the decision whether to replace or retain CEOs in the market competition; hence, the market competition itself does not necessarily substitute the monitoring role of corporate governance. Moreover, only boards of directors have the role in this decision and it does not apply to institutional ownership. This indicates that boards still have discretionary power to retain a CEO even when the firm is performing well in the more competitive market. One of the possible reasons is the fact that there are several board members that also have position as CEO in the firms.

5.2. Discussion and Limitation

The objective of this study is to contribute to the growing literature of CEO turnover, specifically the influence of corporate governance and market competition. From the research point of view, this study adds the evidence of the role of the corporate governance mechanisms in influencing the CEO replacement decision with regard to market competition. This finding also highlights that market competition does not necessarily substitute the corporate governance to monitoring the CEOs. Corporate governance mechanisms, namely outside directors on boards still have an important role the decision to replace a CEO in the market competition. On the other hand, from managerial point of view, this study is beneficial for management as it provides knowledge of the role of governance mechanisms in market competition; management will have better knowledge about corporate governance mechanism structures.

This thesis certainly has multiple limitations. Firstly, this study uses all data from U.S listed companies on the S&P 500 index, not all companies are listed in this index reported the date of the CEO dismissal in detail and thus, some companies had to be eliminated. Moreover, most of companies in the sample data did not report the reason for the replacements of the CEO over the sample period of 8 years, either died, retired, resigned or fired from the company, which that made the data about the reason of CEO replacements need to be hand collected. Therefore, the dependent variable in this study did not differentiate the type of CEO turnover, between voluntary and forced turnover. Thirdly, the results of the regression analysis show that the selected measurements of industry levels could contain biases. This is clearly shown by the multicollinearity analysis, which indicates that the dummy variable of the level of competition is highly correlated between each level of competition. There is also no theoretical evidence supporting the results of the interaction term of market competition and corporate governance mechanisms namely outside directors and institutional ownership. Intuitively, the higher the interaction term, the more CEOs are dismissed. The next limitation is this study does not take into account performance improvement after CEO replacement and thus, it cannot be prove the belief that changing a CEO is a remedy for poor performance. Therefore, future research might take into account firm performance after CEO dismissal.

Furthermore, this study found a significantly increased turnover in 2011. This is possibly caused by the fact that 2011 is a year in which there was an ongoing political debate in the United States Congress about the appropriate level of government spending and its

effect on the national debt. Therefore, it will possibly be fruitful to include political connection as a proxy or corporate governance mechanism for future researches that are related to CEO replacement decision. Based on the findings on the industry differences, it can also be interesting to find out why two major group industries, agriculture, forestry and fishing (SIC 01-09); and public administration (SIC 91-99), that have not exhibited any CEO replacements in the 8-year period. Furthermore, it may also be interesting to examine the CEO replacement decision with regard to market competition in Europe as sample data, considering that Europe not only has different type of market in comparison with the U.S market but also Europe is consisting of many countries and thus, has different policies and regulations in each country. There is still much work for future researches in identifying other factors that may influence CEO replacement decision.

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APPENDICES

Appendix 1 – Industry Classification

The industry differences are based on the competitiveness level of the Herfindahl index. In table 8, all Herfindahl indexes are presented including the dummy variable COMP that has a value 1 for industries above 33% (non-competitive), a value 2 for industries with an index from equal to 33% until 18% (less competitive) and a value 3 for industries below 18% (more competitive).

Table 8 2-digit SIC Industry Classifications

SIC 2-digit	Industry Major Group	Herfindahl index	COMP
01-09	Agriculture, Forestry, and Fishing	42.15%	1
10-14	Mining	20.54%	2
15-17	Construction	39.8%	1
20-39	Manufacturing	4.61%	3
40-49	Transportation, Communications, Electric, Gas and Sanitary Services	6.34%	3
50-51	Wholesale Trade	29.87%	2
52-59	Retail Trade	28.60%	2
60-67	Finance, Insurance and Real Estate	32.30%	1
70-89	Services	18.27%	2
91-99	Public Administration	110.71%	1

Appendix 2 – Collinearity Test

Table 9 shows the results of the multicollinearity test show that the original model contains variables with a tolerance below 0.1 and a VIF score above 2.5 in the variable dCOMP1, dCOMP2, and dCOMP3.

Table 9 Collinearity Test of original model

Variables	Collinearity Model 1		Collinearity Model 2		Collinearity Model 3		Collinearity Model 4	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
ROA	0.927	1.08	0.923	1.08	0.920	1.09	0.919	1.09
MASR	0.996	1.00	0.996	1.00	0.996	1.00	0.995	1.00
OUTDIR	-	-	0.965	1.04	-	-	0.958	1.04
INSTOWN	-	-	-	-	0.996	1.07	0.781	1.28
dCOMP1	0.000	4.60	0.000	4.60	0.000	4.60	0.000	4.60
dCOMP2	0.000	4.26	0.000	4.26	0.000	4.27	0.000	4.27
dCOMP3	0.000	4.35	0.000	4.35	0.000	4.35	0.000	4.35
AGE	0.990	1.01	0.998	1.01	0.998	1.01	0.987	1.01
FIRMSIZE	0.935	1.07	0.917	1.09	0.772	1.30	0.752	1.33
RISK	0.992	1.01	0.992	1.01	0.991	1.01	0.991	1.01

After identifying the fact that competition dummy variables causing the multicollinearity problem in the model, this study continues by performing collinearity test (VIF test) to different level of competition dummy variables, by combining different competition variables (e.g., dCOMP1 and dCOMP2, dCOMP1 and dCOMP3, dCOMP2 and dCOMP3). Table 10 presented below is the result of VIF test, it shows that dCOMP2 and dCOMP3 caused multicollinearity. Therefore, this study tries to fix the multicollinearity problem by separate the COMP variable into different models.

Table 10 Collinearity test of combined models of competition dummy variables

Variables	Collinearity test dCOMP1-dCOMP3		Collinearity test dCOMP1 & dCOMP2		Collinearity test dCOMP1 & dCOMP3		Collinearity test dCOMP2 & dCOMP3	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
ROA	0.919	1.09	0.919	1.09	0.919	1.09	0.919	1.09
MASR	0.995	1.00	0.995	1.00	0.995	1.00	0.995	1.00
OUTDIR	0.958	1.04	0.958	1.04	0.958	1.04	0.958	1.04
INSTOWN	0.781	1.28	0.781	1.28	0.781	1.28	0.781	1.28
dCOMP1	0.000	4.60	0.957	1.04	0.943	1.06	-	-
dCOMP2	0.000	4.27	0.919	1.09	-	-	0.102	9.83
dCOMP3	0.000	4.35	-	-	0.901	1.11	0.101	9.87
AGE	0.987	1.01	0.987	1.01	0.987	1.01	0.987	1.01
FIRMSIZE	0.752	1.33	0.752	1.33	0.752	1.33	0.752	1.33
RISK	0.991	1.01	0.991	1.01	0.991	1.01	0.991	1.01

Omit competition dummy variable (dCOMP3) due to autocorrelation.

After the multicollinearity test, the results of the separated models of competition dummy variables show that all tolerance values are above 0.1 and the VIF scores are below 2.5 and therefore, there is no collinearity issue any more as shown in table 11 until table 14. The models are as follow:

Collinearity Model 1:

$CEOturnover_t = \alpha + \beta_1 ROA_{it} + \beta_2 MASR_{it} + \beta_3 dCOMP1_{it} + \beta_5 AGE_{it} + \beta_6 FIRMSIZE_{it} + \beta_7 RISK_{it} + \varepsilon_{it}$

$CEOturnover_t = \alpha + \beta_1 ROA_{it} + \beta_2 MASR_{it} + \beta_3 dCOMP2_{it} + \beta_5 AGE_{it} + \beta_6 FIRMSIZE_{it} + \beta_7 RISK_{it} + \varepsilon_{it}$

$CEOturnover_t = \alpha + \beta_1 ROA_{it} + \beta_2 MASR_{it} + \beta_3 dCOMP3_{it} + \beta_5 AGE_{it} + \beta_6 FIRMSIZE_{it} + \beta_7 RISK_{it} + \varepsilon_{it}$

Table 11 Collinearity test Model 1

Variables	Collinearity Model 1.a		Collinearity Model 1.b		Collinearity Model 1.c	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
ROA	0.927	1.08	0.941	1.06	0.920	1.07
MASR	0.996	1.00	0.996	1.00	0.996	1.00
dCOMP1	0.981	1.02	-	-	-	-
dCOMP2	-	-	0.995	1.01	-	-
dCOMP3	-	-	-	-	0.993	1.01
AGE	0.993	1.01	0.992	1.01	0.994	1.01
FIRMSIZE	0.935	1.07	0.935	1.07	0.935	1.07
RISK	0.992	1.01	0.992	1.01	0.992	1.01
Mean VIF	1.03		1.03		1.03	

Collinearity Model 2:

$$CEOturnover_t = \alpha + \beta_1 ROA_{it} + \beta_2 MASR_{it} + \beta_3 OUTDIR + \beta_4 dCOMP1_{it} + \beta_5 dCOMP1_{it} + \beta_6 dCOMP1_{it} + \beta_7 AGE_{it} + \beta_8 FIRMSIZE_{it} + \beta_9 RISK_{it} + \varepsilon_{it}$$

$$CEOturnover_t = \alpha + \beta_1 ROA_{it} + \beta_2 MASR_{it} + \beta_3 OUTDIR + \beta_4 dCOMP2_{it} + \beta_7 AGE_{it} + \beta_8 FIRMSIZE_{it} + \beta_9 RISK_{it} + \varepsilon_{it}$$

$$CEOturnover_t = \alpha + \beta_1 ROA_{it} + \beta_2 MASR_{it} + \beta_3 OUTDIR + \beta_4 dCOMP3_{it} + \beta_7 AGE_{it} + \beta_8 FIRMSIZE_{it} + \beta_9 RISK_{it} + \varepsilon_{it}$$

Table 12 Collinearity test of Model 2

Variables	Collinearity Model 2.a		Collinearity Model 2.b		Collinearity Model 2.c	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
ROA	0.925	1.08	0.938	1.07	0.935	1.07
MASR	0.996	1.00	0.996	1.00	0.996	1.00
OUTDIR	0.972	1.03	0.966	1.04	0.968	1.03
dCOMP1	0.980	1.02	-	-	-	-
dCOMP2	-	-	0.988	1.01	-	-
dCOMP3	-	-	-	-	0.988	1.01
AGE	0.992	1.01	0.990	1.01	0.992	1.01
FIRMSIZE	0.918	1.09	0.918	1.09	0.918	1.09
RISK	0.992	1.01	0.992	1.01	0.992	1.01
Mean VIF	1.03		1.03		1.03	

Collinearity Model 3:

$$CEOturnover_t = \alpha + \beta_1 ROA_{it} + \beta_2 MASR_{it} + \beta_3 INSTOWN + \beta_4 dCOMP1_{it} + \beta_7 AGE_{it} + \beta_8 FIRMSIZE_{it} + \beta_9 RISK_{it} + \varepsilon_{it}$$

$$\text{CEOturnover}_t = \alpha + \beta_1 \text{ROA}_{it} + \beta_2 \text{MASR}_{it} + \beta_3 \text{INSTOWN} + \beta_4 \text{dCOMP2}_{it} + \beta_7 \text{AGE}_{it} + \beta_8$$
$$\text{FIRMSIZE}_{it} + \beta_9 \text{RISK}_{it} + \varepsilon_{it}$$

$$\text{CEOturnover}_t = \alpha + \beta_1 \text{ROA}_{it} + \beta_2 \text{MASR}_{it} + \beta_3 \text{INSTOWN} + \beta_4 \text{dCOMP3}_{it} + \beta_7 \text{AGE}_{it} + \beta_8$$
$$\text{FIRMSIZE}_{it} + \beta_9 \text{RISK}_{it} + \varepsilon_{it}$$

Table 13 Collinearity test of Model 3

Variables	Collinearity Model 3.a		Collinearity Model 3.b		Collinearity Model 3.c	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
ROA	0.921	1.09	0.934	1.07	0.921	1.07
MASR	0.996	1.00	0.996	1.00	0.996	1.00
INSTOWN	0.828	1.21	0.791	1.26	0.786	1.27
dCOMP1	0.979	1.02	-	-	-	-
dCOMP2	-	-	0.949	1.05	-	-
dCOMP3	-	-	-	-	0.942	1.06
AGE	0.990	1.01	0.991	1.01	0.992	1.01
FIRMSIZE	0.781	1.28	0.772	1.29	0.772	1.30
RISK	0.991	1.01	0.991	1.01	0.991	1.01
Mean VIF	1.09		1.10		1.10	

Appendix 3 – Predicted sign and results

Table 14 shows the predicted sign of the hypotheses and the results of this thesis.

Table 14 Predicted sign and results

	Hypotheses	Predicted Sign	Result	Significant Level
H1a	The negative effect of firm performance on CEO replacement in competitive market.	-	-	Significant
H1b	The positive effect of firm performance on CEO replacement in less competitive market.	+	+	Significant
H2a	Firms in a competitive market are more likely to have a better firm performance that have a small proportion of outside directors than firms in a less competitive market.	+	-	Significant
H2b	Firms with a small proportion of outside directors on the board are less likely to dismiss CEOs in a competitive market.	+	-	Significant
H3	Firms with high proportion of institutional ownership are more likely to retain the CEO when the market is more competitive.	+	+	Not Significant