**Master thesis**

# CEO power and firm performance – the moderating role of board independence


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## Abstract

In this study, the effect of CEO power on firm performance is examined as well as the moderating role of independent directors. CEO power is defined by the compensation, ownership, founder status, duality, and tenure of the firm its CEOs. Based on a sample of 142 UK listed firms for a sample period of 2013 to 2018, OLS regression analysis is conducted. Literature has indicated that independent directors seems to have an impact on the effect of CEO power on firm performance. Therefore, this study also examines the moderating role of independent directors on the effect of CEO power and firm performance. The results show a significantly positive relationship between CEO power and market-based firm performance Tobin's Q. In addition, this study finds a moderating impact of independent directors on the relationship between CEO power and Tobin's Q. A higher proportion of independent directors weakens the effect of CEO power on Tobin's Q, when CEO power is based on CEO compensation. Another result shows that a higher proportion of independent directors strengthens the effect of CEO power on Tobin's Q, only when CEO power is based on ownership, founder status, duality, and tenure. These results highly depend on how firm performance is measured, the proportion of independent directors, and the amount of debt. However, these results are not robust for stock return. Further research is needed to assess the validity and generalizability of these results. This study contributes to the existing literature because of the scarce research that has been conducted about this topic in UK context.

**Keywords:** *CEO power, CEO compensation, CEO ownership, CEO founder status, CEO duality, CEO tenure, firm performance, corporate governance, independent directors, UK listed firms.*

# Table of contents


**1. Introduction ..... 1**

*1.1 Background information ..... 1*

*1.2 Research objective and contribution ..... 2*

*1.3 Outline of the study ..... 4*

**2. Literature review ..... 5**

*2.1 CEO characteristics ..... 5*
2.1.1 Demographic characteristics ..... 5
2.1.2 Psychological characteristics ..... 7

*2.2 Theories used to explain CEO characteristics ..... 10*
2.2.1 Agency theory ..... 10
2.2.2 Resource dependency theory ..... 11
2.2.3 Upper echelons theory ..... 12
2.2.4 Human capital theory ..... 12

*2.3 Effects of CEO characteristics ..... 13*
2.3.1 On firm performance ..... 13
2.3.2 On investments ..... 17
2.3.3 On leverage ..... 18
2.3.4 On mergers and acquisitions ..... 19
2.3.5 Summary ..... 19

*2.4 Corporate governance ..... 19*
2.4.1 Corporate governance definition ..... 19
2.4.2 Corporate governance mechanisms ..... 20
2.4.3 Summary ..... 23

*2.5 Hypothesis development ..... 23*
2.5.1 Effect on firm performance ..... 24
2.5.2 Moderating effect of board independency ..... 24

**3. Research method ..... 26**

*3.1 Methodology ..... 26*
3.1.1 Regression analysis ..... 26
3.1.2 Endogeneity problem ..... 29

*3.2 Research model ..... 30*
3.2.1 CEO power and firm performance ..... 30
3.2.2 Moderating role of independent directors ..... 31

*3.3 Measurement of variables ..... 31*
3.3.1 Dependent variable ..... 31
3.3.2 Independent variables ..... 32
3.3.3 Control variables ..... 33

*3.4 Robustness tests ..... 34*

**4. Sample and data ..... 35**

*4.1 Sample ..... 35*
4.1.1 Sample size ..... 35
4.1.2 Industry classification ..... 36

*4.2 Data ..... 36*

**5. Results ..... 38**

*5.1 Outliers ..... 38*

*5.2 Descriptive statistics ..... 38*

*5.2 Principal component analysis ..... 40*

*5.3 Bivariate analysis ..... 41*

*5.4 Assumptions regression ..... 42*

*5.5 OLS regression results ..... 42*

5.5.1 Hypothesis 1 – Effect of CEO power on firm performance ..... 42

5.5.2 Hypothesis 2 – Moderating effect of independent directors ..... 45

*5.6 Robustness tests ..... 47*

5.6.1 Split sample ..... 47

5.6.2 CEO power variables ..... 48

5.6.3 Alternative tests ..... 49

**6. Conclusion ..... 50**

*6.1 Conclusion and discussion ..... 50*

*6.2 Limitations and recommendation for future research ..... 51*

**References ..... 52**

**Appendices ..... 63**

# 1. Introduction

## 1.1 Background information

The upper echelon theory (UET) states that Chief Executive Officers (CEOs) reflect their thoughts and values in a firm. The role of CEOs is to lead and motivate its subordinates. Also, CEOs work in close collaboration with the board of directors (Glick, 2011). CEOs are involved in the decision-making process of a firm, since CEOs make operational decisions daily. For example, hiring other top management team members, managing relationships with stakeholders, pricing and inventory management processes. Also, CEOs are responsible for building and maintaining the culture of the firm, which is linked to the workforce and it is a guide for the decision making of other employees (Wang et al., 2016). Different factors influence the decision-making process of CEOs, such as the different characteristics of the CEOs that might have an influence on the choices that they make. The choices that they make have an impact on the leverage, valuation, and performance of the firm. In order to control the impact, different corporate governance mechanisms are used. Corporate governance is the process and structure for controlling and directing a firm. It includes the interaction among the stakeholders, board members, and managers (Huse, 2005; Abdullah & Valentine, 2009). The board of directors is one corporate governance mechanism that influences the actions of the management. The role of the board of directors is to determine the purpose of the firm and its ethics. They also have to decide the strategy and the plan to achieve the strategy. In addition, the board monitors and controls the managers and the CEO. Also, they report and make recommendations to the shareholders (Bonazzi & Islam, 2007). However, CEOs are generally the most powerful members in the firm (Daily & Johnson, 1997).

In the United Kingdom, the Financial Reporting Council sets the corporate governance and stewardship codes and standards for accounting and actuarial work in the United Kingdom (Financial Reporting Council, 2018). Firms are expected to adopt board structures that are consistent with the corporate governance code of best practice (McKnight & Weir, 2009). One of the principles is that board members should include independent directors, such that there is no dominance in the board's decision-making (Financial Reporting Council, 2018). In this study, firms listed on the London Stock Exchange are used. One of the conditions of the London Stock Exchange is that firms must provide a statement in their annual report about the way they apply the principles of the corporate governance code. This is called a "comply or explain" approach (McKnight & Weir, 2009).

The influence of independent directors on firm performance has been studied extensively. Some questions arise, for example, do independent directors have an impact on the choices of CEOs with certain characteristics? Do they prefer men or older CEOs? Or does the nationality of the CEOs matter? Or does powerful and overconfident CEOs matter? The literature has addressed the impact of CEOs and independent directors on firm performance in different countries around the world. Several characteristics of CEOs on firm performance such as gender, age, (Naseem, Lin, Ahmad, & Ali, 2019; Kaur & Singh, 2018;

Terjesen, Couto, & Francisco, 2015), education level (Naseem et al., 2019; Kaur & Singh, 2018; Nielsen & Nielsen, 2013), nationality (Kaur & Singh, 2018; Nielsen & Nielsen, 2013), and the tenure (Hambrick & Fukutomi, 1991; Herrmann & Datta, 2002) have been examined. Besides the demographic characteristics, there are also psychological characteristics investigated such as power (Adams, Almeida, & Ferreira, 2005; Jiraporn, Chintrakarn, & Liu, 2012), confidence (Leung, Tse, & Westerholm, 2017; Malmandier & Tate, 2005), and style (Choudhury et al., 2019; Schoar & Zuo, 2016) of the CEOs. The impact of independent directors is mainly associated with the impact of corporate governance on firm performance (Uribe-Bohorquez, Martínez-Ferrero, & García-Sánchez, 2018; Saidat, Silva, & Seaman, 2018; Merendino, & Melville, 2019). In addition, some researchers have investigated the moderating impact of corporate governance including independent directors (Duru, Iyengar, & Zampelli, 2016; Busru & Shanmugasundaram, 2017; Wang, 2014).

## 1.2 Research objective and contribution

Many researchers have examined the relationship between CEO power, independent directors, and firm performance. However, the results regarding the relationships differ. The results vary from negative to positive relationships or no significant relationship at all. According to the agency theory, the board of directors' role is to monitor the CEOs (Terjesen et al., 2015), whereas the independent directors are considered as strong monitors and less likely to threaten the interest of shareholders (Carter, Simkins, & Simpson, 2003). Moreover, CEOs has to be monitored closely and incentives have to be used to motivate them to be in line with the interests of the shareholders (Martin & Butler, 2017). Both aspects will reduce the agency conflicts and improve the firm performance. However, the theory also argued that powerful CEOs tend to increase the agency conflicts and therefore decline the firm performance. In line with the agency theory, a negative relationship would be expected for powerful CEOs, whereas a positive relationship would be expected for independent directors.

Besides that, the resource dependency theory argues that different types of directors bring different resources to the firms. Female, higher educated (Farrag & Mallin, 2016), older, and longer-tenured CEOs (Wang et al., 2016) might bring different perspectives and experience to the firm, which could give access to different benefits and resources. Also, the theory argues that CEOs can create uncertainty due to their different interests which can confuse the decision-making process. However, CEOs can reduce the uncertainty by controlling the decisions, the alternatives that are considered, or the information flows which will gain their power (Finkelstein, 1992). Furthermore, independent directors tend to be higher educated and to have a wide range of resources (Hillman, Cannella, & Harris, 2002). Also, the experience of independent directors in other companies can be useful for the decisions-making process in the board of directors (Finkelstein, Hambrick, & Cannella, as cited in Terjesen et al., 2015). In line with the resource dependency theory, a relationship between CEO power and firm performance would be expected and a positive relationship for independent directors on CEO power and firm performance would be expected.

According to the UET, CEOs are applying greater influence over firm performance than any other top management team member (Bolinger, Brookman, & Thistle, 2019). The decisions that a CEO makes reflects the firm performance, while the CEO characteristics shape the future firm performance. During the tenure of CEOs, they increase their power, knowledge, and skills which helps by resisting the pressure from the shareholders (Wang et al., 2016). It is argued that older CEOs tend to be more risk-averse than younger CEOs (Orens & Reheul, 2013). Also, older and longer-tenured CEOs tend to be more committed which might lead to better future firm performance (Wang et al., 2016). The education level (Wang et al., 2016) and nationality (Nielsen & Nielsen, 2013) of CEOs are also linked to firm performance by the UET. In line with the UET, CEO power would have an influence on the firm performance.

Based on the above, there are reasons to conduct this study. First, the majority of the studies investigate the relationship of CEO characteristics such as gender and age on firm performance or CEO power on corporate risks or capital structure. However, this thesis examines the relationship between CEO power and firm performance, which has not been investigated much. Second, there is no clear linkage of independent directors on relationship between CEO power and firm performance. Therefore, this study intends to examine the relationship between CEO power and firm performance and whether independent directors have a moderating impact on the relationship between CEO power and firm performance. This leads to the following research question that will be investigated:

*What is the effect of CEO power on firm performance and how does independent directors affect this relationship?*

This study mainly contributes to the literature for three reasons. The first contribution is that most studies focused on the individual relationships between CEO power and independent directors on firm performance. Whereas, this study includes the moderating role of independent directors on the relationship between CEO power and firm performance. The second contribution is that this study provides, to the best of my knowledge, the first United Kingdom evidence on the effects of independent directors on CEO power and firm performance. Since the majority of the existing literature is analyzing the impact in the context of the United States and China. Lastly, the results of this study could give valuable information to improve the corporate governance practices and therefore, be relevant to investors, regulators, analysts, and others. It could be relevant to know what kind of influence a CEO has on the firm performance and how it varies with the proportion of independent directors. So, the findings could give useful information to balance the CEO's decision-making power as the moderating impact of independent directors on the relationship between CEO power and firm performance is highlighted in this study.

## 1.3 Outline of the study

The outline of the thesis is as follows, the next chapter discusses the different CEO characteristics, the theories that explain the impact of CEO characteristics, the empirical findings, the moderating role of corporate governance, and the hypotheses development. Next, in chapter three a description of the methodology and the measurements of the variables are given. The fourth chapter discusses the sample for this study and the resources that have been used to collect the data. Following, in chapter five the results of the research model are described. Lastly, in chapter six a conclusion and discussion are drawn, followed by the limitations of this study and recommendations for future research.

# 2. Literature review

In this chapter a literature review on CEO characteristics and corporate governance and its relationship with firm performance will be described. In the first section, the different CEO characteristics, that have been used by many researchers, will be described. Followed by the theories that have been adopted by various studies. In the third section, the effects of CEO characteristics on various variables will be discussed. In the fourth section, corporate governance and its mechanisms will be introduced. In section five, the effects of CEO power and board independence will be used to formulate the hypotheses that will be tested in this study.

## 2.1 CEO characteristics

There are several different CEO characteristics that have been examined by researchers. The CEO characteristics are categorized into demographic characteristics (Kaur & Singh, 2018; Naseem et al., 2019) and psychological characteristics (Brown & Sarma, 2007; Sheikh, 2019). The demographic characteristics consist of gender, age, education level, nationality, and tenure. The psychological characteristics consist of power, confidence, and style. Each characteristic will be discussed based on the literature.

### 2.1.1 Demographic characteristics

**CEO gender**

The first demographic characteristic is CEO gender which is often used as a characteristic for firm performance. Gender diversity in top positions has become a common topic, due to the implementation of the gender quotas. In order to meet the quotas, firms have to increase the number of females in top positions (Marinova, Plantenga, & Remery, 2016). In the UK, it is rarely that women are leading listed firms. Female top managers are only 3% to 5% of the (executive) board seats in UK listed firms. Even though the proportion of female CEOs has slightly increased, the majority of CEOs is male (Renneboog & Zhao, 2011). It is argued that women are more risk-averse and that their focus is more on long-term perspectives in comparison to men (Marinova et al., 2016). Also, Faccio, Marchica, and Mura (2016) argued that female CEOs are more risk-averse than male CEOs due to the fact that they might choose to reduce the risks in order to fit with their preferences once they become CEOs. They added that female CEOs are less overconfident and therefore reduce the risks. They are also less likely to engage acquisitions and to issue debt than male CEOs. Peni (2014) argued that female CEOs tend to outperform firms with male CEOs. Also, Félix and David (2019) agreed that firms would better perform if they have a female in their management, especially in the context of family firms.

**CEO age**

The second demographic characteristic is CEO age. Older CEOs tend to have more experience, greater risk management and better people skills (Kuo, Wang, & Lin, 2015). Bertrand and Schoar (2003) argued that older CEOs are less aggressive towards capital expenditures, financial leverage, and cash holdings. Similarly, Orens and Reheul (2013) stated that older CEOs are more risk-averse and conservative than younger CEOs. Graham, Harvey, and Puri (2013) supported the findings that older CEOs are less risk-tolerant and added that older CEOs are less optimistic than younger CEOs. Furthermore, younger CEOs are more likely to run firms with high growth rate (Graham et al., 2013). Younger CEOs are also described as making more and riskier financing decisions (Serfling, 2014).

**CEO education level**

Another demographic CEO characteristic is the education level. Different educational backgrounds of CEOs can provide the directors with different perspectives, career development and social contacts (Anderson, et al., 2011). CEOs with higher education are more likely to make effective decisions (Naseem et al., 2019) and are more likely to lead companies with high research and development (R&D) spending (Barker and Mueller, 2002). Also, CEOs with an advanced degree tend to outperform CEOs without any advanced degree (Nakavachara, 2019).

**CEO nationality**

Another studied CEO characteristic is nationality. Nielsen and Nielsen (2013) stated that CEOs from different nationalities bring a wide range of knowledge and experience with different institutional environments. Furthermore, when the top positions consist of different nationalities, the complex tasks will be solved better and with more innovative solutions. Their study shows that nationality has a strong effect on CEOs' orientations which are independent of knowledge accrued in management development (Nielsen & Nielsen, 2013). Moreover, Badru and Raji (2016) argued that foreign CEOs act in the best interest of the shareholders and have a more well-diversified experience than domestic CEOs. Also, Conyon et al. (2019) suggested that the CEOs foreign experience influences their corporate strategy decisions for UK firms. In contrast to the positivity, Kaur and Singh (2018) suggested that foreign CEOs might not know the national rules and regulation and are therefore not in favor of the firm performance.

**CEO tenure**

Tenure is another characteristic that have been used by many researchers. Hambrick and Fukutomi (1991) described tenure as the number of years in a position. In case of this research, it would be the number of years in the CEO position. In the start of their position, CEOs are strong committed. In the early period of the tenure, the CEO might adopt a strategy that is in line with the background of his or her career. The longer the CEO's position, the stronger the association between his or her background and personality and

also the characteristics of the firm. The task knowledge of the CEO is limited which makes it more difficult for CEOs to adopt risky strategies, in the early years. When the tenure increases, the task knowledge will be greater and the CEO will have more confident to adopt riskier strategies (Hambrick & Fukutomi, 1991). Herrmann and Datta (2002) added that as the tenure increases, CEOs are choosing strategies that provide full control over operations, even though it involves higher resource commitments and greater investment risks.

### 2.1.2 Psychological characteristics

**CEO power**

Power can be defined as the capacity of individuals to apply their will (Finkelstein, 1992). The characteristic power can be divided into different dimensions. Finkelstein (1992) divided power into four dimensions; structural power, ownership power, expert power, and prestige power. Firstly, structural power is based on the formal organizational structure and hierarchical authority. CEOs have a high structural power over other directors because of their position. The authority of CEOs allows them to manage uncertainty by controlling the behaviour of colleagues. In addition, the higher the structural power of a CEO, the greater his or her control over the actions of colleagues. Structural power can be measured by the percentage of higher titles, compensation, and number of titles of the CEO. Secondly, ownership power is based on the position of CEOs in the agent-principal relationship. The relationship depends on their ownership positions and on their links to the founder of the firm. A CEO with significant shareholding in its firm will be more powerful than a CEO without. Also, CEOs that are founder of the firm might gain power through their long-term interaction with the board, while they try to have control over the board members. Ownership power can be measured by the number of shares, family shares, and the founder or relative status of the CEO. Thirdly, expert power is linked to the contacts and relationships of CEOs with elements of task environment. CEOs will be able to deal with environmental contingencies. The more contacts and relationships CEOs have, the greater their ability to deal with elements of task environment, and the greater their expert power. Expert power is also linked with the CEOs experiences which increases their ability to control the critical contingencies. Expert power can be measured by the number of different functional areas and positions the CEO had experience in. Lastly, prestige power is based on the personal prestige or status of CEOs. The reputation of CEOs in the institutional environment and among shareholders influences the perceptions of others of their influence. Prestige power can be measured by the number of boards and nonprofit boards the CEO sat on and the educational background of the CEO (Finkelstein, 1992). Besides the dimensions of Finkelstein (1992), power can be divided into other dimensions, namely formal and informal power (Peiro & Melia, 2003). Formal power is based on the availability and capacity to control the exchange of values which is associated with the firm's hierarchy. This can also be described as a top-down manner. The CEOs apply formal power on their subordinates while the opposite is not the case. Moreover, informal power is

based on personal resources which is not necessarily associated with the firm's hierarchy. However, the position in the hierarchy can affect the development of the personal relationships. Peiro & Melia (2003) argued that members in a similar hierarchical position as the target will hold higher informal power over the target person than superiors and subordinates.

Furthermore, the dimensions of power based on Finkelstein (1992) have been used by many researchers such as Adams, Almeida, and Ferreiera (2005) and Jiraporn et al. (2012). Adams et al. (2005) focused on the structural power of CEOs. They argued that CEOs can only have an impact on the firm performance if they have influence over crucial decisions. A powerful CEO is one that can consistently influence key decisions in their firm, in spite of their potential opposition from other directors. When the decision-making power becomes more centralized in the hands of a CEO, the firm performance will be more variable (Adams et al., 2005). Similarly, Jiraporn et al. (2012) focused on structural power and also argued that CEO power indicates how much decision-making power a CEO has. The more power a CEO has, the lower the leverage of the firm. Also, powerful CEOs are more likely to increase the agency costs, resulting in poor firm performance (Bebchuk et al., as cited in Jiraporn et al., 2012). Veprauskaitė and Adams (2013) argued that CEO power, based on CEO duality, CEO tenure, and CEO share ownership, has a negative impact on the firm performance in context of UK publicly listed firms. Brown and Samra (2007) argued that power is not the same as overconfidence, whereas power is an objective fact of behaviour that demonstrates the ability of the CEOs to impose their will on others. They added that power may follow from overconfidence, but not all overconfident CEOs will have a lot of power. According to Brown and Samra (2007), CEO power can be based on CEO remuneration. Horstmeyer (2019) argued that CEO power is linked to the tenure and ownership of the CEO. Furthermore, Horstmeyer (2019) described that powerful CEOs control board-level investments and monitor decisions in the boardroom. Moreover, Munir and Li (2016) argued when CEOs have less decision-making power, firms tend to have high leverage to reduce the agency costs. On the contrary, they suggest that when CEOs have strong decision-making power, they are more likely to manipulate firm leverage in order to pursue their own self-interest rather than the wealth of the shareholders.

**CEO confidence**

Confidence is also used as a psychological characteristic. Leung, Tse, and Westerholm (2017) argued that confident CEOs are CEOs who are not risk-averse and are taking risky and extreme decisions. Confidence of a CEO can lead to overconfident in some cases. Many researchers analysed the overconfidence of CEOs. Overconfidence can be defined as an overestimation of someone's own abilities and of outcomes related to someone's own personal situation (Langer, 1975). Furthermore, Brown and Sarma (2007) argued that people who seek managerial positions are more likely to be overconfident about their ability as a future manager. Overconfidence is based on media coverage that illustrates how the press portrayed each individual CEO during a period. Lee, Hwang, and Chen (2016) argued that founder CEOs tend to be more

overconfident than professional CEOs. Overconfident CEOs are more likely to make acquisitions than other CEOs (Brown & Samra, 2007). In addition, overconfident CEOs tend to overestimate the returns of an investment project, where they view external funds as excessively costly. When there is a great amount of internal funds, overconfident CEOs tend to overinvest. When there is need for external funds, they tend to cut the investments (Malmandier & Tate, 2005). Malmandier and Tate (2008) argued that overconfident CEOs are more focused on acquisitions, where overconfidence is based on the revealed beliefs and the outsiders' perceptions of the CEOs.

**CEO style**

The CEO characteristic style is based on the communication, managing, and language style of CEOs. The uncertainty of the firm's communications can be reflected by the limited monitoring and evaluation practices (Zerfass, Verčič, & Wiesenberg, 2016). The communication patterns can reveal the location knowledge in the management team. CEOs tend to speak more when they know more about the topic than others (Li et al., 2014). CEOs are mainly communicating with their employees by using email and face-to-face channels. There are two communication styles used by CEOs, namely responsive and assertive communication style. Responsive CEOs can be described as being good listeners, responsive, understanding, friendly, and interested. Assertive CEOs can be described as dominant, aggressive, and competitive (Men, 2015). Choudhury et al. (2019) described the communication styles of CEOs as an important skill for CEOs. The communication categories that have been used are "excitable", "stern", "dramatic", "rambling", and "melancholy". The communication style can help to predict a firm's ability to grow, adapt to change, and reallocate existing assets (Choudhury et al., 2019).

Furthermore, the managing style of CEOs is based on the start of their career as CEO (Schoar & Zuo, 2016). Schoar and Zuo (2016) argued that CEOs who started during a recession (recession CEOs) tend to have a more conservative management style. They tend to invest less in capital expenditures and R&D. Also, they show lower overheads, and have lower leverage and working capital needs. In addition, firms run by recession CEOs tend to have lower stock return volatility than firms run by CEOs who are not started during the recession. Also, Schoar and Zuo (2016) described that recession CEOs might invest in skills that allows him to deepen his existing knowledge and strengthen his image. Investors might value the skills that recessions CEOs bring into their firms. It might be possible that boards select recessions CEOs based on their specific needs. Besides that, Mullins and Schoar (2016) also focused on the managing style of CEOs and therefore divided firms into four categories due to their association with the characteristics of their CEOs. The firms are divided into firms run by the founder, family firms with a family member as CEO, family firms with a professional CEO, and non-family firms run by professional CEOs. They argued that in firms where the founder or the family owners are involved in management and control, the CEO tends to have a hierarchical management style. This means that the CEO is less protecting the shareholder rights and more protecting stakeholders such as workers and is most accountable to banks as their outside investors. In

addition, these CEOs see their role as maintaining the status quo instead of bringing changes. In contrast, professional CEOs are focused on maximizing the value of shareholders and prefer to bring changes to the firms rather than maintaining traditions and values. They are also more likely to focus on selecting top talent rather than monitoring managers (Mullins & Schoar, 2016).

In addition to the communication and managing style of CEOs, the language style has also been used to analyse the CEO style. Language can provide information about a firm's risks, financial performance, and future corporate transactions (Li, as cited in Buchholz et al., 2018). Li et al. (2014) argued that CEOs that speak more tend to receive higher pay. As a result, firms that recognize the knowledge-pay relationship tend to have higher firm value (Li et al., 2014). CEOs that are expressing themselves more dramatic than other CEOs, tend be less likely to oversee major acquisitions. Lee et al. (2016) described that founder CEOs tend to use more optimistic language. Narcissistic CEOs tend to be more like to use an abnormal optimistic tone. They are also more likely to undertake challenging and bold actions (Buchholz et al., 2018). An abnormal optimistic tone might predict negative future earnings and cash flows. Managers might use a certain tone to mislead investors about firm's future performance (Huang, Teoh, & Zhang, 2014).

## 2.2 Theories used to explain CEO characteristics

Studies that examine the relationship between CEO characteristics and firm performance has adopted different theories. The agency theory, the resource dependency theory, the upper echelons theory, and the human capital theory will be discussed.

### 2.2.1 Agency theory

The agency theory is used in most of the studies concerning CEO characteristics and firm performance. The agency theory concerns the agency relationship which is defined as a contract between two parties, the agent and the principals, to perform some service on their behalf which involves decision-making authority to the agent (Jensen & Meckling, 1976). When the individuals act in their self-interest, conflicts will arise (Band, 1992). The agents are for example the managers and directors, and the principals are the shareholders. Band (1992) mentioned that the agency theory concerns the separation of a firm's ownership and control. Also, the different suppliers of capital, the separation of risk-bearing, decision-making, and control functions in the firms are concerned in the agency theory. The conflicts between the agent and the principals can cause agency costs. According to Eisenhardt (1989), the agency theory is about resolving two problems that can occur in the agency relationships. The first problem is the conflict of interests between the shareholders and the managers and the difficulty of verifying that the shareholder is behaving appropriately. The second problem is the different risk-taking attitudes of the shareholders and managers. Whereas, the board of directors is adopting a controlling role over the managers in the agency theory (Uribe-Bohorquez et al., 2018; Terjesen et al., 2015). Krause, Withers, and Semadeni (2017) added that the agency theory prescribes independent monitoring by separating the CEO and board member positions. The

power of CEOs is something that potentially needs to be limited and controlled (Jensen, 1993). In addition, Martin and Butler (2017) mentioned that CEOs has to be monitored closely and their incentives have to motivate them to be in line with the shareholders' interests. In addition, Tanikawa and Jung (2018) considered the relationship between CEO and top management team members as the relationship between principal and agent from the agency theory perspective. Bonazzi and Islam (2007) argued that monitoring of CEOs by directors is crucial for the firm performance, as it will improve the firm performance and avoid the possibility of agency problems. Furthermore, King, Srivastav, and Williams (2016) and Wang et al. (2016) argued that the education level of CEOs has a strong impact on the firm performance and the risk-taking behaviour of the CEOs. Also, foreigners might improve the quality of monitoring and reduce the managerial entrenchment and the agency costs. Adams et al. (2005) mentioned that the agency theory describes that if high power allows CEOs to become entrenched, power should have a negative impact on performance. In addition, Jiraporn et al. (2012) argued that when CEOs play a more dominant role among top executives, the firm leverage will decline. Overconfident CEOs tend to believe that they are acting in the interest of shareholders and are willing to personally invest in their firms. Acquisitions might result from both agency problems and CEO overconfidence. The personal overinvestment of CEOs arises from overconfidence (Malmendier & Tate, 2008).

### 2.2.2 Resource dependency theory

The resource dependency theory considers the role of external resources in affecting the firm performance. It recognizes the influence of external factors. Managers can help to reduce dependency between the firm, the external factors and the environmental uncertainty (Hillman & Dalziel, 2003; Hillman, Withers, & Collins, 2009). CEOs can create uncertainty by having conflicting interests that can confuse the decision-making process. However, CEOs that can reduce this uncertainty by controlling the decisions, the alternatives that are considered, or the information flows, will gain power (Finkelstein, 1992). Hillman et al. (2009) mentioned that mergers and acquisitions, joint ventures, boards of directors, corporate political action, and executive succession help to manage the dependencies. Different types of directors might bring different resources to their firms. CEO characteristics as gender and education bring different perspectives, experience, and backgrounds to the board (Farrag & Mallin, 2016). Also, the presence of women can bring different benefits and resources to the firm (Carter et al., 2010). Farrag and Mallin (2016) added that female CEOs might bring different viewpoints, perspectives, and experience and therefore prefer to make riskier decisions. Older and longer-tenured CEOs might have stronger networks, and better access to resources, which results in better firm performance (Wang et al., 2016). Furthermore, the theory suggests that foreigners offer greater financial flexibility (Ujunwa, 2012). The theory also argues that when a firm has poor performance, it will be more likely to replace its CEO, which would result in a positive respond of the market. In addition, CEO tenure is shorter in more competitive and uncertain environments than in stable and predictable environments (Hillman et al., 2009).

### 2.2.3 Upper echelons theory

The UET is a management theory developed by Hambrick and Mason in 1984, that suggests that CEOs experience, values, and personalities affect their choices and the firm performance (Hambrick, 2007; Naseem et al., 2019). Since psychological aspects of CEOs are difficult to observe, the UET suggest that demographic characteristics can be used as proxies. For example, CEOs age, tenure, education, and leadership style (Hiebl, 2013; Farrag & Mallin, 2016). According to the UET, the decisions that a CEO makes reflects the firm performance, while the CEO characteristics shape the future firm performance (Wang, et al., 2016). Furthermore, CEOs are applying greater influence over firm performance than any other top management team member (Bolinger, et al., 2019). Researchers, that have used UET, focused on characteristics as age, nationality, education, and tenure as indicators for the experience of CEOs. During the tenure of CEOs, they increase their power, knowledge, and skills which helps by resisting the pressure from the shareholders (Wang et al., 2016). In the context of UET, Orens and Reheul (2013) argued that older CEOs are more risk-averse and conservative than younger CEOs. Therefore, they are more likely to take on corporate decisions that are not in line with the interests of the shareholders, which might lead to bad firm performance (Wang et al., 2016). Farrag and Mallin (2016) confirmed the UET by suggesting that younger CEOs are likely to make riskier decisions than older CEOs. Also, older and longer-tenured CEOs might produce better firm commitment which could lead to increasing future firm performance (Wang et al., 2016). Nielsen and Nielsen (2013) stated that different nationalities among executives bring wide range of knowledge and experience. In addition, nationality diverse executives use their knowledge and experience to solve complex tasks by providing more innovative solutions. Nationality diversity might improve the comprehensiveness and quality of strategic decisions, and ultimately the firm performance. The educational level is associated with being open minded, tolerance of ambiguity, ability to process information, and to identify and evaluate multiple alternatives (Hambrick & Mason, as cited in Herrmann & Datta, 2002). The presence of highly educated CEOs can have a positive impact on the future firm performance, because they have better training, greater development, and a broader knowledge which helps to improve their decision making and strategic actions (Wang et al., 2016). Furthermore, the theory suggests that using optimistic language in financial reporting is partially a function of CEO's personality characteristics (Buchholz et al., 2018).

### 2.2.4 Human capital theory

The human capital theory of Becker developed in 1964 argues that the education, skills and experience have beneficial influence on the firm. Furthermore, unique human capital is derived from gender diversity. The human capital theory complements the resource dependency theory in context of diversity and suggests that men and women have important qualities including level of education, but women are less likely to have experience as business experts (Terjesen, Sealy, & Singh, 2009). Farrag and Mallin (2016) mentioned that more diverse directors might have better ability and better management quality. The human capital of CEOs plays an important role for investments as they make the strategic decisions and

determine the developments of the firm (Offstein & Gnyawali, 2005). Many researchers have linked the human capital theory to the educational level and experience of CEOs (Nosella, Petroni, & Verbano 2010; Jensen & Zajac, 2004; Patzelt, 2010). Nosella et al (2006) argued that the education of CEOs shows if the CEO is capable of managing the firm successfully. Patzelt (2010) mentioned that a CEO with management education has a positive effect on large firms, because a management education signals that CEOs are capable to mitigate processes in the top management team. In addition, Buchholtz, Ribbens, and Houle (2003) focused on CEO age in context of human capital theory and found that investments in CEOs human capital tend to decline with age.

## 2.3 Effects of CEO characteristics

In this section, the empirical evidence found on the effects of CEO characteristics on different variables will be described. The impact of CEO characteristics on firm performance, investments, leverage, and mergers and acquisitions will be discussed below.

### 2.3.1 On firm performance

Many researchers have examined the impact of CEO characteristics on firm performance. While several CEO characteristics have been identified and examined, the results regarding the significance and the impact of these characteristics on firm performance vary. Hereafter, the positive, negative, and no significant effects between CEO characteristics and firm performance will be discussed respectively. An overview of the impact of CEO characteristics on firm performance can be found in Table 1 at the end of this section.

*Positive effect of CEO characteristics on firm performance*

The first effect identified is a positive effect between CEO characteristics and firm performance. For example, Perryman, Fernando, and Tripathy (2015) examined the impact of gender diversity in top positions on firm performance, risks, and executive compensation. Their results show that firms with greater gender diversity deliver better performance. They added that in case of increasing gender diversity, the focus should be on women in top leader positions.

In addition, Liu, Wei, and Xie (2014) used a sample of over 2000 listed firms in Shanghai and Shenzhen Stock Exchanges to investigate the effect of board gender diversity on firm performance. Their results confirm the positive effect of female directors on firm performance. Moreover, they found that female executive directors have a stronger positive effect on firm performance than female independent directors. According to their study, the more female directors, the stronger the impact on firm performance.

Furthermore, Terjesen et al. (2015) examined whether the presence of independent and female directors impact the firm performance, using data from public firms in 47 countries. They found that firms

with more female directors have higher firm performance for both market and accounting measures. In addition, their results suggest that external independent directors only contribute to firm performance when the board is gender diversified. Finally, they found that firms in complex environments are more likely to have gender-balanced boards.

Moreover, Kuo et al. (2015) investigated the impact of CEO traits and compensation on firm performance and financial leverage. The sample that have been used consist of 729 United States (US) listed firms. Their results show that an older CEO has more experience, greater risk management and better people skills which helps to increase the firm performance. In addition, Kuo et al. (2015) added that older CEOs generate more earnings and financing capacity for firms with good performance or high leverage.

Even more, another study examined the impact of CEO personal and organizational characteristics on firm performance and the mediating impact of capital structure in context of Pakistani firms (Naseem et al., 2019). CEO age shows a positive and significant impact on current and future performance. Their study also shows that after a certain age, the impact on performance declines. In addition, male CEOs have a significant impact on performance in comparison to female CEOs. Even though, the number of female CEOs is increasing in Pakistan. Another CEO characteristic is the education level, which has a positive effect on firm performance as CEOs education helps them to make effective decisions that can improve the firm performance (Naseem et al., 2019).

Furthermore, another studied CEO characteristic is nationality by Nielsen and Nielsen (2013), whom examined the relationship between top management team diversity and firm performance in the context of Swiss firms. Their study shows that nationality diversity has a positive impact on firm performance. This effect becomes stronger in longer-tenured teams, highly internationalized firms, and environments with a lot of critical resources. According to Nielsen and Nielsen (2013), the diversity is depending on the specific elements of diversity being considered. Also, the diversity is also depending on the firm and industry conditions under which strategic decisions take place.

Moreover, Badru and Raji (2016) examined the link between firm performance and corporate governance mechanisms based on the nationality of the CEO. Their sample are publicly listed firms on the Nigerian Stock Exchange. They confirmed the positive relationship of Nielsen and Nielsen (2013). Foreign CEOs have an important role in firm performance in Nigeria, due to the fact that foreign CEOs act in the best interest of the shareholders and have a more well-diversified experience than domestic CEOs.

Also, Adams et al. (2005) examined the impact of powerful CEOs on firm performance in the context of publicly listed firms in the Fortune 500. Their results show that firm performance will be more variable as the decision-making power of CEOs increase. However, they also found that firms with powerful CEOs are not only those with poor performance, but also those with the best performance.

In addition, another study examined the relationship between CEO power, pay structure, and firm performance (Tien, Chen, Chuang, 2013). The sample that have been used consist of 112 firms in the US.

CEO power is based on duality, directorship, and tenure. Their results indicate that CEO power (based on directorship) has a positive impact on a firm's return on assets and return on equity.

Overall, evidence shows a positive relationship between CEO characteristics and firm performance. However, this only holds for the characteristics gender, age, education level, nationality, and power.

*Negative effect of CEO characteristics on firm performance*

Besides the positive relationship between CEO characteristics and firm performance, there is also evidence that shows a negative relationship. As mentioned before, Naseem et al. (2019) examined the impact of CEO characteristics on firm performance in context of Pakistani firms. In contradiction to the positive impact of CEO characteristics, they also found characteristics that have a negative impact on firm performance. For example, a longer-tenured CEO has a negative impact on firm performance, indicating that the role of CEOs in strategic decision making is very low and the chairman is more powerful. Naseem et al. (2019) suggest that the negative impact might be due to the lack of motivation, low compensation package, and the lack of managerial abilities, which leads to a firm's negative performance.

Similarly, Nguyen, Rahman, and Zhao (2017) investigated the relationship between CEO characteristics and firm performance. Their results indicate that CEO tenure is negatively associated with firm performance, consistent with the findings of Naseem et al. (2019). The impact of CEO tenure is higher in high-growth firms than in low-growth firms. Their results also indicate that CEO age is negatively associated with firm performance and suggest that firms with younger CEOs outperform firms with older CEOs. These results might be due to the fact that younger CEOs have more energy and flexibility than older CEOs.

In addition, Belenzon, Shamshur, and Zaruskie (2019) examined the relationship between CEO's age and firm performance for Western European small owner-managed firms. Their results confirm the findings of Nguyen et al. (2017) that CEO age is negatively associated with firm performance. Belenzon et al. (2019) found that as the CEO gets older, the firm has lower investments, lower sales growth and lower profitability. However, as Belenzon et al. (2019) stated, these results are mainly dependent on the industry, where the results are stronger for industries focusing on human capital and creativity. In contradiction to more financially developed markets where fewer firms are owned by older CEOs and where the decline of firm performance associated with older CEOs is less noticeable.

Furthermore, another study investigated the impact of board diversity and CEO educational background on the performance of bank in the UK (Elsharkawy, Paterson, & Sherif, 2018). Their study used a sample of 54 UK publicly listed banks. The results show a negative relationship between foreign CEOs and firm performance.

Moreover, Kaur and Singh (2018) examined the relationship between CEO characteristics and firm performance in the context of Indian firms. They also found a negative relationship between CEOs

nationality and firm performance, due to the fact that foreign CEOs might not know the national rules and regulations.

Even more, Jadiyappa et al. (2019) investigated the effect of CEO gender on firm performance in context of Indian firms. Their results show that female CEOs have a negative impact on firm performance. Also, female CEOs are associated with higher agency costs which might be due to gender-biased views which are common in the Indian business culture.

Besides that, Veprauskaitė and Adams (2013) investigated the impact of CEO power on firm performance for UK publicly listed firms. Their results show that CEO power has a negative impact on the firm performance. They expressed CEO power by duality, tenure, and share ownership. The more power a CEO has, the more influence on the board, which leads to a poorer financial performance.

Lastly, Tanikawa and Jung (2018) investigated how CEO and top management members influence the firm performance. Their study used a sample of 115 Japanese firms. The results show that CEO power negatively moderates the relationship between top management team tenure diversity and firm performance.

Overall, evidence shows a negative relationship between CEO characteristics and firm performance. However, this only holds for the characteristics gender, tenure, age, nationality, and power.

*No significant effect of CEO characteristics on firm performance*

Besides the positive and negative effects, there are researchers that found no significant relationship between CEO characteristics and firm performance. For example, Kaur and Singh (2018) examined the relationship between CEO characteristics and firm performance and found that CEO gender did not have a significant impact on firm performance for Indians firms. Kaur and Singh (2018) found also an insignificant impact for CEOs education, because it might be possible that when time proceeds, the skills of CEOs slowly disappear.

In addition, Elsharkawy et al. (2018) focused on the relationship between board diversity, CEO educational background, and bank performance. They found an insignificant relationship between CEOs education level and firm performance for banks in the UK. Although, they recommended that there should be attention to the educational level of CEOs. When CEOs have a business education, it will help them in the decision-making process and guarantee a strong financial system.

Moreover, Nelson (2005) examined the relationship between corporate governance practices, CEO characteristics, and firm performance. He did not find a relationship between CEO age and tenure on firm performance.

Lastly, Tien et al. (2013) examined the relationship CEO power, pay structure, and firm performance. Besides the positive relationship of directorship, they found no significant impact of CEO power, based on duality and tenure, on firm performance.

Overall, empirical studies have also found no significant relationship between CEO characteristics and firm performance. This relationship was found for the characteristics gender, education, age, tenure, and power.

| Relationship between CEO characteristics and firm performance | | |
|---|---|---|
| **Characteristics** | **Effect** | **Sources** |
| *CEO gender* | + | (Perryman et al., 2015; Liu et al., 2014; Terjesen et al., 2015; Naseem et al., 2019) |
| | - | (Jadiyappa et al., 2019) |
| | n.s. | (Kaur & Singh, 2018) |
| *CEO age* | + | (Kuo et al., 2015) |
| | - | (Nguyen et al., 2017; Belenzon et al., 2019) |
| | n.s. | (Nelson, 2005) |
| *CEO education level* | n.s. | (Kaur & Singh, 2018; Elsharkawy et al., 2018) |
| *CEO nationality* | + | (Nielsen & Nielsen, 2013; Badru & Raji, 2016) |
| | - | (Elsharkawy et al., 2018; Kaur & Singh, 2018) |
| *CEO tenure* | + | (Naseem et al., 2019; Nguyen et al., 2017) |
| | n.s. | (Nelson, 2005; Tien et al., 2013) |
| *CEO power* | + | (Adams et al., 2005; Tien et al., 2013) |
| | - | (Veprauskaitė & Adams, 2013; Tanikawa & Jung, 2018) |

*Table 1 - Overview on the effects of CEO characteristics on firm performance*

### 2.3.2 On investments

Barker and Mueller (2002) examined the relationship between CEO characteristics and the R&D spending of a firm. Their results show that R&D spending is greater at firms where CEOs are younger and longer tenured. This might suggest that CEOs, over time, tend to suit the R&D spending to their own preferences. Furthermore, they found no significant relationship between CEOs education level and R&D spending. Besides that, Faccio et al. (2016) investigated the relationship between CEO's gender and the risk-taking behaviour of firms. Their results show that female CEOs tend to make financing and investments choices that are less risky than male CEOs. The risk-averse behaviour of female CEOs has an impact on the efficiency of the capital allocation process. The results of Faccio et al. (2016) show that male CEOs are more likely to have high quality opportunities and high levels of investments, which is less likely for female CEOs. Thus, female CEOs do not allocate capital efficiently in comparison to male CEOs. Furthermore, Farag and Mallin (2016) examined the impact of demographic CEO characteristics on corporate risk-taking in case of Chinese IPOs. Their study shows that older and male CEOs are more risk averse compared to younger and female CEOs. Also, long-tenured CEOs are less like to take risky decisions because they are internally focused and

less interested in new business innovations than short-tenured CEOs. Also, long-tenured CEOs might be in favor of stability and efficiency in their firms and therefore not willing to make risky decisions. As for education level, Farag and Mallin (2016) found that higher educated CEOs are less risk-averse, more interested in innovation, and better informed about external factors. Moreover, another study examined the impact of CEO overconfidence on firm investments of Forbes 500 CEOs (Malmendier & Tate, 2005). They found that overconfident CEOs overestimate the returns of investments projects, where they find external funds excessively costly. Thus, when there is a great amount of internal funds, overconfident CEOs overinvest. When there is need for external funds, they cut the investments. Their results show that investments of overconfident CEOs are more responsive to cash flow. Furthermore, Buchholz et al. (2018) investigated how CEO narcissism can be related to the usage of an abnormal optimistic tone in financial disclosures in the context of US listed firms. Their results show that CEO narcissism has a relationship with an abnormal optimistic tone. The level of CEO narcissism has a positive impact on the likelihood of future seasoned equity offerings and larger future investments in R&D, only in the presence of a highly abnormal optimistic tone.

### 2.3.3 On leverage

Munir and Li (2016) examined the relationship between CEO power and firm leverage by testing whether the effect of CEO power varies across firms with different degrees of CEO power. They have used a sample of 295 Chinese listed small and medium-sized enterprises (SMEs). In order to test CEO power, some CEO power measures have been constructed, such as CEO pay slice, CEO ownership, CEO-chair duality, and CEO-founder dummy. Their results suggest that there is a U-shaped relationship between CEO power and firm book value-based leverage. Thus, the distribution of decision-making power can affect the financing decisions that are made. Also, CEOs with higher power tend to use lower leverage to pursue their own benefits. In addition, Jiraporn et al. (2012) investigated the influence of CEO dominance on capital structure. They have used the agency theory to investigate the influence. Their results are consistent with the agency theory, when CEO's are more dominant, the firm tend to have lower leverage. Also, firms with powerful CEOs experience negative impact from changes in capital structure. Moreover, Kuo et al. (2015) investigated the relationship between CEO traits, financial performance, and financial leverage. Their results indicate that longer-tenured CEOs can reduce earnings risk-taking for debt financing, while older CEOs generate higher earnings risk-taking and as a result increase firm's debt financing capacity. For medium and high earnings performance and debt, older CEOs can increase the firm's return on assets and the debt financing capacity. They also suggested that for low earnings performance and low debt, longer-tenured CEOs and older CEOs can decrease the risks in debt financing.

### 2.3.4 On mergers and acquisitions

CEO characteristics are also associated with mergers and acquisitions (M&A's). For example, Yim (2013) argued that CEO age became an important factor on firm acquisitions. Especially, a CEO who is 20 years older is approximately 30% less likely to announce an acquisition. Furthermore, Zhang et al. (2016) found also a relationship between CEO age and acquisitions activities. Their results show that younger CEOs are more likely to acquire another firm and spend more on large capital expenditures. Besides CEO age, they have used CEO tenure as a measure for reputation and found that large acquisitions increase CEO reputation, especially for younger CEOs. Brown and Sarma (2007) examined the roles of CEO overconfidence and CEO power in the decision to acquire another firm in the context of the United States. Their results show that CEO overconfidence as well as CEO power are important in explaining the decision to acquire another firm. Also, Malmendier and Tate (2008) examined the impact of CEO overconfidence on M&A's. As overconfident CEOs overestimate their returns, they overpay firms and therefore, undertake value-destroying mergers. The impact is the strongest when they have access to internal financing, and it does not require external financing. Also, the likelihood of making an acquisition is 65% higher if the CEO is overconfident.

### 2.3.5 Summary

The literature has shown that CEO characteristics affects different variables. Namely, CEO characteristics affects firm performance, investments, leverage, and mergers and acquisitions. Besides that, other studies also found a relationship between CEO characteristics and cash holdings (Orens & Reheul. 2013; Lim & Lee, 2018), budgeting practices (Zor, Linder, & Endenich, 2018), internal control quality (Lin et al., 2014), and bond ratings and yiels (Liu & Jiraporn, 2010). In conclusion, it seems that CEO characteristics have an impact on a wide range of different variables.

## 2.4 Corporate governance

In this section, corporate governance will be discussed. Firstly, the definition and aspects of corporate governance will be discussed. Secondly, the different corporate governance mechanisms will be discussed. Lastly, a summary will be given to explain why this study examines the moderating impact of independent directors.

### 2.4.1 Corporate governance definition

Corporate governance is the process and structure for controlling and directing a firm. It includes the interaction among the stakeholders and board members (Huse, 2005; Abdullah & Valentine, 2009). In shorten, corporate governance focuses on how to monitor or control management in the best way. Corporate governance has been linked to the agency theory, because corporate governance is designed to reduce the agency conflict and improve the performance (Dani, Picolo, & Klann, 2018). Within corporate

governance, there are many mechanisms that can influence the firm performance. Filatotchev and Nakajima (2010) and Weir, Laing, and McKnight (2002) divided corporate governance mechanisms into internal and external mechanisms. Filatotchev and Nakajima (2010) argued that internal mechanisms are associated with internal problems like managerial opportunism, misalignment of objectives of managers and stakeholders, and distortions of managerial incentives. To reduce the impact of these problems, the firm may use internal governance mechanisms like board independence, board size, ownership, and CEO duality. Weir et al. (2002) agreed and added that debt financing is also an internal governance mechanism. Furthermore, Filatotchev and Nakajima (2010) argued that the external mechanisms are associated with external problems like information asymmetries and self-serving behaviour of for example the customers, suppliers, and network partners. In order to reduce the impact of external problems, firms may focus on its entry modes, control over its subsidiary, and its network governance. According to Weir et al. (2010), the key external mechanism, the market for corporate control, acts as a last resort. However, the external governance factors depend on the firm's internal governance characteristics (Filatotchev & Nakajima, 2010). Therefore, the internal governance characteristics such as board independence, board size, ownership, and CEO duality will be further discussed.

### 2.4.2 Corporate governance mechanisms

As previously discussed, there are many different corporate governance mechanisms. Only the internal mechanisms, board independence, board size, ownership, and CEO duality, will be further discussed. This thesis examined the moderating role of independent directors. Therefore, the moderating role of the internal mechanisms will be described. The internal mechanisms will be discussed based on evidence found in literature examining the relationship with firm performance and the moderating role of the mechanisms.

#### *2.4.2.1 Board independence*

Board independence has been used by various studies as one of the corporate governance mechanisms and as a key element for good governance (Ujunwa, 2012). Independent directors are defined as non-executive directors that are considered independent when the board determines that directors are independent in character and judgment. Also, when there are no relationships or circumstances which could affect or appear to affect the director's judgment (Financial Reporting Council, 2018). The UK Code specifies circumstances that can cause dependence such as employment in the last five years, material business relationships, cross-directorships, representing a significant shareholder, board tenure, family ties, and additional remuneration from the firm (Financial Reporting Council, 2018; Johanson & Østergren, 2010).

There are theories used to explain board independence like the agency theory and the resource dependency theory. The agency theory highlights the importance of having independent directors, as they are less likely to threaten the interests of shareholders through conspiracy with insiders. Therefore, independent directors are considered as strong monitors and critical for reducing the agency conflicts (Carter et al., 2003). The resource dependency theory has also been used in context of board independence

as the theory considers the role of external resources in affecting the firm performance. The resources help to reduce dependency between the firm and the external junctures and reduce the uncertainty for the firm (Hillman & Dalziel, 2003). Pucheta-Martínez and Gallego-Álvarez (2019) added that boards help the firms to improve their performance by reducing the dependency. Independent directors tend to have a high education level, wide range of resources (Hillman, Cannella, & Harris, 2002), and a lot of experience in other companies (Finkelstein, Hambrick, & Cannella, as cited in Terjesen et al., 2015) which can help in their roles on the board.

Besides the theories, there are also researchers that explain the impact of independent directors on firm performance. For example, De Andres, Azofra, and Lopez (2005) suggested that independent directors should function as a mediator to reduce the conflict of interests and should make management more efficient through better monitoring, thus improving firm performance. Therefore, it is suggested that independent directors might be a threat to the power of CEOs (Voordeckers, van Gils, & van den Heuvel, 2007). Buigut, Soi, and Koskei (2015) argued that it is necessary for firms to increase the proportion of independent directors in order to prevent CEOs from applying power and influence over the board by controlling factors such as their own opportunities. Ahmadi, Nakaa, and Bouri (2018) suggested that having more independent directors might result in better firm performance because there is no personal interest being exercised. Also, Barka and Legendre (2006) argued that the presence of independent directors leads to high firm performance. Kao, Hodgkinson, and Jaafar (2018) have examined the effects of ownership structure and board of directors on firm performance and found evidence that board independence has a positive impact on firm performance. In addition, Terjesen et al. (2015) found also a positive impact of independent directors on firm performance but only when the board is gender diversified. Furthermore, Uribe-Bohorquez et al. (2018) examined the relationship between board independence and firm performance and the moderating effect of institutional context. Their findings support Terjesen et al. (2015) that independent directors have a positive impact on firm performance. They added that the positive impact will be greater when firms operate in countries with greater extent of law and enforcement.

In addition, board independence has also been used as a moderator. For example, Duru, et al. (2016) examined the moderating role of board independence on the relationship between CEO duality and firm performance. They suggest that boards spend most of their time monitoring the management. The board makes the decision to replace a CEO, therefore assessing CEO talent and using information in the replacement decision is their goal in monitoring. The study of Duru et al. (2016) found evidence that as the proportion of independent directors increases, the negative impact of CEO duality on firm performance turned into a positive impact. Moreover, Busru and Shanmugasundaram (2017) found also a positive effect of independent directors on the relationship between R&D expenditures and profitability of a firm. They argued that independent directors judge independently and their involvement increases the proper and considerable innovation investment with marginal risk. In addition, Wang (2014) argued that advancing

board independence could positively moderate the relationship between international diversification and firm performance.

#### *2.4.2.2 Board size*

Another mechanism is board size, which is important because it affects the extent of monitoring, controlling and decisions making in a firm. It is suggested that a large board is less effective in monitoring performance. In addition, larger boards seem to provide firms with diversity in contracts, experience and expertise needed to increase performance (Haniffa & Hudaib, 2006). The agency theory argues that larger board size increases the agency costs and monitors the firm incorrectly (Kao et al., 2018). Cheng (2008) suggested that larger boards has to take more compromises to reach consensus and the decisions are less extreme which leads to less variable firm performance. The study of Busru and Shanmugasundaram (2017) found evidence of the moderating role of board size, as it affects the relationship between R&D expenditure and profitability negatively. They suggest that larger board increases complexities in decision-making process from agency theory point of view.

#### *2.4.2.3 Ownership*

Ownership has also been used as a corporate governance mechanism. The ownership structure affects the business decisions and strategies due to different objectives (Busru & Shanmugasundaram, 2017). The agency theory suggests that corporate governance mechanisms might reduce the conflicts of interests arising from separation of ownership and control in modern firms (Ozkan, 2011). In addition, the agency theory suggests that there is an alignment of interests between shareholders and managers as the manager's ownership increases (Jensen & Meckling, 1976). Von Lilienfeld-Toal and Ruenzi (2014) argued that there are explanations for why CEOs take an ownership position. For example, when the firm is undervalued and the CEO recognizes that, he or she might take an ownership position in order to benefit from trading based on private information. Besides that, CEOs might want to give a positive signal to outside investors by investing themselves. As mentioned before, ownerships help to align the interests between shareholders and managers which might be another explanation for taking an ownership position (Von Lilienfeld-Toal & Ruenzi, 2014). Besides the manager's ownership, there are also other types of ownerships. Kao et al. (2018) have used block-holders' ownership, institutional ownership, foreign ownership, and family ownership. Block-holders' ownership is based on the shares owned by the largest outside shareholders. Also, they can reduce the agency problems as they have strong incentives to monitor. Similarly, families have also strong incentives to reduce the agency costs because they have invested most of their private equity. Moreover, Griffith, Fogelberg, and Weeks (2002) have examined the relationship between CEO ownership and firm performance and found a negative relationship between CEO ownership and firm performance. Kao et al., (2013) have found a positive relationship between the block-holders', institutional, foreign, and family ownership and firm performance. Furthermore, Busru and Shanmugasundaram (2017) found also a positive impact of family-concentrated ownership on the

relationship between R&D expenditures and profitability. While foreign ownership and institutional ownership did not have a moderating impact on the relationship between R&D expenditures and profitability.

#### *2.4.2.4 CEO duality*

Another mechanism that have been used as a corporate governance mechanism is CEO duality. CEO duality is a board leadership structure where the CEO is both the CEO and the chairperson of the board of directors (Rechner & Dalton, 1991). Krause et al. (2017) mentioned that the agency theory prefers independent monitoring by separating the CEO and board member positions. The agency theory argues that the duality increases the power of the CEO over the board. While the stewardship theory argues that the motives of the agent and principals should be aligned. Also, the stewardship theory and resource dependency theory argue that duality prefers more focused and flexible leadership, which would be more effective for firms in dynamic environments (Duru et al., 2016). In addition, Duru etl al. (2016) argued that a powerful CEO improves the board's capability to provide valuable resources to the firm which can result in a positive impact on the firm performance. Song and Kang (2019) examined the moderating role of CEO duality on the relationship between geographic diversification and firm performance. They found evidence that CEO duality has a positive moderating impact, which implies that the geographic diversification is greater in the CEO duality structure. In addition, Wang (2014) found evidence that when the CEO duality becomes less, it could have a positive moderating impact on the relationship between international diversification and performance by reducing the challenges that are related to managing international activities.

### 2.4.3 Summary

Overall, the corporate governance mechanisms have an impact on firm performance. Whereas independent directors monitor the management, it will be interesting to examine the moderating role of independent directors on the relationship between CEO power and firm performance. The empirical findings suggest that independent directors have a moderating impact on the relationship between CEO duality and firm performance and on the relationship between R&D expenditures and profitability.

## 2.5 Hypothesis development

In previous paragraphs, CEO characteristics, theories that are linked to CEO characteristics, and empirical evidence on the impact of CEO characteristics are discussed. Furthermore, corporate governance including the theories that are used to explain corporate governance and the empirical evidence are also discussed. In this paragraph, the different theories and empirical evidence will be used to develop hypotheses that will be examined in this study.

### 2.5.1 Effect on firm performance

Powerful CEOs have a strong capacity to apply their will. They can consistently influence key decisions in their firm, and therefore influence the firm performance. The agency theory predicts that powerful CEOs would use their power to influence the board in order to be in line with their interests which would reduce the firm performance. Also, their power would be worsening the agency costs because of their self-interest, resulting in poor firm performance. The UET focuses on the executives' experience, values, and personality. The theory predicts that CEOs have an influence on firm performance. In addition, CEOs can increase their power, knowledge, and skills during their tenure that helps to resist the pressure from the shareholders. The resource dependency theory is less focusing on the power of CEOs, although the theory argues that CEOs can create uncertainty by having conflicting interests that can confuse the decision-making process. However, CEOs can reduce this uncertainty by controlling the decisions, which will increase their power.

As mentioned previously, Veprauskaitė and Adams (2013) found a negative relationship between CEO power and firm performance which supports the agency theory. In addition, Munir and Li (2016) found that when CEOs have high decision-making power, they are more likely to take advantage in order to pursue their own self-interest rather than the wealth of the shareholders. On the other hand, Adams et al. (2005) found that firms with powerful CEOs are not only those with poor performance, but also those with the best performance because powerful CEOs might take decisions with extreme consequences. Following the theories and empirical findings, it might be that powerful CEOs are mainly focused on their well-being rather than the well-being of the shareholders which results in a negative impact on firm performance. This results in the following hypothesis:

*H1. Powerful CEOs have a negative effect on firm performance.*

### 2.5.2 Moderating effect of board independency

Corporate governance focuses on how to monitor or control management in the best way. The board of directors is a corporate governance mechanism that can help to monitor and control the management in the best way. Board independency is one of the corporate governance characteristics. When following the agency theory, independent directors are important as they are considered strong monitors and not acting in self-interest. In addition, independent directors limit the self-interested behaviour of CEOs. However, the effectiveness depends on the power of CEOs and the board of directors. According to the resource dependency theory, external resources can reduce the dependency in order to improve the firm performance. As discussed previously, multiple studies have found a positive effect of independent directors on firm performance (Ahmadi et al., 2018; Barka & Legendre, 2016; Kao et al., 2018; Uribe-Bohorquez et al., 2018; Terjesen et al., 2015). Also, multiple studies have found a positive moderating impact of independent directors (Duru et al., 2016; Busru & Shanmugasundaram, 2017; Wang, 2014). However, this study examined the moderating impact of independent directors on CEO power and firm performance, which is not yet investigated.

However, powerful CEOs might influence the board by gaining control over the board and making them act in their interest. While independent directors are not acting in their self-interest because they have no connection with the firm, therefore they are less sensitive to the influence of powerful CEOs. On the contrary, independent directors could threat the power of CEOs as they focus on aligning the interests of managers and shareholders and making the management more efficient through better monitoring. As a result, the firm performance will be significantly higher. So, it could be important to increase the proportion of independent directors to prevent CEOs from using their power to influence the board to act according to their preferences. Thus, independent directors have a positive influence on the relationship between CEO power and firm performance. This results in the following hypothesis:

*H2. A higher proportion of independent directors weakens the effect of powerful CEOs on firm performance.*

# 3. Research method

In this chapter, the research method will be discussed. First, the different methods used in previous studies will be explained. Second, the research method that is used in this research will be discussed, followed by the measurements of the variables.

## 3.1 Methodology

The relationship between CEO power and firm performance has been studied by many researchers. The most common research method that has been used is the regression analysis. For example, Tien et al. (2013) have applied regression analysis to examine the relationship between CEO power and firm performance. Moreover, many researchers have also used regression in their study to examine the relationship between CEO power and firm performance (Gupta et al., 2016; Adams et al., 2005; Jiraporn et al., 2012). In addition, Veprauskaitė and Adams (2013) examined the relationship between CEO power and firm performance by using the GMM dynamic panel data regression. Besides that, other researchers have also used regression analysis to examine the relationship between other CEO characteristics and firm performance (Kaur & Singh, 2019; Peni, 2012; Kuo et al., 2015; Pucheta-Martínez & Gallega-Álvarez, 2019; Félix & David, 2019; Merendino & Melville, 2019).

Furthermore, the moderating impact of independent directors on the relationship between CEO power and firm performance has not been studied yet. However, regression analysis is used for examining the moderating effect of independent directors on international diversification and firm performance (Wang, 2014). Busru and Shanmugasundaram (2017) have also used regression analysis to examine the moderating impact of independent directors on innovation and profitability.

Overall, regression analysis is applied by most of the studies examining the relationship between CEO power and the moderating impact of independent directors on firm performance. In order to be consistent with previous studies, regression analysis is also used in this study. In the next paragraphs, the main estimation techniques of regression analysis, that have also been applied by the previously mentioned researchers, will be explained.

### 3.1.1 Regression analysis

Regression analysis is applied by most of the studies examining the relationship between CEO power and the moderating impact of independent directors on firm performance. Also, studies that examine the relationship between other CEO characteristics and firm performance have applied regression analysis. The methods ordinary least square regression, panel regression, and generalized method of moments (GMM) regression are used by most of the studies. Therefore, these models will be further discussed in the following sections.

#### *3.1.1.1 OLS regression*

Regression analysis is the most widely used dependence technique, that explores all types of dependence relationships. This method is applicable in every business decision making process, for example business forecasting, national economy, models of firm's performance, customers decision-making process, and more. This method calculates the relationship between one or more independent variables and one dependent variables. Simple regression analysis is used when there is a single dependent and single independent variables. Multiple regression analysis is used to analyse the relationship between a single dependent variable and several independent variables (Hair et al., 2010).

In addition, there are different types of regression analysis methods. For example, logistic regression and linear regression. Logistic regression can be applied when the dependent variable is nonmetric and dichotomous (Hair et al., 2010). The logistic regression cannot be applied in this study, since the dependent variable (firm performance) is metric. However, the linear regression can be used when there is more than one independent variable involved, which is the case in this study. The ordinary least square (OLS) regression will be applied to examine the linear effect on firm performance. Furthermore, OLS regression method is used by prior research when studying CEO power in relationship with firm performance (Adams et al., 2015; Jiraporn et al., 2012).

Moreover, Hair et al. (2010) mentioned that the multivariate analysis is based on a set of assumptions which have to be met. Firstly, the dependent and independent variables have to be metric. This is the case for this study, since some variables are already metric, and some variables are transformed into dummy variables. Secondly, the sample size is important because it has a direct impact on the statistical power of the regression analysis. This study contains a multiple regression; therefore, the sample size should be at least 50 observations, and preferably 100 observations (Hair et al., 2010). This study investigates UK listed firms. The sample size consists of 142 firms. Therefore, the assumption for sample size has met. Next, the linearity of the variables (the change of the dependent variable that is associated with the independent variable), constant variance of the error terms, independence of the error terms, and the normality of the error term distribution need to be met. To check the assumptions, residual plots and normal probability plots can be made. Furthermore, adjustments can be made to meet the assumptions like transforming data with logarithms or deleting outliers. Next to the assumptions, there is also an issue that is associated with the correlation between independent variables, namely multicollinearity. The best situation would be that a number of independent variables are highly correlated with the dependent variable and little correlated with other independent variables. Multicollinearity can have significant effect on the results. A measure of multicollinearity is the variance inflation factor (VIF), which should be smaller than 10 in order to have no issues in interpretation (Hair et al., 2010). A regression analysis can be performed when the assumptions are met.

#### *3.1.1.2 Panel regression*

The panel regression analysis is used when the data are collected over time for the same individuals (Maddala, 1987). The advantages of panel data are that it provides more information, more variability, less multicollinearity, higher degrees of freedom, and more efficiency (Gujarati, as cited in Naseem et al., 2019). There are two types of panel regression analysis that have been used by many researchers, namely fixed and random effects. The fixed effects model is used when conclusions are made about a set of cross-section data or time-series data (one-way) or for cross-section data and time-series data (two-way). Whereas, random effects model is used when conclusions are made about the population from which the cross-section data came from (Maddala, 1987). Gupta et al. (2016) have applied the fixed effects to examine CEO power in relationship with firm performance, because it specifies the distinctive effects of each firm that are not a random sample and are time invariant. Also, Naseem et al. (2019) have applied the fixed effect to investigate the relationship between CEO characteristics and firm performance and the mediating impact of capital structure. They have used the fixed effects because their sample is not a random sample. Furthermore, Kao et al. (2018) have used a different type of fixed effects that is called the two-way fixed effects method to examine the relationship between board of directors and firm performance. This method is used because it will draw conclusions of both the cross-section and time-series data. In order to control for industrial effects and regulation effects, the industry dummies and year dummies have been included in their model. Besides Kao et al. (2018), Peni (2012) has also applied the two-way fixed effects, because it allows different interceptions for each industry, controls for possible change in firm performance over time, and allows individual effects of each firm which cannot be explained by control variables. The random effects panel model has been applied by Kuo et al. (2015) to examine the impact of different CEO traits and compensation on the firm performance. Jadiyappa et al. (2019) considers if they use the random or fixed effects model to examine the relationship between CEO gender, firm performance, and agency costs. In order to make a decision, they have conducted the Hausman test. Where the null hypothesis is that the random effects are efficient. Their study has rejected the null hypothesis and therefore used the fixed effects. Due to the usage of fixed effects model, they can control for time-invariant effects and firm-specific factors that can affect the firm performance. Also, Wang (2014) have used the Hausman test to find the most appropriate model for investigating the moderating effects of corporate governance, including independent directors, on international diversification and firm performance. The results of the Hausman test showed that the random-effects model is the most appropriate for that particular study.

#### *3.1.1.3 GMM regression*

Another method that have been used to examine the relationship between board of directors and CEO characteristics on firm performance is the generalized method of moments (GMM) regression. The relationship will be estimated simultaneously in levels and first differences. Veprauskaitė and Adams (2013) have used the GMM for examining the relationship between CEO power and firm performance. They have used GMM because it takes account of time-invariant and it controls for variable simultaneity and

unobserved heterogeneity. Félix and David (2019) have used the GMM for analyzing the impact of gender on firm performance due to the possibility of reverse causality. The usage of GMM helps to improve the efficiency of the estimator and the power of testing the hypotheses by allowing more instrumental variables in the estimation. Furthermore, GMM controls for endogeneity, time-invariant characteristics, multicollinearity, possible omission of independent variables, and unobserved heterogeneity (Félix & David, 2019). Also, Terjesen (2015) have used the GMM to analyse the impact of independent and female directors on firm performance because it computes the standard errors that are robust to heteroscedasticity. In their study, some variables are highly correlated and therefore, impossible to interpret. The usage of GMM solves this problem and the results remain robust. Moreover, the GMM estimation is also used as robustness test by Naseem et al. (2019).

### 3.1.2 Endogeneity problem

Endogeneity addresses the probability of reversed causality. Reversed causality could limit the outcomes of this study. Some researchers already examined the relationship between CEO power and firm performance and argued that there could be a reversed causality between CEO power and firm performance. This means that CEO power can determine firm performance, as well as that firm performance can determine CEO power. Given that, it is important to be aware of the endogeneity problem as it could limit the outcomes of this study.

Furthermore, reversed causality is addressed by previous studies. For example, Adams et al. (2005) mentioned the possibility of an endogeneity problem between CEO power and firm performance. They argued that firm performance might determine CEO power. They explained the reversed causality as follows. If the firm performance is good, the implementation of changes by CEOs will be easier which increase their power. Also, if the firm performance is not as good, firms might want to concentrate decision-making power in the hands of CEOs, so that the decisions are made faster. In their research, they have created a dummy variable to limit the impact of endogeneity. The value of "1" is given for very high or very low stock returns and "0" otherwise. However, their study focuses on the variability of firm performance, which is not the case in this study. Moreover, Daily & Johnson (1997) also examined the relationship between CEO power and firm performance. They argued that CEOs are mostly replaced due to poor firm performance. In addition, when firm performance is high, there might be little need for controlling CEOs closely. They tested reversed causality by using the same variables but with reversed causal direction. Furthermore, some researchers have used two additional tests to mitigate the endogeneity problem for the relationship between CEO power and corporate performance, capital structure (Jiraporn et al.,2012), or bond ratings and yields (Liu & Jiraporn, 2010). In addition, Sheikh (2018) have examined the relationship between CEO power and firm risk. In order to limit the impact of endogeneity, a 1-year lag for the dependent variable is used. More specifically, the dependent variable is determined for $t$+1, with CEO power at year $t$ as the independent variable (Sheikh, 2018).

Besides that, other researchers that examined the relationship between CEO power and firm performance have either not addressed the endogeneity problem (Gupta et la., 2016; Tien et al., 2013) or have used GMM regression due to the fact that it controls for endogeneity (Veprauskaitė & Adams, 2013). Furthermore, researchers that have examined the relationship between other CEO characteristics and firm performance have not controlled for endogeneity. It seems that when many CEO variables are used, it is hard to find the right tools. The use of weak tools may do more wrong than good, therefore endogeneity tests are not conducted in those studies (Kaur & Singh, 2018; Peni, 2012).

Overall, reversed causality is an important problem that needs to be addressed. In line with previous study, a one-year lead will be used in order to mitigate the endogeneity problems. This means that the effect of the independent variable CEO power at *t* will be examined on dependent variable firm performance year *t*+1.

## 3.2 Research model

In order to test the hypotheses, the OLS regression including fixed effects will be used because it focuses on the variation within the same firm over time and it is in line with previous study. There will be two equations, one for testing hypothesis 1 and one equation for testing the moderating impact of independent directors for hypothesis 2.

### 3.2.1 CEO power and firm performance

In order to test the effect of CEO power on firm performance, the variable CEO power (CEOP) is used as the independent variable. The dependent variable is the firm performance (FP). The models of Munir and Li (2016), Adams et al. (2009), and Pucheta-Martínez and Gallega-Álvarez (2019) are used as a basis for the following model to test hypothesis 1:

$$FP_{i,\,t+1} = \beta_0 + \beta_1\,(CEOP)_{it} + \beta_2\,(SIZE1)_{it} + \beta_3\,(LEV1)_{it} + \beta_4\,(Industry)_i + \beta_5\,(Year)_t + \varepsilon_{it}$$

$FP_{i,\,t+1}$ = Financial performance of firm i in year t+1;

$CEOP_{it}$ = CEO power of firm i in year t;

$SIZE1_{it}$ = Control variable firm size of firm i in year t;

$LEV1_{it}$ = Control variable leverage of firm i in year t;

$Industry_i$ = Control variable industry dummy for firm i;

$Year_t$ = Control variable year dummy for year t;

$\varepsilon_{it}$ = Error term of firm i in year t.

### 3.2.2 Moderating role of independent directors

In order to test the moderating impact of independent directors on the relationship between CEO power and firm performance, the moderator variable independent directors (INDEP) is included in the model as an interaction with CEO power. The model in section 3.2.1. is used as a basis and extended with the interaction of independent directors and CEO power. The following model has been framed to test hypothesis 2:

$$FP_{i,\,t+1} = \beta_0 + \beta_1\,(CEOP)_{it} + \beta_2\,(SIZE1)_{it} + \beta_3\,(LEV1)_{it} + \beta_4\,(Industry)_i + \beta_5\,(Year)_t + \beta_6\,(INDEP * CEOP)_{it} + \varepsilon_{it}$$

| | |
|---|---|
| $FP_{i,\,t+1}$ | = Financial performance of firm i in year t+1; |
| $CEOP_{it}$ | = CEO power of firm i in year t; |
| $SIZE1_{it}$ | = Control variable firm size of firm i in year t; |
| $LEV1_{it}$ | = Control variable leverage of firm i in year t; |
| $Industry_i$ | = Control variable industry dummy for firm i; |
| $Year_t$ | = Control variable year dummy for year t; |
| INDEP * $CEOC_{it}$ | = Interaction independent directors and CEO power of firm i in year t; |
| $\varepsilon_{it}$ | = Error term of firm i in year t. |

## 3.3 Measurement of variables

In this section, the measurements of the variables will be discussed. First, the dependent variable firm performance will be explained. Second, the independent variables CEO power and board independence will be discussed. Then, the control variables that are included in the analysis will be described. An overview of the variables and its measurements can be found in Table 2 at the end of this section.

### 3.3.1 Dependent variable

The dependent variable in this study is firm performance, since the study investigates if independent directors weakens the relationship between CEO power and firm performance. As previously mentioned, the dependent variable will have a one-year lead. Previous researchers have used two types of firm performance, namely accounting-based and market-based (Adams et al., 2005; Tien et al., 2013; Tanikawa & Jung, 2018). For accounting-based, net income, return on assets (ROA), or return on equity (ROE) are used. ROA is calculated by dividing earnings before interest and taxes by total assets and ROE by dividing net income by total equity (Veprauskaitė & Adams, 2013; Tien et al., 2013). For market-based, the most common measures are stock returns or Tobin's Q (Veprauskaitė & Adams, 2013; Adams et al., 2005). Stock return (RET) is calculated by using the following formula: [stock $price_t$ + $dividend_t$ – stock $price_{t-1}$] / stock $price_{t-1}$ (Veprauskaitė & Adams, 2013). Tobin's Q is measured as the sum of the book value of total assets minus the book value of common equity plus the market value of common equity divided by the book value

of total assets (Veprauskaitė & Adams, 2013; Tien et al., 2013; Adams et al., 2005). This study will include both the accounting-based and market-based measures. The ROA and ROE are used as measures for the accounting-based performance and Tobin's Q is used as market-based measurement. Whereas ROS and RET are used as a robustness test.

### 3.3.2 Independent variables

#### *3.3.2.1 CEO power*

In this study, CEO power is the independent variable. Multiple researchers have measured power by using the four dimensions of Finkelstein (1992). Expert power and prestige power are not included because the other dimensions have been used extensively by previous studies. The first power indicator is the CEOs compensation (COMP) which is included in the structural power dimension by Finkelstein (1992). COMP is defined as the total cash compensation (including salary, cash bonuses, and other benefits) dividing by the total cash compensation of all directors on the board (Veprauskaitė & Adams, 2013). The higher the percentage of CEOs compensation, the more ability to apply decision-making power (Munir & Li, 2016). The second CEO power indicator is CEO ownership (OWNS) because shareholdings are relevant indicator of ownership power, as it reduces the board influence (Finkelstein, 1992). OWNS is measured as total shares owned by the CEO divided by the total shares of the firm. Some studies have used a dummy variable where a value of "1" is given when the CEO owns equal to or more than 3% of the shares and "0" otherwise (Veprauskaitė & Adams, 2013; Munir & Li, 2016). The third indicator of CEO power is a CEOs status as founder of the firm. Finkelstein (1992) argued that ownership power is also based on the CEOs personal relation to the firm. Adams et al. (2005) considered that CEOs who are also founders are more influential. A dummy variable is used to measure the CEOs founder status (FNDR). A firm was given a value of "1" if the CEO is one of the founders of the firm and "0" otherwise (Adams et al., 2005; Munir & Li, 2016). The fourth indicator of CEO power is CEO-duality (DUAL), which indicates whether the same person holds the CEO and chairman positions. DUAL is used as a dummy variable that is valued as "1" if the CEO also holds a chairman position and "0" otherwise (Veprauskaitė & Adams, 2013; Munir & Li, 2016). The fifth CEO power indicator is tenure (TENR), which is not included in the four dimensions of Finkelstein (1992). However, it is often used as an indicator of power. TENR is measured as the number of years a CEO holds its position as CEO (Veprauskaitė & Adams, 2013; Tanikawa & Jung, 2018). The longer a CEO is in its position, the more power the CEO has to apply more influence on the board's decision-making process (Tien et al., 2013).

In order to combine these different indicators for power, this study follows previous studies and employs the principal components analysis (PCA) to construct CEO power indexes. Similar to Veprauskaitė and Adams (2013) and Munir and Li (2016), all components with eigenvalues greater than 1 are used. PCA is used in order to reduce the dimensionality of a data set which consist of interrelated variables, in this case CEO power-related variables. This can be done by transforming the data into a new set of variables which are uncorrelated (Veprauskaitė & Adams, 2013).

#### *3.3.2.2 Board independence*

The independency of the board (INDEP) is measured as the number of independent directors divided by the board members of a firm, which is in line with prior studies (Merendino & Melville, 2019; Kao et al., 2018; Saidat et al., 2018). In this study, the impact of the independent directors on the relationship between CEO power and firm performance is investigated. Therefore, INDEP is the moderator variable. In order to investigate the hypothesis that includes the moderating impact, the interaction term CEOP * INDEP is included in the model. The interaction consists of the individual interaction terms of the new set of power variables and INDEP.

### 3.3.3 Control variables

Besides the relationship between the dependent, independent, and moderator variables, some control variables are included in the model. Control variables are expected to influence the performance of the firm (Nielsen & Nielsen, 2013). Since the variables could affect the results, the model should control for these variables. There are four control variables included in the model.

The first control variable is firm size, which tends to be an important determine of firm performance. Firm size is measured as the natural logarithm of the annual sales (Veprauskaitė & Adams, 2013). While Adams et al. (2005) measured firm size as the natural logarithm of the firm's total assets. In line with Veprauskaitė & Adams (2013), firm size will be measured as the natural logarithm of the firm's total sales. In the robustness test, the natural logarithm of the firm's total assets is used.

The second control variable is leverage, which also tends to be an important determine of firm performance (Veprauskaitė & Adams, 2013). Leverage can be measured as the proportion of long-term debt to total assets (Adams et al., 2005). Another measure is total debt divided by total assets (LEV2), which is used in the robustness tests (Veprauskaitė & Adams, 2013).

The third control variable is industry effect. It could be that the industry in which a firm is operating affects its firm performance. The different structures among the industries affect the behaviour of firms, which in turn affects its firm performance (Fernández et al., 2018). Furthermore, it could be that some industries are more volatile than others and therefore influence the firm performance (Adams et al., 2005; Veprauskaitė & Adams, 2013). Therefore, industry dummies are included in the model to control for industry effects. Controlling for industry effects is in line with previous studies (Adams et al., 2005; Veprauskaitė & Adams, 2013; Munir & Li, 2016). The industry dummies are based on the NACE Rev. 2 classification and will be included in each regression analysis.

The fourth control variable is year effect. Year effect is included as year dummies to control for temporal conditions (Gupta et al., 2016). For this study, the data is collected over five years. Specifically, the CEO power data and board independence data are collected for the years 2013 to 2017. Whereas, the firm performance data are collected for the years 2014 to 2018. In order to control for specific year effects, year dummies are included.

## 3.4 Robustness tests

In order to ensure the results under different circumstances, different robustness tests are conducted. As previously discussed, some variables are replaced by different measurements. Besides that, the validation approach of split samples is applied (Hair et al., 2010). The first subsample involves only firms in the manufacturing industry. The second and third subsample consists of two groups based on board independence and total debt, respectively. Also, a regression with the individual CEO power variables is conducted. To check whether the PCA made a difference in the analyses, each CEO power variable is separately. Lastly, the control variables firm size and leverage are used separately.

| Variable | Definition | Sources |
|---|---|---|
| ***Firm performance*** | | |
| Return on assets (ROA) | Earnings before interest and taxes divided by total assets | (Veprauskaitė & Adams, 2013; Adams et al., 2005) |
| Return on equity (ROE) | Net income divided by total equity | (Veprauskaitė & Adams, 2013; Tien et al., 2013) |
| Return on sales (ROS) | Earnings before interest and taxes divided by total sales | (Duru et al., 2016) |
| Tobin's Q | Book value debt and market value common equity divided by book value total assets | (Veprauskaitė & Adams, 2013; Tien et al., 2013; Adams et al., 2005) |
| Stock return (RET) | Stock price plus dividend minus initial stock price divided by initial stock price | (Veprauskaitė & Adams, 2013) |
| ***CEO power*** | | |
| CEO compensation (COMP) | Total compensation divided by total compensation of all directors on the board | (Veprauskaitė & Adams, 2013) |
| CEO ownership (OWNS) | Total shares owned by the CEO divided by the total shares of the firm | (Munir & Li, 2016; Veprauskaitė & Adams, 2013) |
| CEO founder status (FNDR) | 1 = founder, 0 = otherwise | (Adams et al., 2005; Munir & Li, 2016) |
| CEO duality (DUAL) | 1 = CEO and chairman, 0 = otherwise | (Munir & Li, 2016; Veprauskaitė & Adams, 2013) |
| CEO tenure (TENR) | Number of years CEO holds CEO position | (Veprauskaitė & Adams, 2013; Tanikawa & Jung, 2018) |
| ***Moderating variable*** | | |
| Board independence (INDEP) | Number of independent directors on the board divided by total of board members | (Merendino & Melville, 2019; Kao et al., 2018; Saidat et al., 2018) |
| ***Control variables*** | | |
| Firm size (SIZE1) | Natural logarithm of the annual sales | (Veprauskaitė & Adams, 2013) |
| Firm size (SIZE2) | Natural logarithm of the total assets | (Adams et al., 2005) |
| Leverage (LEV1) | Long-term debt divided by total assets | (Veprauskaitė & Adams, 2013; Adams et al., 2005) |
| Leverage (LEV2) | Total debt divided by total assets | (Veprauskaitė & Adams, 2013) |
| Industry dummies | 4 dummy variables based on Nace Rev. 2 classification | (Veprauskaitė & Adams, 2013; Adams et al., 2005) |
| Year dummies | 4 dummy variables to control year effect from 2013-2017 | (Gupta et al., 2016) |

*Table 2 - Variable measurements*

# 4. Sample and data

In this chapter, the sample size that is used in this study is described. Following by the industry classification of the sample and the data collection to perform the regression analysis.

## 4.1 Sample

### 4.1.1 Sample size

This study examines the effect of CEO power on firm performance for United Kingdom publicly listed firms. Therefore, firms listed on the London stock exchange (FTSE ALL-SHARE firms) are used to create the sample. On 19 November 2019, a list of FTSE ALL-SHARE firms is retrieved from the website ORBIS. The list consisted of 541 firms for a sample period of 2013 to 2018. There are four selection criteria for the sample used. First of all, regulated industries, like financial and utility firms are excluded (Veprauskaitė & Adams, 2013; Munir & Li, 2016; Adams et al., 2005; Jiraporn et al., 2012). This resulted in excluding 169 firms from the sample. Secondly, there are also firms that are not having a CEO. The information about the CEO and its power have been retrieved from BoardEx. The firms without CEO are also excluded from the sample. Many trust and investment companies did not have a CEO, like AEW UK Reit Plc. and Fundsmith Emerging Equities Trust Plc. Additionally, there are also firms excluded from the sample because their CEO is not in its position during the whole sample period. Some firms have had different CEOs during the sample period. This might give a wrong impression about the impact of their power on the firm performance, because they are in the CEO position for a short period of time which might be that they do not have a clear impact on the firm performance. Also, it might be that some changes in the CEO power variables are not related to firm performance. To illustrate, Urbin & Civic Plc. have changed their CEO in 2013, 2014 and in 2016, and SIG Plc. have changed their CEO in 2013, 2016, and 2017. This leads to excluding 168 firms from the sample. Lastly, firms that have missing or unavailable CEO information or financial data, are excluded from the sample. For example, TUI AG and John Menzies Plc. did not report individual CEO power data in their annual report for the majority of the sample period. Also, St. James Palace Plc. did not report all financial data which is needed to measure the firm performance appropriately. Based on that, another 15 firms are excluded from the sample because of missing or unavailable data. In conclusion, the final sample consist of 142 firms. The results of the selection criteria are shown in Table 3.

| **Sample selection** | | |
|---|---|---|
| **Sample size** | **Reason for exclusion** | **Number of excluded firms** |
| **Initial sample** | All listed firms on London Stock Exchange | |
| **541** | Financial or utility firms | **169** |
| **372** | Firms without CEOs | **47** |
| **325** | Firms where CEO is not in its position during the sample period | **168** |
| **157** | Firms with missing or unavailable data | **15** |
| **142** | Final sample size | |

*Table 3 - Sample selection*

### 4.1.2 Industry classification

As mentioned in section 3.3.3, this study controls for industry effects by using the industry dummies based on the NACE Rev. 2 classifications. The NACE Rev. 2 has 21 different classifications. In the FTSE ALL-SHARE list, not all the classifications are presented. In Table 4, it is shown that there are only 13 classifications of NACE Rev. 2 in the sample. Moreover, some classification consists of only 1 or 4 firms, which could be a problem for the validation of the results. Therefore, some classifications are grouped together to obtain a greater number of observations for each category. The 13 different classification are reclassified into 5 categories. Namely, "manufacturing industry", "real estate and construction industry", "commodity, retail and transport industry", "communication and administrative industry", and "other industries".

| **Industries** | | | |
|---|---|---|---|
| **NACE REV. 2 classification** | **Number of firms before reclassification** | **Reclassification** | **Number of firms after reclassification** |
| C - Manufacturing | 51 | Manufacturing industry | 51 |
| F - Construction | 6 | Real estate and construction industry | 20 |
| L - Real estate activities | 14 | | |
| B - Mining and quarrying | 13 | Commodity, retail, and transport industry | 34 |
| G - Wholesale and retail trade | 11 | | |
| H - Transportation and storage | 10 | | |
| J - Information and communication | 13 | Communication and administrative industry | 23 |
| N - Administrative and support service activities | 10 | | |
| I - Accomodation and food service activities | 4 | Other industries | 14 |
| M - Professional, scientific and technical activities | 4 | | |
| O - Public administration | 1 | | |
| R - Arts, entertainment and recreation | 1 | | |
| S - Other service activites | 4 | | |
| **Totaal** | **142** | | **142** |

*Table 4 - Industry specification*

## 4.2 Data

This study examined the moderating impact of independent board members on CEO power and firm performance for United Kingdom publicly listed firms. The data is gathered from FTSE ALL-SHARE firms that are listed on the London stock exchange. The FTSE ALL-SHARE list consist of 541 firms for a sample period of 2013 to 2018. In the OLS analyses, information for the variables of CEO power, board independence, and the control variables are only about 2013 to 2017. The information for the firm performance is about 2014 to 2018 as firm performance is used as a lead-lag variable. The data are obtained from the database ORBIS from Bureau van Dijk and BoardEx. ORBIS consists of comprehensive company reports, financial information, and ownership information from 300 million companies around the world. BoardEx consists of information about board members from more than 1.8 million publicly listed firms. Information regarding

the firm performance variables and control variables have been retrieved from ORBIS. Information regarding the CEO power variables and the moderating variable independent directors have been retrieved from BoardEx. Annual reports have been used to gather specific information that were not available in ORBIS. For example, some firms had no available dividend data or no available total debt data in ORBIS. To gather these data, the annual reports have been used. These annual reports have been retrieved from the firm's websites.

# 5. Results

In this chapter the results of the analyses are described. First, the outliers of the data are discussed, Second, the descriptive statistics of the variables included in this study are described. Third, a principal component analysis for CEO power is conducted. Then, a bivariate correlation analysis is showed by using the Pearson correlation matrix. In the last section, the results of the OLS regression analyses and the robustness tests are discussed in order to answer the two hypotheses of this study.

## 5.1 Outliers

Outliers might exist in a multivariate analysis and could affect the outcomes of the study. Therefore, it is necessary to identify the outliers before conducting the analysis. In order to identify the outliers, boxplots can be used. Values that were below 1st percentile are set to the 1st percentile, and the data above 99th percentile to the 99th percentile. This is called winsorization which is used by many researchers in the field of finance (e.g. Wang, 2014; Duru et al., 2016; Merendino & Meville, 2019). Merendino and Melville (2019) and Duru et al. (2016) also used the 1st and 99th percentile.

## 5.2 Descriptive statistics

In Table 5, the descriptive statistics of the variables that are used in this study are shown after the outliers have been removed. The data is retrieved for a sample of 142 firms over a period of 2013 to 2018. Panel A shows the dependent variables. Relative to Veprauskaitė & Adams (2013), the sample of this study shows similar to the period of 2003 to 2008 in terms of return on assets (9.2% vs. 8.9%), and slightly lower in terms of return on equity and Tobin's Q (respectively, 14.4% vs. 15.1%, and 1.32 vs. 1.56). Evidence shows that the sample of UK firms for this study might not be recovered from the impact of the financial crisis in 2008. When comparing Tobin's Q to Adams et al. (2005) for 1992 to 1999 and Tien et al. (2013) for 2001 to 2005, firms in the United States perform better in terms of Tobin's Q (respectively, 2.01 and 2.31). This could mean that over the years firms in the United States are on average higher overvalued than firms in the United Kingdom.

Besides that, Panel B displays the CEO-power variables. Relative to Veprauskaitė & Adams (2013), a CEO of a UK listed firm earns on average much more total compensation of all directors on the board from 2013 to 2018 than from 2003 to 2008 (42.8% vs. 35%). Furthermore, CEOs holds on average only 2.1% of the firm's total shares. Another independent variable is the founder status of the CEO. On average 8.8% of the sample CEOs is also the founder of the firm. Similarly, Adams et al. (2005) found that 9% of the CEOs are also founder of the firm in the United States. These results are much higher in China where on average 44.6% of the CEOs are also the founder of the firm (Munir & Li, 2016). As can be observed, CEO duality is not very common within this sample, as the mean is 2.1%. In China, CEO duality is more common, as 32.9% of the CEOs holds a CEO and chairman position (Munir and Li, 2016). In the United States, the percentage is even higher than in China, 63% of the CEOs are in both positions (Gupta et al., 2016). Regarding the CEO

tenure, the descriptive statistics show that CEOs are on average approximately 7.5 years in their position. In line with previous research of Veprauskaitė & Adams (2013) and Ozkan (2011).

In this study, the proportion of independent directors on the board is used as the moderating variable and is displayed in Panel C. The average proportion of independent directors is slightly higher than the findings of Veprauskaitė & Adams (2013) (59.1% vs. 57.3%). Given this, evidence shows that more than half of the board are independent directors, which is line with the corporate governance code. Another example is the study of Ozkan (2011) who used a sample period of 1999 to 2005. The mean value increased over the years from 49.1% to 57.1%. Given this, the proportion of independent directors have been increased over the years. One of the reasons might be that in 2003, the UK Code was revised by adding that at least half of the board should consist of independent directors.

| Variables | Obs. | Mean | Std. Deviation | Minimum | 1st quartile | Median | 3rd quartile | Maximum |
|---|---|---|---|---|---|---|---|---|
| **Panel A: Performance variables** | | | | | | | | |
| ROA (%) | 834 | .092 | .080 | -.161 | .048 | .079 | .134 | .345 |
| ROE (%) | 722 | .144 | .313 | -.702 | -.009 | .154 | .303 | .932 |
| ROS (%) | 819 | .170 | .205 | -.378 | .052 | .114 | .214 | .898 |
| TobinsQ | 839 | 1.323 | 1.049 | .064 | .614 | 1.002 | 1.707 | 5.566 |
| RET (%) | 810 | .122 | .310 | -.734 | -.066 | .112 | .314 | .858 |
| **Panel B: CEO-power variables** | | | | | | | | |
| COMP (%) | 835 | .428 | .117 | .094 | .350 | .430 | .507 | .747 |
| OWNS (%) | 852 | .021 | .056 | .000 | .001 | .003 | .010 | .358 |
| FNDR | 852 | .088 | .284 | 0 | 0 | 0 | 0 | 1 |
| DUAL | 852 | .021 | .144 | 0 | 0 | 0 | 0 | 1 |
| TENR (years) | 852 | 7.426 | 5.930 | .000 | 4.000 | 6.000 | 10.000 | 31.000 |
| **Panel C: Moderating variable** | | | | | | | | |
| INDEP (%) | 852 | .591 | .140 | .074 | 0.500 | .592 | 0.700 | .857 |
| **Panel D: Control variables** | | | | | | | | |
| Total sales (x 1mln) | 843 | 5.446 | 18.020 | .021 | .262 | .830 | 2.710 | 18.793 |
| Total assets (x 1mln) | 852 | 7.932 | 21.575 | .057 | .415 | 1.301 | 4.135 | 18.736 |
| LEV1 (%) | 835 | .367 | .229 | .010 | .205 | .338 | .494 | 1.241 |
| LEV2 (%) | 847 | .790 | .311 | .198 | .562 | .777 | .981 | 1.951 |

*Table 5 - Descriptive statistics*

Panel D displays the control variables size, leverage, industry dummies, and year dummies. The industry and year variables have been discussed earlier in section 3.3.3. The control variable size is measured by using the natural logarithm of total sales and the natural logarithm of total assets. Whereas, leverage is measured by dividing long-term debt and total debt by total assets. The sample of this study has higher total sales and total assets than the findings of Ozkan (2011) for a sample period of 1999 to 2005. Given this, it is clear that the economy has been growing a lot over the years and the financial crisis has not a lot of impact anymore. The control variable leverage based on long-term debt and total debt shows a mean of 36.7% and 79.0% respectively, which is highly increased in comparison to Veprauskaitė & Adams (2013) who reported for long-term debt 16.5% and for total debt 21.2%. Based on that, it is clear that leverage changes dramatically over the years.

## 5.2 Principal component analysis

As mentioned in chapter 3, this study uses PCA to develop a CEO power index. Table 6 shows these measures. Panel A shows the correlation matrix of the CEO power variables. Some correlations are not strong due to the fact that these variables capture different aspects of CEO power (Veprauskaitė & Adams, 2013). This is also in line with Finkelstein (1992), who divided power into different dimensions. Panel B shows the components and the loadings for the power indexes PWR1 and PWR2. In Appendix A, the PCA scree plot and loading plot can be found in Figure 1 and 2, respectively. In line with Veprauskaitė and Adams (2013), only the components with eigenvalues greater than 1 have been retained.

| | COMP | OWNS | FNDR | DUAL | TENR |
|---|---|---|---|---|---|
| **Panel A: Correlation Matrix** | | | | | |
| COMP | 1 | | | | |
| OWNS | -.045 | 1 | | | |
| FNDR | -.184 | .305 | 1 | | |
| DUAL | -.053 | .359 | .109 | 1 | |
| TENR | -.033 | .375 | .401 | .213 | 1 |
| **Panel B: Power index weights** | | | | | |
| PWR1 | -.229 | .750 | .679 | .554 | .736 |
| PWR2 | .832 | .248 | -.365 | .388 | .051 |

| **Panel C: Principal component descriptive statistics** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Mean** | **Std. Deviation** | **Minimum** | **1st quartile** | **Median** | **3rd quartile** | **Maximum** |
| PWR1 | .018 | .997 | -1.030 | -.503 | -.284 | .125 | 7.210 |
| PWR2 | .002 | 1.018 | -2.710 | -.638 | -.003 | .584 | 3.840 |

*Table 6 - Principal component analysis*

The first power index, PWR1, can be characterized by CEO ownership, CEO founder status, CEO duality, and CEO tenure, as their weights exceed the 0.5 threshold. These variables explain 38.47% of the variation. The first grouping of variables is similarly to the dimension "ownership power" of Finkelstein (1992). This dimension describes that a CEO with significant shareholdings will be more powerful. Also, CEOs with ownership power will try to have more control over the board members (Finkelstein, 1992). The signs of the weights are in line with the prediction from the literature, a positive (negative) PWR1 means high (low) CEO power.

The second power index, PWR2, can be characterized by CEO compensation which has a value that is exceeding the 0.5 threshold with a 20.81% of variation explanation. This is similarly to the dimension "structural power" of Finkelstein (1992). This dimension describes that CEOs with more compensation than other CEOs have a high structural power, which indicates that they have a great control over the actions of colleagues (Finkelstein, 1992). The signs of the components are in line with the prediction from the literature, a positive (negative) PWR2 means high (low) CEO power.

## 5.3 Bivariate analysis

The bivariate analysis is done by using the Pearson's correlation matrix, which is presented in Table 7. In the table, it can be seen that ROA correlates significantly with all other measurements for firm performance, which is line with the expectations. that all these variables measure firm performance. However, ROS is the only variable that is not correlated to Tobin's Q and RET. ROS is an accounting-based measure, whereas Tobin's Q and RET are a market-based measurement for firm performance. So, the results indicate that ROS does measure accounting-based firm performance but in a different way than ROA and ROE. Also, Kuo et al., (2015) found that ROA and ROE are positively significantly correlated with each other. The table also shows that the market-based measurements Tobin's Q and RET correlate with each other at the 0.01 level (r=.226**), which also indicates that both variables measure market-based firm performance.

| **Variables** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. ROA | 1 | | | | | | | | | | | |
| 2. ROE | .221** | 1 | | | | | | | | | | |
| 3. ROS | .204** | .065 | 1 | | | | | | | | | |
| 4. TobinsQ | .585** | .144** | -.030 | 1 | | | | | | | | |
| 5. RET | .175** | .115** | .053 | .226** | 1 | | | | | | | |
| 6. PWR1 | .079 | .057 | .056 | .183** | .032 | 1 | | | | | | |
| 7. PWR2 | .051 | .023 | -.162** | .048 | .029 | .000 | 1 | | | | | |
| 8. INDEP | -.030 | -.056 | -.139** | -.063 | -.061 | -.203** | .194** | 1 | | | | |
| 9. SIZE1 | .020 | -.060 | -.291** | -.150** | -.069 | -.217** | .066 | .419** | 1 | | | |
| 10. SIZE2 | -.069* | -.027 | .039 | -.279** | -.129** | -.165** | -.072* | .366** | .671** | 1 | | |
| 11. LEV1 | -.092** | -.111** | .070* | -.183** | -.154** | -.163** | .028 | .108** | .144** | .247** | 1 | |
| 12. LEV2 | .107** | -.265** | -.361** | -.057 | -.058 | -.130** | .110** | .168** | .347** | .188** | .487** | 1 |

*Notes: *. Correlation is significant at the 0.05 level. **. Correlation is significant at the 0.01 level.*

*Table 7 - Bivariate analysis*

Furthermore, the table also shows the correlation between the dependent and independent variables. PWR1 and Tobin's Q are positively and significantly correlated (r=.183**). PWR2 is negatively and significantly corelated with ROS (r=-.162**). Regarding the correlation with the moderating variable independent directors, the correlation matrix shows that independent directors are significantly correlated with marked-based firm performance measurement ROS (r=-.139**). In line with Saidat et al., (2018), who also found a significant correlation between independent directors and Tobin's Q. The correlation between independent directors and Tobin's Q has also been found by Wang (2014). Furthermore, independent directors are also significantly correlated with both CEO power indexes. Lastly, the correlation matrix also shows the correlation between the control variables size and leverage with the dependent and independent variables. PWR1 is negatively correlated with all control variables, whereas PWR2 is only significantly correlated with SIZE2 and LEV2. Independent directors are highly correlated with both size control variables.

## 5.4 Assumptions regression

Specific assumptions need to be tested to assess the probability of the data before conducting the OLS regression analysis. Firstly, the residuals of the regression should have a normal distribution. A normal P-P plot can be used to determine if the residuals are normally distributed. The data follows somewhat the line, which implies normal distribution (not reported). However, the Shapiro-Wilk test can also be conducted to find out if the data is normally distributed (see Appendix B Table 8). It can be concluded that the data is not normally distributed. However, the Shapiro-Wilk test is designed for a small sample between 3 and 50, and this study has a greater sample size, so the analysis is continued. Secondly, the homoscedasticity refers to the equal distribution of the residuals. The data is homoscedastic if the data is randomly distributed. This assumption can be checked by making a scatterplot including the predicted values and residuals. In Appendix B Figure 3, the scatterplot is displayed, and it can be seen that the data is homoscedastic. Thirdly, the multicollinearity has to be assessed as it refers to the predictor variables that are highly correlated with each other. This assumption can be checked by examining the VIF values, displayed in Table 9. The VIF values should be all below the maximum requirement of 10. However, below 5 would be even better. It can be seen that there exists no multicollinearity, since all variables show VIF values below 5. After assessing the assumptions, the OLS analyses seem to be appropriate.

## 5.5 OLS regression results

To test the two hypotheses, two regression models have been constructed. The first section shows the first regression results for hypothesis 1. The second section includes the moderating variable and displays the regression results for hypothesis 2. The tables present the standardized coefficients due to the fact that it is easier to compare the outcomes because some variables are measured on different scales. This is used by other articles, such as Munir and Li (2016), Tanikawa and Jung (2018), and Jiraporn et al. (2012).

### 5.5.1 Hypothesis 1 – Effect of CEO power on firm performance

The first hypothesis states that powerful CEOs has a negative impact on firm performance. Table 10 reports the results of the OLS regression for each of the three measurements of firm performance (ROA, ROE, and Tobin's Q). The first models show the regression results with only the control variables. In model 2 and model 3, it can be observed that the estimates of CEO power (PWR1 and PWR2) are included into the model. In model 4, all variables are included into the model.

As noted earlier, PWR1 characterises four main sources of CEO power – CEO ownership, CEO founder status, CEO duality, and CEO tenure. Table 10 shows that PWR1 is positively related to firm performance, only for Tobin's Q. Hence, the findings cannot confirm the first hypothesis. Also, the findings are not consistent with the prediction of the agency theory, which argues that a high level of decision-making power allows the CEO to have the control, and therefore has a negative effect on the firm performance. The findings are also not in line with Veprauskaitė and Adams (2013) who find that higher control of CEOs reduces the firm performance.

PWR2 does not show any statistically significance in all three measurements of firm performance. As mentioned earlier, PWR2 characterises CEO compensation. The size of total CEO compensation does not significantly affect the performance of UK listed firms. Veprauskaitė and Adams (2013) also found that the total CEO compensation does not significantly affect the performance for UK listed firms. However, Buigut et al. (2014) found a significant relationship between CEO compensation and firm performance.

The adjusted $R^2$ is included in the models to assess the explained variance, which varies between the different firm performance measurements. The adjusted $R^2$ is between 1% and 11% for ROA. For ROE, it varies between 13% and 23% and for Tobin's Q between 132% and 163%.

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| PWR1 | | .048 | | .050 | | .028 | | .024 | | .075** | | .076** |
| | | (1.192) | | (1.234) | | (.656) | | (.556) | | (2.035) | | (2.052) |
| PWR2 | | | .038 | .033 | | | .029 | .025 | | | .019 | .012 |
| | | | (.955) | (.820) | | | (.679) | (.583) | | | (.518) | (.332) |
| SIZE1 | .002 | .053 | .049 | .059 | -.036 | -.033 | -.033 | -.032 | -.194*** | -.166*** | -.176*** | -.159*** |
| | (.860) | (1.294) | (1.203) | (1.415) | (-.832) | (-.737) | (-.745) | (-.704) | (-5.215) | (-4.382) | (-4.747) | (-.4191) |
| LEV1 | .0214 | -.082** | -.113*** | -.117*** | -.067 | -.046 | -.057 | -.039 | -.137*** | -.145*** | -.203*** | -.186*** |
| | (-1.499) | (-1.973) | (-2.754) | (-2.807) | (-1.556) | (-1.054) | (-1.293) | (-.879) | (-3.668) | (-3.810) | (-5.425) | (-4.871) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 681 | 672 | 667 | 661 | 584 | 576 | 573 | 568 | 688 | 678 | 674 | 667 |
| Adjusted R square | .001 | .005 | .008 | .011 | .023 | .019 | .015 | .013 | .132 | .147 | .157 | .163 |
| F-statistic | 1.033 | 1.287 | 1.509 | 1.590* | 2.377*** | 2.016** | 1.817** | 1.620* | 11.504*** | 11.582*** | 12.437*** | 11.820*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. The firm performance variables are analyzed at t + 1. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 10 - OLS regression hypothesis 1*

### 5.5.2 Hypothesis 2 – Moderating effect of independent directors

The second hypothesis states that a higher proportion of independent directors weakens the effect of powerful CEOs on firm performance. Table 11 shows the results of the OLS regression with the moderating variable independent directors, the measurements of CEO power and firm performance. The first model shows the regression results with only the moderating variable independent directors and the control variables. In model 2 and model 3, besides the estimates of CEO power (PWR1 and PWR2), the interaction between independent directors and the CEO power indexes are included. In model 4, all variables are included into the model.

The results show that the ratio of independent directors on the board is significantly negative associated with only ROA. There is no relationship between independent directors and other firm performance measurements. Based on the results, it can be concluded that independent directors are only negatively related to firm performance based on ROA. Therefore, our results do not strongly support the UK corporate governance code.

The second hypothesis argues the impact of independent directors on the relationship between CEO power and firm performance. The results show that the coefficient of INDEP x PWR1 is significantly positive, which indicates that a higher proportion of independent directors strengthens the effect of CEO power (PWR1) on firm performance (Tobin's Q). Based on that, the second hypothesis cannot be confirmed. Furthermore, the results show that the coefficient of INDEP x PWR2 is significantly negative, which indicates that a higher proportion of independent directors weakens the effect of CEO power (PWR2) on firm performance (Tobin's Q). So, when firm performance is based on market-based measurement, the second hypothesis can be confirmed. This is in line with the prediction of the agency theory that independent directors limit the self-interested behaviour of CEOs. This result is consistent with the findings of Buigut et al. (2014) who found that the percentage of independent directors weakens the effect of CEO compensation on firm performance.

The adjusted $R^2$ is also included in these models to assess the explained variance, which varies between the different firm performance measurements. The adjusted $R^2$ varies between 10% and 16% for ROA. In addition, the adjusted $R^2$ varies between 17% and 20% for ROE and between 154% and 171% for Tobin's Q. When adding the interaction terms to the models, the adjusted $R^2$ increased in comparison to the models of Table 10. This suggests that including the interaction terms into the models, the explained variation increased in the firm performance variables.

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| INDEP | -.057 | -.087* | -.084* | -.093** | -.054 | -.061 | -.078 | -.069 | -.025 | -.041 | -.046 | -.042 |
| | (-1.328) | (-1.938) | (-1.857) | (-2.022) | (-1.187) | (-1.260) | (-1.601) | (-1.410) | (-.631) | (-.989) | (-1.114) | (-1.001) |
| PWR1 | | .097 | | .088 | | -.094 | | -.104 | | -.084 | | -.091 |
| | | (1.134) | | (1.020) | | (-1.018) | | (-1.124) | | (-1.078) | | (-1.163) |
| PWR2 | | | .257 | .275* | | | .260 | .241 | | | .331** | .171* |
| | | | (1.616) | (1.677) | | | (1.544) | (1.318) | | | (2.247) | (1.726) |
| INDEP x PWR1 | | -.065 | | -.071 | | .128 | | .124 | | .179** | | .261** |
| | | (-.754) | | (-.811) | | (1.374) | | (1.318) | | (2.254) | | (2.133) |
| INDEP x PWR2 | | | -.213 | -.238 | | | -.226 | -.203 | | | -.315** | -.242 |
| | | | (-1.332) | (-1.442) | | | (-1.334) | (-1.162) | | | (-2.126) | (-1.588) |
| SIZE1 | .077* | .097** | .087* | .095** | -.015 | -.004 | .000 | -.006 | -.162*** | -.137*** | -.156*** | -.141*** |
| | (1.749) | (2.113) | (1.898) | (2.045) | (-.313) | (-.086) | (-.004) | (-.112) | (-4.000) | (-3.265) | (-3.729) | (-3.329) |
| LEV1 | -.105*** | -.117*** | -.110* | -.124*** | -.055 | -.029 | -.054 | -.034 | -.199*** | -.176*** | -.205*** | -.183*** |
| | (-2.588) | (-2.780) | (-2.691) | (-2.937) | (-1.271) | (-.654) | (-1.228) | (-.759) | (-5.338) | (-4.590) | (-5.472) | (-4.739) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 676 | 661 | 667 | 661 | 580 | 568 | 573 | 568 | 683 | 667 | 674 | 667 |
| Adjusted R square | .010 | .014 | .014 | .016 | .020 | .017 | .020 | .018 | .154 | .170 | .163 | .171 |
| F-statistic | 1.606* | 1.741** | 1.728* | 1.735** | 2.079** | 1.754** | 1.900** | 1.680* | 12.275*** | 11.481*** | 11.077*** | 10.173*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. The firm performance variables are analyzed at t + 1. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 11 - OLS regression hypothesis 2*

## 5.6 Robustness tests

In this section, the robustness tests are performed to test the validity of this study. Firstly, a regression is conducted for different subsamples. Secondly, a regression is conducted with each CEO power variable separately. Finally, regressions are performed with alternative measures for some of the variables of the main regression analysis and using the control variables separately. The tables of the robustness tests can be found in Appendix C.

### 5.6.1 Split sample

In this section, the results are tested on its robustness by using different subsamples. The first test involves a subsample that contains only firms that are participating in the manufacturing industry to validate the results of the main regression. The second test contains subsamples based on high and low board independence. Finally, the third test involves subsamples that are based on high and low debt.

#### *5.6.1.1 Only manufacturing industry*

To validate the results of the main regression, the first subsample contains only firms that are participating in the manufacturing industry. The manufacturing industry represents 35% of the total sample. The results of the regression are displayed in Table 12 and Table 13. The results indicate significance for the relationship between CEO power and firm performance. In the main regression, CEO power (PWR1) and firm performance (Tobin's Q) are positively related, which is validated by the manufacturing industry. Also, the results indicate significance with regards to the effect of the interaction between independent directors and CEO power on firm performance. In the main regression the interaction INDEP x PWR1 was significantly positively related to Tobin's Q and INDEP x PWR2 was significantly negatively related to Tobin's Q, which is also validated by the manufacturing industry. As such, the results of the split sample based on the manufacturing industry validate the results of the main regression results in terms of significance of PWR1 as predictor of Tobin's Q, the interaction terms as predictors of Tobin's Q.

#### *5.6.1.2. High and low board independence*

The second robustness test involves subsamples based on board independence. The theory argued that independent directors could reduce the impact of powerful CEO's. In order to see if this is conditional on the percentage of independent directors, the main sample is divided into two groups. The two groups are based on the median value of board independence. High board independence includes firms that have a higher percentage of independent directors than the median value and low board independence includes firms that have a lower percentage of independent directors. Table 14 and Table 15 shows the results of high board independence and Table 16 and Table 17 of low board independence. The tables show some interesting results. As can be observed, PWR2 is only significantly related to firm performances for high board independence. Whereas PWR1 is only significantly related to firm performance (Tobin's Q) for low board independence, which validates the results of the main regression analysis. The interaction term

INDEP x PWR2 is for both subsamples significantly negatively related to Tobin's Q. However, the interaction term INDEP x PWR1 is only significantly positively related to Tobin's Q for low board independence. As such, the results of the subsamples based on board independence validate the results of the main regression results in terms of significance of PWR1 as predictor of Tobin's Q, the interaction terms as predictors of Tobin's Q. CEO power (PWR1) and the interaction term INDEP x PWR1 are only related to marked-based firm performance when there is low board independency.

#### *5.6.1.3 High and low debt*

The third robustness test involves subsamples based on total debt. Jiraporn et al. (2012) argued that powerful CEO's tend to use less debt. Munir and Li (2016) argued that firms in financial distress are firms that use high debt. Therefore, it might be that the results of the main regression analysis are conditional on the amount of debt. The samples are divided into two groups based on the median value of total debt. High debt firms are firms that use more debt than the median value and low debt firms are firms that use less debt. Table 18 and Table 19 shows the results of high debt and Table 20 and Table 21 of low debt. The results show that high debt does not confirm the significance of the main regression analysis. However, low debt confirms the positive relationship between CEO power (PWR1) and firm performance (Tobin's Q). Also, the positive effect of the interaction term INDEP x PWR1 and the negative effect of the interaction term INDEP x PWR2 on marked-based firm performance Tobin's Q are only confirmed by low debt. Overall, the results of the third robustness test show that effect of CEO power is especially important for firms that use low debt.

### 5.6.2 CEO power variables

In this section, the results are tested on its robustness when the CEO power indexes are replaced by the individual CEO power variables. The results of the regression for hypothesis 1 and hypothesis 2 are presented in Table 22 and Table 23. The results show a significantly positive relationship between CEO founder status and firm performance (Tobin's Q). CEO founder status is included in PWR1, which has also a positive relationship with Tobin's Q. Furthermore, the interaction terms with CEO ownership and CEO tenure are both negatively related to firm performance (Tobin's Q). Whereas, the interaction terms with CEO founder status and CEO duality are both positively related to firm performance (Tobin's Q). In the main regression, these four CEO power variables were included in the first power index and the interaction term INDEP x PWR1 is positively related to firm performance (Tobin's Q). So, the results of using the CEO power variables separately does not validate the results of the main regression results in terms of significance as only CEO founder status as predictor of Tobin's Q, the interaction terms CEO founder status and CEO duality as predictors of Tobin's Q show similar results.

### 5.6.3 Alternative tests

In this section, the results are tested on its robustness when some variables are used separately or measured differently. Table 24 and Table 25 presents the regression including only SIZE1 and Table 26 and Table 27 includes only LEV1. Both results show a positive relationship between CEO power (PWR1) and firm performance (Tobin's Q) and between the interaction term INDEP x PWR1 and Tobin's Q. Also, a negative relationship was found between the interaction term INDEP x PWR2 and Tobin's Q. As such, the results of using the control variables separately validate the results of the main regression in terms of significance of PWR1 as predictor of Tobin's Q, the interaction terms as predictors of Tobin's Q.

The natural logarithm of sales (SIZE1) used in the main regression analysis is replaced with the natural logarithm of total assets (SIZE2) as a proxy for firm size. In addition, the alternative measure for leverage is LEV2, which is total debt divided by total assets. Table 28 indicates that the results are consistent with the results in Table 10. As a positively significant effect is found for PWR1 and the market-based performance Tobin's Q. Table 29 indicates that the interaction terms are in line with the results of the main regression. So, the results of using alternative measurements validate the results of the main regression.

The firm performance measurements are also replaced by different measurements. The accounting-based performance measurements are replaced by ROS and the market-based performance measurement is replaced by RET. Table 30 and Table 31 show the results of the different measurements. The first power index is positively related to ROS, whereas the second power index is negatively related to ROS. No other significant results were found when replacing the firm performance measurements. So, these different measurements of firm performance do not validate the results. This also means that the second hypothesis cannot be confirmed based on market-based performance measurements.

# 6. Conclusion

The conclusion of this study is described in this chapter. First, the conclusion based on the results of the analyses is presented and it will answer the research question. Second, the limitations of this study are discussed following by the recommendation for future research.

## 6.1 Conclusion and discussion

This study investigated the effect of independent directors on the relationship between CEO power and firm performance, measured by ROA, ROE, and Tobin's Q. The results of the conducted OLS regression models does not provide evidence that supports hypothesis 1. The OLS regression models only show a positively significant effect of CEO power on firm performance for PWR1 and Tobin's Q. The existence of CEO power does not appear to negatively influence the firm performance. As such, no support is found for hypothesis 1. However, the results do provide evidence that supports hypothesis 2. The OLS regression models show significant effects of independent directors on the relationship between CEO power and firm performance. A positive effect of independent directors on CEO power and firm performance was found for power index 1 and Tobin's Q. Which suggests that a higher proportion of independent directors strengthens the effect of CEO power on marked-based firm performance. On the other hand, the results also found a negative impact of independent directors on power index 2 and Tobin's Q. This suggest that a higher proportion of independent directors weakens the effect of CEO power, based on CEO compensation, on marked-based firm performance. Bases on that, the second hypothesis is confirmed when firm performance is measured by marked-based performance measurements.

Different robustness tests have been conducted to assess the validity of the results. These tests involved using different subsamples, CEO power variables separately, and different measurements for some of the variables of the main analysis. The manufacturing industry, firms with low board independence and firms with low debt validate the results of the main regression. When using the CEO power variables separately, only CEO founder status and the interaction terms with CEO founder status and CEO duality show significant results. The robustness test with different measurements for the control variables and using the control variables separately also validate the results. However, the different measurements of firm performance did not validate the results. When using the market-based performance measurement stock return, no significant results were found. Hence, the second hypothesis cannot be confirmed.

Concluding to the results of this study, the research question "What is the effect of CEO power on firm performance and how does independent directors affect this relationship?" can be answered. The effect of CEO power on firm performance and the moderating role of independent directors highly depend on how firm performance is measured, the proportion of independent directors, and the amount of debt. Even though, some effects of CEO power on firm performance and moderating effect of independent directors have been found, these effects do not remain after conducting robustness tests with different firm performance measurements. Therefore, there seems to be no statistically significant effect.

## 6.2 Limitations and recommendation for future research

As described, the results of this study showed some relevant results in the context of the moderating impact of independent directors on the relationship between CEO power and firm performance. However, it is important to discuss the limitations of this study and the recommendations for future research. The first limitation is the conceptualisation of CEO power. In this study, only two dimensions of power are used. There are also other power dimensions that can be used, like prestige power and expert power (Finkelstein, 1992). Furthermore, the second limitation of this study is that only UK listed firms on the London Stock Exchange have been examined. Given that every country has its own rules, corporate governance practices, and institutional environment, the results of this study are hard to generalize to other listed firms in other countries. Therefore, these results are only valid in the context of UK listed firms. Thirdly, it is also important to mention that the data is collected manually, so it might be possible that some data have been recorded incorrectly, which could have influenced the results of the analysis. Due to the large sample size, it should not have an influence on the results.

Besides the limitations of this study, recommendations for future research can be given. The first recommendation is that researchers could use other dimensions of power such as, expert power and prestige power. This will show the role of other aspects of CEO power. Secondly, researchers could focus on other European countries to increase the generalizability of the findings of this study. Thirdly, future research could focus on privately-held firms in UK context. Most studies regarding the effects of CEO power on firm performance focus on publicly listed firms, whereas no attention is paid to privately held firms. An explanation could be that is it much harder to retrieve data from privately held firms than for publicly listed firms. However, it might be interesting to focus on the effect of CEO power on firm performance and the moderating impact of independent directors for privately held firms. Besides that, to the best of my knowledge, the moderating impact of corporate governance on the relationship between CEO power and firm performance have not been examined extensively in the UK context. Given this, future research should examine the moderating impact of other corporate governance mechanisms, such as board size, ownership, or CEO duality. Another recommendation is to use a different research method to examine the effect of CEO power on firm performance. Most studies are focused on regression analysis. Therefore, it might be interesting to use different research methods in order to find out if it affects some of the results. Finally, future research should also investigate the relationship between CEO power and firm performance and the role of independent directors for a different period to see whether the choice of the UK to leave the European Union, called Brexit, in January 2020 has an impact.

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# Appendices

*Appendix A: Principal Components Analysis*

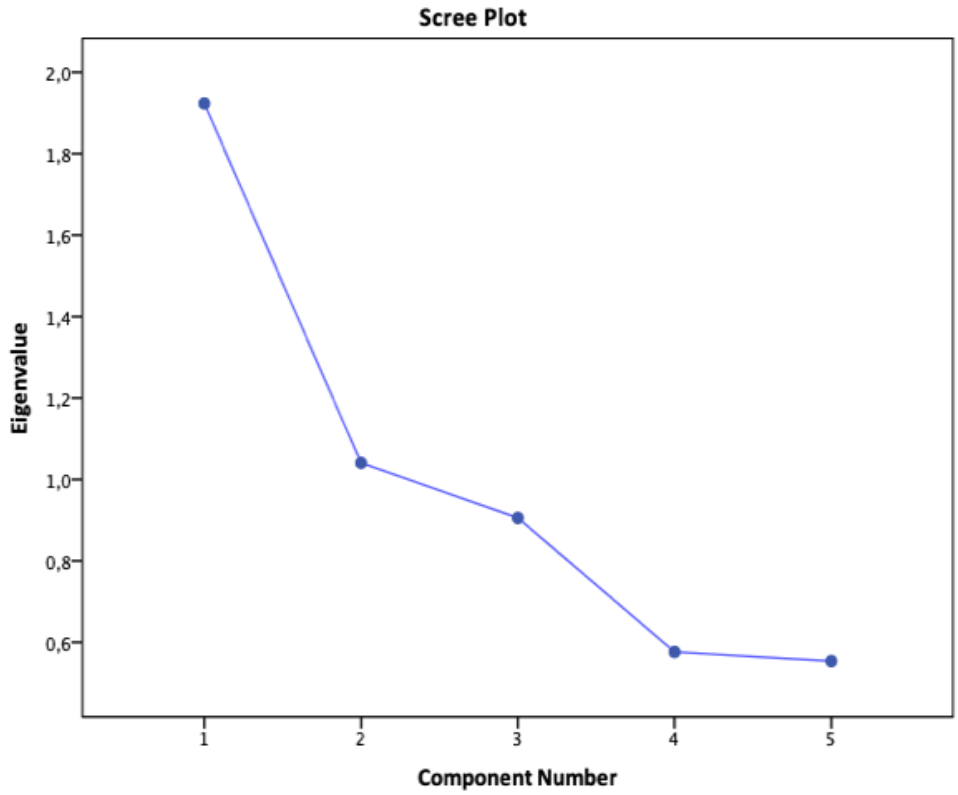


*Figure 1 - Scree plot*

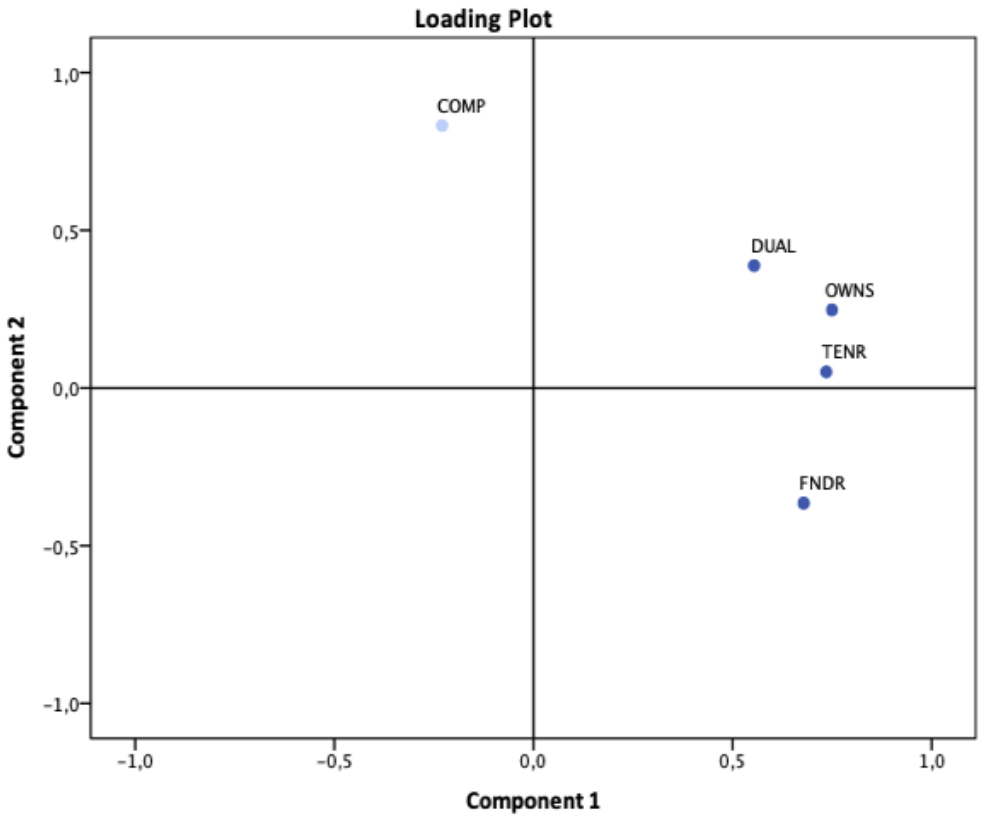


*Figure 2 - Loading plot*

*Appendix B: Assumptions regression*

| Shapiro-Wilk | | | |
|---|---|---|---|
| | Statistic | df | Sig. |
| ROA | .962 | 654 | .000 |
| ROE | .967 | 654 | .000 |
| ROS | .796 | 654 | .000 |
| TobinsQ | .877 | 654 | .000 |
| RET | .990 | 654 | .000 |
| COMP | .992 | 654 | .001 |
| OWNS | .407 | 654 | .000 |
| FNDR | .322 | 654 | .000 |
| DUAL | .132 | 654 | .000 |
| TENR | .849 | 654 | .000 |
| INDEP | .983 | 654 | .000 |
| SIZE1 | .977 | 654 | .000 |
| SIZE2 | .943 | 654 | .000 |
| LEV1 | .950 | 654 | .000 |
| LEV2 | .974 | 654 | .000 |

*Table 8 - Shapiro-Wilk test*

| Collinearity statistics | |
|---|---|
| | VIF |
| COMP | 1.223 |
| OWNS | 1.356 |
| FNDR | 1.292 |
| DUAL | 1.217 |
| TENR | 1.329 |
| INDEP | 1.498 |
| SIZE1 | 3.016 |
| SIZE2 | 2.596 |
| LEV1 | 1.597 |
| LEV2 | 1.875 |
| a. Dependent variable: ROA | |

*Table 9 - VIF values*

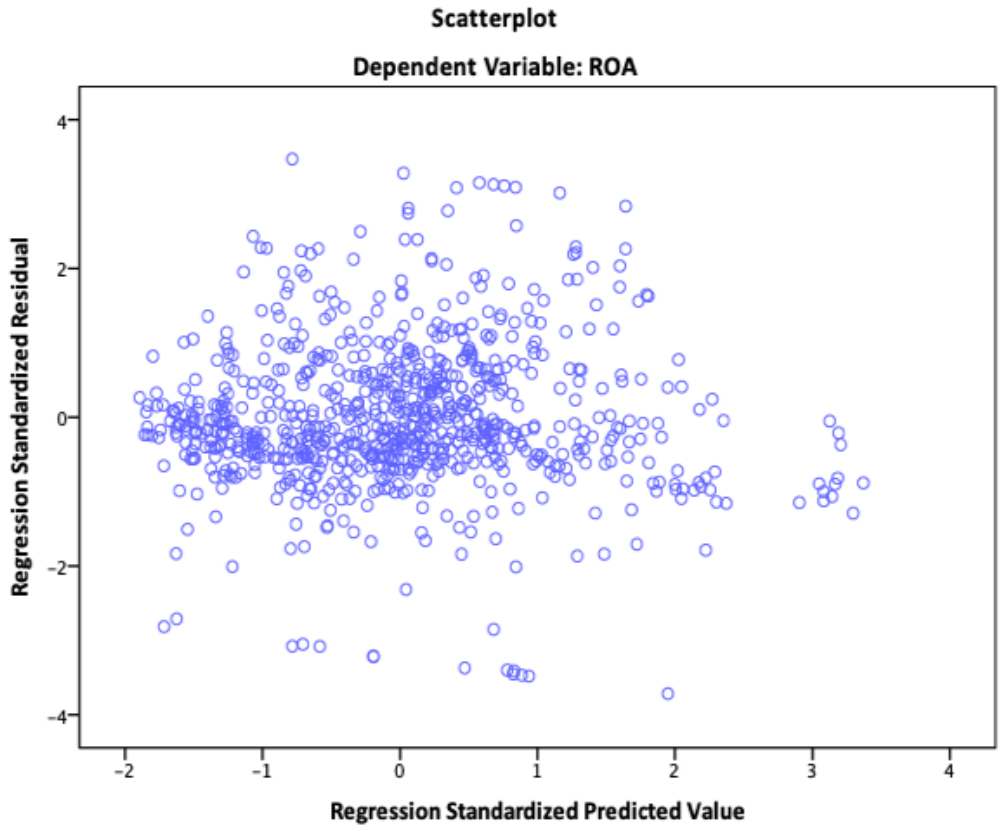


*Figure 3 - Scatterplot*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| PWR1 | | .170*** | | .166** | | .055 | | .043 | | .288*** | | .305*** |
| | | (2.676) | | (2.544) | | (.766) | | (.588) | | (4.953) | | (5.188) |
| PWR2 | | | .027 | -.009 | | | .084 | .059 | | | -.067 | -.134** |
| | | | (.427) | (-.147) | | | (1.210) | (.818) | | | (-1.138) | (-2.328) |
| SIZE1 | .154** | .170** | .140** | .157** | -.030 | -.033 | -.034 | -.038 | -.190*** | -.140** | -.203*** | -.148** |
| | (2.345) | (2.553) | (2.130) | (2.341) | (-.405) | (-.439) | (-.447) | (-.491) | (-3.042) | (-2.288) | (-3.257) | (-2.436) |
| LEV1 | -.348*** | -.321*** | -.367*** | -.342*** | -.079 | -.056 | -.073 | -.053 | -.303*** | -.260*** | -.317*** | -.272*** |
| | (-5.304) | (-4.849) | (-5.566) | (-5.142) | (-.1061) | (-.743) | (-.975) | (-.699) | (-4.853) | (-4.281) | (-5.082) | (-4.519) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 246 | 242 | 241 | 237 | 213 | 210 | 210 | 207 | 251 | 247 | 246 | 242 |
| Adjusted R square | .084 | .104 | .093 | .111 | .012 | .010 | .013 | .007 | .157 | .229 | .174 | .255 |
| F-statistic | 4.759*** | 5.006*** | 4.523*** | 4.693*** | 1.437 | 1.311 | 1.400 | 1.189 | 8.767*** | 11.488*** | 8.387*** | 11.339*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 12 – Split sample manufacturing industry for hypothesis 1*

*Table 13 – Split sample manufacturing industry for hypothesis 2*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| INDEP | -.011 | .009 | .019 | .033 | -.040 | -.038 | -.039 | -.033 | -.073 | -.067 | -.077 | -.033 |
| | (-.147) | (.125) | (.250) | (.442) | (-.518) | (-.464) | (-.481) | (-.394) | (-1.059) | (-.982) | (-1.079) | (-.481) |
| PWR1 | | -.096 | | -.107 | | -.022 | | -.046 | | -.160 | | -.148 |
| | | (-.723) | | (-.823) | | (-.150) | | (-.315) | | (-1.359) | | (-1.274) |
| PWR2 | | | .844*** | .740*** | | | .633** | .658** | | | .599*** | .285 |
| | | | (3.578) | (3.052) | | | (2.350) | (2.347) | | | (2.684) | (1.320) |
| INDEP x PWR1 | | .301** | | .266** | | .083 | | .055 | | .500*** | | .491*** |
| | | (2.236) | | (2.009) | | (.550) | | (.369) | | (4.175) | | (4.156) |
| INDEP x PWR2 | | | -.850*** | -.776*** | | | -.567** | -.613** | | | -.685*** | -.432** |
| | | | (-3.583) | (-3.220) | | | (-2.092) | (-2.198) | | | (-3.055) | (-2.017) |
| SIZE1 | .159** | .167** | .133* | .147** | -.016 | -.017 | -.026 | -.037 | -.157** | -.098 | -.163** | -.110 |
| | (2.162) | (2.196) | (1.779) | (1.955) | (-.202) | (-.205) | (-.315) | (-.442) | (-2.259) | (-1.441) | (-2.299) | (-1.645) |
| LEV1 | -.347*** | -.333*** | -.397*** | -.370*** | -.072 | -.044 | -.083 | -.070 | -.291*** | -.244*** | -.324*** | -.268*** |
| | (-5.193) | (-4.983) | (-.5987) | (-5.544) | (-.948) | (-.565) | (-1.090) | (-.895) | (-4.590) | (-4.088) | (-5.149) | (-4.507) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 246 | 237 | 241 | 237 | 213 | 207 | 210 | 207 | 251 | 242 | 246 | 242 |
| Adjusted R square | .080 | .126 | .133 | .157 | .009 | .002 | .027 | .019 | .157 | .292 | .206 | .316 |
| F-statistic | 4.066*** | 4.798*** | 5.114*** | 5.017*** | 1.266 | 1.039 | 1.653 | 1.373 | 7.679*** | 12.103*** | 8.070*** | 11.146*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| PWR1 | | -.075 | | -.085 | | .084 | | .076 | | .017 | | .001 |
| | | (-1.351) | | (-1.518) | | (1.413) | | (1.273) | | (.323) | | (.025) |
| PWR2 | | | -.082 | -.094* | | | -.034 | -.043 | | | .-124** | -.133** |
| | | | (-1.455) | (-1.654) | | | (-.558) | (-.715) | | | (-2.399) | (-2.567) |
| SIZE1 | -.043 | -.056 | -.062 | -.080 | -.058 | -.057 | -.061 | -.062 | -.161*** | -.163*** | -.184*** | -.190*** |
| | (-.779) | (-1.008) | (-1.106) | (-1.409) | (-.963) | (-.932) | (-.975) | (-.989) | (-3.142) | (-3.154) | (-3.593) | (-3.681) |
| LEV1 | -.163*** | -.178*** | -.206*** | -.225*** | -.071 | -.044 | -.073 | -.049 | -.300*** | -.294*** | -.352*** | -.350*** |
| | (-2.896) | (-3.093) | (-3.574) | (-3.816) | (-1.171) | (-.700) | (-1.164) | (-.762) | (-5.787) | (-5.509) | (-6.701) | (-6.498) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 349 | 348 | 344 | 343 | 296 | 295 | 293 | 292 | 349 | 348 | 344 | 343 |
| Adjusted R square | .023 | .025 | .036 | .041 | .057 | .064 | .047 | .054 | .164 | .165 | .198 | .201 |
| F-statistic | 1.814** | 1.807** | 2.156** | 2.209** | 2.793*** | 2.842*** | 2.325*** | 2.394*** | 7.863*** | 7.235*** | 8.729*** | 8.181*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. The firm performance variables are analyzed at t + 1. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 14 - Split sample high board independence hypothesis 1*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| INDEP | -.031 | -.027 | -.023 | -.024 | .131** | .132** | .139** | .132* | -.028 | -.056 | -.053 | -.055 |
| | (-.507) | (-.428) | (-.352) | (-.380) | (1.977) | (1.993) | (1.981) | (1.889) | (-.490) | (-.976) | (-.903) | (-.945) |
| PWR1 | | -.162 | | -.149 | | -.060 | | -.056 | | -.053 | | -.041 |
| | | (-1.182) | | (-1.047) | | (-.420) | | (-.375) | | (-.423) | | (-.314) |
| PWR2 | | | -.411 | -.444 | | | -.117 | -.281 | | | -.667* | -.727* |
| | | | (-1.025) | (-1.079) | | | (-.265) | (-.618) | | | (-1.826) | (-1.939) |
| INDEP x PWR1 | | .089 | | .075 | | .154 | | .148 | | .065 | | .053 |
| | | (.645) | | (.513) | | (1.063) | | (.952) | | (.514) | | (.394) |
| INDEP x PWR2 | | | .336 | .366 | | | .063 | .235 | | | .558 | .615 |
| | | | (-.833) | (.875) | | | (.141) | (.507) | | | (1.517) | (1.615) |
| SIZE1 | -.025 | -.055 | -.049 | -.064 | -.112* | -.114* | -.122* | -.117 | -.139** | -.147** | -.156*** | -.159*** |
| | (-.402) | (-.881) | (-.778) | (-1.003) | (-1.657) | (-1.679) | (-1.718) | (-1.636) | (-2.466) | (-2.599) | (-2.708) | (-2.736) |
| LEV1 | -.173*** | -.205*** | -.205*** | -.221*** | -.084 | -.055 | -.093 | -.064 | -.314*** | -.321*** | -.348*** | -.344*** |
| | (-3.011) | (-3.482) | (-3.504) | (-3.684) | (-1.354) | (-.860) | (-1.476) | (-.980) | (-5.927) | (-5.930) | (-6.551) | (-6.286) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 347 | 343 | 344 | 343 | 294 | 292 | 293 | 292 | 347 | 343 | 344 | 343 |
| Adjusted R square | .024 | .032 | .032 | .034 | .059 | .065 | .055 | .062 | .169 | .186 | .200 | .201 |
| F-statistic | 1.783* | 1.862** | 1.873** | 1.816** | 2.686*** | 2.566*** | 2.322*** | 2.280*** | 7.431*** | 7.014*** | 7.602*** | 6.741*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. The firm performance variables are analyzed at t + 1. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 15 - Split sample high board independence hypothesis 2*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| PWR1 | | .137** | | .134** | | -.049 | | -.064 | | .103** | | .108** |
| | | (2.428) | | (2.374) | | (-.802) | | (-1.035) | | (1.995) | | (2.079) |
| PWR2 | | | .085 | .074 | | | .104* | .110* | | | .049 | .037 |
| | | | (1.467) | (1.282) | | | (1.661) | (1.751) | | | (.929) | (.707) |
| SIZE1 | .233*** | .269*** | .257*** | .285*** | .001 | .002 | .021 | .006 | -.180*** | -.138** | -.157*** | -.120** |
| | (3.986) | (4.522) | (4.402) | (4.775) | (.009) | (.034) | (.328) | (.098) | (-3.389) | (-2.538) | (-2.940) | (-2.207) |
| LEV1 | -.017 | .005 | -.064 | -.050 | .058 | .062 | .061 | .057 | .009 | .025 | -.044 | -.031 |
| | (-.276) | (.078) | (-1.028) | (-.799) | (.896) | (.942) | (.931) | (.860) | (.170) | (.443) | (-.775) | (-.550) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 328 | 323 | 320 | 317 | 284 | 280 | 277 | 275 | 334 | 329 | 326 | 323 |
| Adjusted R square | .035 | .053 | .052 | .065 | .033 | .033 | .043 | .043 | .180 | .187 | .187 | .197 |
| F-statistic | 2.192** | 2.632*** | 2.591*** | 2.842*** | 1.983** | 1.882** | 2.144** | 2.025** | 8.324*** | 7.893*** | 7.799*** | 7.623*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. The firm performance variables are analyzed at t + 1. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 16 - Split sample low board independence hypothesis 1*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| INDEP | .039 | -.012 | -.026 | -.022 | -.071 | -.136** | -.139** | -.158** | -.051 | -.077 | -.107** | -.089* |
| | (.697) | (-.217) | (-.450) | (-.379) | (-1.186) | (-2.214) | (-2.251) | (-2.504) | (-1.006) | (-1.485) | (-2.026) | (-1.703) |
| PWR1 | | .212* | | .192 | | -.011 | | -.045 | | -.162 | | -.187* |
| | | (1.773) | | (1.587) | | (-.082) | | (-.340) | | (-1.493) | | (-1.706) |
| PWR2 | | | .398 | .255 | | | .260 | .407 | | | .449* | .342 |
| | | | (1.513) | (.921) | | | (.924) | (1.377) | | | (1.849) | (1.349) |
| INDEP x PWR1 | | -.082 | | -.082 | | -.063 | | -.063 | | .305*** | | .307*** |
| | | (-.679) | | (-.676) | | (-.481) | | (-.479) | | (2.795) | | (2.812) |
| INDEP x PWR2 | | | -.323 | -.185 | | | -.156 | -.296 | | | -.412* | -.310 |
| | | | (-1.218) | (-.666) | | | (-.550) | (-1.000) | | | (-1.684) | (-1.220) |
| SIZE1 | .245*** | .293*** | .275*** | .292*** | .002 | .027 | .043 | .028 | -.161*** | -.100** | -.119** | -.094* |
| | (4.162) | (4.847) | (4.510) | (4.762) | (.030) | (.420) | (.671) | (.433) | (-3.015) | (-1.833) | (-2.142) | (-1.702) |
| LEV1 | -.063 | -.041 | -.069 | -.056 | .057 | .072 | .064 | .054 | -.048 | -.022 | -.050 | -.032 |
| | (-1.028) | (-.653) | (-1.095) | (-.887) | (.872) | (1.096) | (.970) | (.823) | (-.867) | (-.388) | (-.892) | (-.573) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 326 | 317 | 320 | 317 | 283 | 275 | 277 | 275 | 332 | 323 | 326 | 323 |
| Adjusted R square | .041 | .059 | .050 | .059 | .035 | .046 | .054 | .056 | .190 | .220 | .197 | .220 |
| F-statistic | 2.257** | 2.518*** | 2.309*** | 2.322*** | 1.925** | 2.031** | 2.225*** | 2.081** | 8.073*** | 8.000*** | 7.155*** | 7.072*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. The firm performance variables are analyzed at t + 1. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 17 - Split sample low board independence hypothesis 2*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| PWR1 | | -.078 | | -.091 | | .134** | | .122* | | -.012 | | -.030 |
| | | (-1.345) | | (-1.545) | | (2.132) | | (1.877) | | (-.223) | | (-.554) |
| PWR2 | | | -.048 | -.067 | | | -.053 | -.025 | | | -.070 | -.081 |
| | | | (-.805) | (-1.096) | | | (-.795) | (-.367) | | | (-1.271) | (-1.441) |
| SIZE1 | .081 | .063 | .062 | .034 | -.090 | -.070 | -.091 | -.073 | -.025 | -.019 | -.045 | -.051 |
| | (1.353) | (1.039) | (1.020) | (.546) | (-1.305) | (-1.000) | (-1.306) | (-1.025) | (-.449) | (-.333) | (-.794) | (-.884) |
| LEV1 | -.089 | -.113* | -.121* | -.157** | -.082 | -.042 | -.091 | -.047 | -.244*** | -.234*** | -.281*** | -.280*** |
| | (-1.452) | (-1.776) | (-1.897) | (-2.354) | (-1.212) | (-.606) | (-1.290) | (-.635) | (-4.305) | (-3.987) | (-4.761) | (-4.564) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 353 | 347 | 345 | 341 | 285 | 280 | 279 | 276 | 357 | 350 | 349 | 344 |
| Adjusted R square | -.009 | -.007 | -.009 | -.006 | .011 | .020 | .003 | .010 | .111 | .109 | .125 | .120 |
| F-statistic | .696 | .770 | .707 | .838 | 1.323 | 1.517 | 1.081 | 1.243 | 5.448*** | 4.904*** | 5.516*** | 4.910*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 18 - Split sample high debt for hypothesis 1*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| INDEP | -.132** | -.219*** | -.185*** | -.216*** | -.074 | -.102 | -.118* | -.103 | -.002 | -.064 | -.039 | -.052 |
| | (-2.198) | (-3.390) | (-2.866) | (-3.306) | (-1.122) | (-1.435) | (-1.650) | (-1.434) | (-.030) | (-1.043) | (-.638) | (-.840) |
| PWR1 | | -.020 | | -.044 | | -.101 | | -.062 | | .033 | | .021 |
| | | (-.191) | | (-.416) | | (-.937) | | (-.555) | | (.341) | | (.210) |
| PWR2 | | | -.264 | -.256 | | | .366 | .376 | | | -.127 | -.143 |
| | | | (-1.022) | (-.956) | | | (1.280) | (1.261) | | | (-.523) | (-.565) |
| INDEP x PWR1 | | -.113 | | -.096 | | .280** | | .248** | | -.077 | | -.073 |
| | | (-1.079) | | (-.890) | | (2.505) | | (2.171) | | (-.771) | | (-.720) |
| INDEP x PWR2 | | | .246 | .221 | | | -.409 | -.387 | | | .064 | .070 |
| | | | (.958) | (.827) | | | (-1.443) | (-1.318) | | | (.264) | (.278) |
| SIZE1 | .136** | .134** | .160** | .139** | -.064 | -.032 | -.059 | -.052 | -.024 | -.017 | -.024 | -.025 |
| | (2.115) | (1.997) | (2.314) | (2.002) | (-.863) | (-.417) | (-.742) | (-.659) | (-.398) | (-.266) | (-.365) | (-.379) |
| LEV1 | -.090 | -.156** | -.117* | -.166** | -.081 | -.037 | -.093 | -.037 | -.245*** | -.265*** | -.281*** | -.284*** |
| | (-1.485) | (-2.435) | (-1.854) | (-2.523) | (-1.202) | (-.530) | (-1.317) | (-.507) | (-4.314) | (-4.423) | (-4.750) | (-4.605) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 352 | 341 | 345 | 341 | 284 | 276 | 279 | 276 | 356 | 344 | 349 | 344 |
| Adjusted R square | .003 | .025 | .011 | .022 | .010 | .037 | .013 | .036 | .108 | .116 | .121 | .116 |
| F-statistic | 1.083 | 1.661* | 1.286 | 1.511* | 1.264 | 1.817** | 1.290 | 1.690* | 4.923*** | 4.479*** | 4.681*** | 3.999*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 19 - Split sample high debt for hypothesis 2*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| PWR1 | | .110** | | .109** | | -.014 | | -.022 | | .110** | | .111** |
| | | (1.992) | | (1.978) | | (-.244) | | (-.374) | | (2.043) | | (2.061) |
| PWR2 | | | .146*** | .136*** | | | .099* | .093 | | | .105* | .094* |
| | | | (2.653) | (2.460) | | | (1.669) | (1.540) | | | (1.940) | (1.735) |
| SIZE1 | .235*** | .257*** | .249*** | .268*** | -.007 | -.008 | .001 | -.002 | .007 | .025 | .018 | .034 |
| | (4.090) | (4.431) | (4.311) | (4.614) | (-.121) | (-.126) | (.019) | (-.025) | (.130) | (.437) | (.315) | (.599) |
| LEV1 | .089 | .059 | .006 | .001 | -.086 | -.063 | -.083 | -.065 | .045 | .023 | -.054 | -.037 |
| | (1.562) | (1.017) | (.100) | (.012) | (-1.436) | (-1.028) | (-1.348) | (-1.024) | (.806) | (.406) | (-.950) | (-.644) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 327 | 324 | 321 | 319 | 298 | 295 | 293 | 291 | 330 | 327 | 324 | 322 |
| Adjusted R square | .065 | .073 | .080 | .089 | .027 | .022 | .030 | .026 | .093 | .107 | .106 | .116 |
| F-statistic | 3.269*** | 3.316*** | 3.547*** | 3.594*** | 1.812* | 1.611* | 1.820** | 1.648* | 4.369*** | 4.553*** | 4.492*** | 4.536*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 20 - Split sample low debt for hypothesis 1*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| INDEP | .010 | .021 | -.005 | .003 | -.026 | -.020 | -.033 | -.034 | -.061 | -.036 | -.069 | -.054 |
| | (.178) | (.365) | (-.080) | (.051) | (-.430) | (-.327) | (-.542) | (-.540) | (-1.103) | (-.664) | (-1.229) | (-.973) |
| PWR1 | | .137 | | .082 | | -.006 | | -.054 | | -.240* | | -.287** |
| | | (1.044) | | (.625) | | (-.039) | | (-.371) | | (-1.910) | | (-2.265) |
| PWR2 | | | .505** | .424* | | | .307 | .394 | | | .402* | .258 |
| | | | (2.328) | (1.893) | | | (1.330) | (1.603) | | | (1.866) | (1.145) |
| INDEP x PWR1 | | -.020 | | .002 | | -.013 | | .001 | | .391*** | | .419*** |
| | | (-.155) | | (.014) | | (-.087) | | (.009) | | (3.086) | | (3.297) |
| INDEP x PWR2 | | | -.368* | -.296 | | | -.208 | -.302 | | | -.294 | -.136 |
| | | | (-1.697) | (-1.284) | | | (-.900) | (-1.230) | | | (-1.361) | (-.602) |
| SIZE1 | .236*** | .255*** | .251*** | .265*** | -.004 | -.005 | .009 | .002 | .022 | .026 | .037 | .039 |
| | (3.940) | (4.226) | (4.210) | (4.403) | (-.058) | (-.075) | (.136) | (.029) | (.377) | (.446) | (.639) | (.678) |
| LEV1 | .013 | .007 | -.004 | -.011 | -.076 | -.059 | -.083 | -.071 | -.043 | -.019 | -.053 | -.030 |
| | (.228) | (.125) | (-.062) | (-.180) | (-1.220) | (-.917) | (-1.325) | (-1.105) | (-.755) | (-.334) | (-.923) | (-.516) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 323 | 319 | 321 | 319 | 295 | 291 | 293 | 291 | 326 | 322 | 324 | 322 |
| Adjusted R square | .062 | .068 | .083 | .085 | .021 | .015 | .027 | .022 | .100 | .134 | .112 | .144 |
| F-statistic | 2.932*** | 2.802*** | 3.240*** | 2.974*** | 1.562 | 1.332 | 1.633* | 1.443 | 4.311*** | 4.822*** | 4.133*** | 4.615*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 21 - Split sample low debt for hypothesis 2*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| COMP | | .036 | | .042 | | .041 | | .051 | | .017 | | .044 |
| | | (.908) | | (1.041) | | (.948) | | (1.162) | | (.477) | | (1.200) |
| OWNS | | | .002 | -.008 | | | -.021 | -.023 | | | .050 | .046 |
| | | | (.034) | (-.161) | | | (-.428) | (-.477) | | | (1.189) | (1.092) |
| FNDR | | | -.008 | -.013 | | | .022 | .034 | | | .124*** | .126*** |
| | | | (-.187) | (-.300) | | | (.461) | (-.707) | | | (3.086) | (3.111) |
| DUAL | | | -.018 | -.011 | | | .001 | .011 | | | .016 | .037 |
| | | | (-.417) | (-.257) | | | (.029) | (-.226) | | | (-.405) | (.921) |
| TENR | | | .085* | .106** | | | .057 | .048 | | | -.013 | -.015 |
| | | | (1.810) | (2.183) | | | (1.140) | (.941) | | | (-.309) | (-.344) |
| SIZE1 | .002 | .046 | .042 | .054 | -.036 | -.037 | -.030 | -.030 | -.194*** | -.177*** | -.170*** | -.153*** |
| | (.860) | (1.142) | (1.037) | (1.308) | (-.832) | (-.820) | (-.674) | (-.666) | (-5.215) | (-4.763) | (-4.515) | (-4.078) |
| LEV1 | .0214 | -.111*** | -.043 | -.094** | -.067 | -.054 | -.055 | -.044 | -.137*** | -.203*** | -.114*** | -.180*** |
| | (-1.499) | (-2.712) | (-1.036) | (-2.231) | (-1.556) | (-1.239) | (-1.246) | (-.960) | (-3.668) | (-5.396) | (-2.993) | (-4.698) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 681 | 667 | 681 | 667 | 584 | 573 | 584 | 573 | 688 | 674 | 688 | 674 |
| Adjusted R square | .001 | .008 | .000 | .010 | .023 | .016 | .020 | .013 | .132 | .157 | .147 | .174 |
| F-statistic | 1.033 | 1.501 | 1.006 | 1.459 | 2.377*** | 1.859** | 1.844** | 1.506* | 11.504*** | 12.432*** | 9.492*** | 10.451*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 22 – CEO power variables hypothesis 1*

*Table 23 – CEO power variables hypothesis 2*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| INDEP | -.057 | -.121 | .003 | -.044 | -.054 | -.047 | -0.075 | -.096 | -.025 | -.017 | .070 | .110 |
| | (-1.328) | (-.838) | (.050) | (-.293) | (-1.187) | (-.309) | (-.713) | (-.609) | (-.631) | (-.127) | (1.281) | (.816) |
| COMP | | .043 | | .022 | | .130 | | .130 | | .086 | | .089 |
| | | (.264) | | (.135) | | (.749) | | (-.728) | | (-.573) | | (.600) |
| OWNS | | | .791*** | .800*** | | | .430* | .412 | | | .906*** | 1.025*** |
| | | | (3.689) | (3.402) | | | (1.827) | (1.604) | | | (4.676) | (4.842) |
| FNDR | | | -.425** | -.404* | | | -.623*** | -.553** | | | -.506*** | -.504** |
| | | | (-2.074) | (-1.902) | | | (-2.741) | (-2.342) | | | (-2.636) | (-2.538) |
| DUAL | | | -.105 | -.141 | | | -.152 | -.148 | | | -.211** | -.411** |
| | | | (-.846) | (-.740) | | | (-1.133) | (-.713) | | | (-1.888) | (-2.402) |
| TENR | | | .221 | .224 | | | -.054 | -.134 | | | .294* | .345* |
| | | | (1.127) | (1.016) | | | (-.242) | (-.541) | | | (1.645) | (1.723) |
| INDEP x COMP | | .034 | | .051 | | -.092 | | -.096 | | -.079 | | -.065 |
| | | (.139) | | (.209) | | (-.358) | | (-.365) | | (-.353) | | (-.293) |
| INDEP x OWNS | | | -.765*** | -.773*** | | | -.424* | -.408* | | | -.824*** | -.929*** |
| | | | (-3.759) | (-3.499) | | | (-1.902) | (-1.694) | | | (-4.477) | (-4.674) |
| INDEP x FNDR | | | .417** | .407* | | | .668*** | .612** | | | .644*** | .651*** |
| | | | (1.978) | (1.866) | | | (2.836) | (2.514) | | | (3.256) | (3.195) |
| INDEP x DUAL | | | .018 | .055 | | | .131 | .139 | | | .164 | .347*** |
| | | | (.155) | (.313) | | | (1.009) | (-.727) | | | (1.525) | (2.195) |
| INDEP x TENR | | | -.154 | -.159 | | | .066 | .147 | | | -.348* | -.395* |
| | | | (-.746) | (-.691) | | | (.281) | (.570) | | | (-1.845) | (-1.893) |
| SIZE1 | .077* | .092** | .081* | .080* | -.015 | .004 | -.026 | -.011 | -.162*** | -.151*** | -.140*** | -.151*** |
| | (1.749) | (2.023) | (1.808) | (1.730) | (-.313) | (.090) | (-.538) | (-.215) | (-4.000) | (-3.595) | (-3.488) | (-3.657) |
| LEV1 | -.105*** | -.102** | -.093** | -.092** | -.055 | -.045 | -.037 | -.025 | -.199*** | -.199*** | -.179*** | -.175*** |
| | (-2.588) | (-2.495) | (-2.243) | (-2.171) | (-1.271) | (-1.021) | (-.836) | (-.540) | (-5.338) | (-5.273) | (-4.785) | (-4.595) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 676 | 667 | 676 | 667 | 580 | 573 | 580 | 573 | 683 | 674 | 683 | 674 |
| Adjusted R square | .010 | .012 | .032 | .031 | .020 | .020 | .034 | .033 | .154 | .158 | .204 | .207 |
| F-statistic | 1.606* | 1.645* | 2.814*** | 2.001*** | 2.079** | 1.881** | 2.085*** | 1.929*** | 12.275*** | 10.692*** | 10.200*** | 9.401*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 24 – Only SIZE1 as control variable for hypothesis 1*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| PWR1 | | .074* | | .079** | | .045 | | .040 | | .122*** | | .127*** |
| | | -0.837 | | (1.997) | | (1.067) | | (.935) | | (3.359) | | (3.456) |
| PWR2 | | | .026 | .020 | | | .021 | .016 | | | .022 | .014 |
| | | | (.650) | (.510) | | | (.488) | (.385) | | | (.614) | (.384) |
| SIZE1 | .010 | .031 | .015 | .031 | -.059 | -.050 | -.056 | -.049 | -.208*** | -.172*** | -.202*** | -.172*** |
| | (.246) | (.761) | (.388) | (.751) | (-1.383) | (1.124) | (-1.290) | (-1.085) | (-5.641) | (-4.563) | (-5.430) | (-4.534) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 695 | 686 | 681 | 675 | 598 | 590 | 587 | 582 | 702 | 692 | 688 | 681 |
| Adjusted R square | .000 | .003 | -.001 | .003 | .020 | .020 | .015 | .015 | .119 | .137 | .124 | .142 |
| F-statistic | .967 | 1.198 | .956 | 1.161 | 2.386** | 2.192** | 1.867** | 1.791* | 11.546*** | 11.977*** | 10.740*** | 11.226*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 25 - Only SIZE1 as control variable for hypothesis 2*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| INDEP | -.040 | -.063 | -.064 | -.065 | -.052 | -.054 | -.072 | -.059 | -.030 | -.039 | -.058 | -.042 |
| | (-.950) | (1.423) | (-1.438) | (-1.448) | (-1.168) | (-1.141) | (-1.530) | (-1.222) | (-.764) | (-.966) | (-1.391) | (-1.021) |
| PWR1 | | .109 | | .104 | | -.092 | | -.099 | | -.087 | | -.093 |
| | | (1.242) | | (1.175) | | (-.981) | | (-1.050) | | (-1.074) | | (-1.151) |
| PWR2 | | | .213 | .191 | | | .246 | .214 | | | .281* | .159 |
| | | | (1.348) | (1.180) | | | (1.481) | (1.255) | | | (1.891) | (1.061) |
| INDEP x PWR1 | | -.041 | | -.045 | | .142 | | .138 | | .236*** | | .235*** |
| | | (-.466) | | (-.506) | | (1.511) | | (1.447) | | (2.904) | | (2.868) |
| INDEP x PWR2 | | | -.184 | -.168 | | | -.222 | -.188 | | | -.258* | -.133 |
| | | | (-1.159) | (-1.033) | | | (-1.330) | (-1.097) | | | (-1.728) | (-.880) |
| SIZE1 | .036 | .059 | .044 | .055 | -.039 | -.023 | -.026 | -.027 | -.187*** | -.149*** | -.177*** | -.151*** |
| | (.834) | (1.290) | (.969) | (1.206) | (-.835) | (-.469) | (-.539) | (-.541) | (-4.620) | (-3.571) | (-4.234) | (-3.591) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 690 | 675 | 681 | 675 | 594 | 582 | 587 | 582 | 697 | 681 | 688 | 681 |
| Adjusted R square | .001 | .004 | .002 | .003 | .019 | .019 | .019 | .019 | .121 | .153 | .129 | .152 |
| F-statistic | 1.037 | 1.224 | 1.115 | 1.161 | 2.145** | 1.951** | 1.929** | 1.800** | 10.624*** | 11.233*** | 9.456*** | 9.727*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 26 – Only LEV1 as control variable for hypothesis 1*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| PWR1 | | .038 | | .038 | | .035 | | .030 | | .107*** | | .106*** |
| | | (.953) | | (.966) | | (.822) | | (.712) | | (2.902) | | (2.905) |
| PWR2 | | | .039 | .033 | | | .028 | .024 | | | .017 | .011 |
| | | | (.973) | (.838) | | | (.668) | (.572) | | | (.454) | (.287) |
| LEV1 | -.056 | -.076** | -.106*** | -.111*** | -.072* | -.051 | -.062 | -.044 | -.161*** | -.162*** | -.229*** | -.205*** |
| | (-1.408) | (-1.857) | (-2.612) | (-2.662) | (-1.702) | (-1.168) | (-1.448) | (-1.005) | (-4.247) | (-4.213) | (-6.058) | (-5.335) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 681 | 672 | 667 | 661 | 584 | 576 | 573 | 568 | 688 | 678 | 674 | 667 |
| Adjusted R square | .001 | .004 | .008 | .009 | .024 | .020 | .016 | .014 | .099 | .123 | .130 | .142 |
| F-statistic | 1.066 | 1.247 | 1.515 | 1.550 | 2.566*** | 2.165** | 1.945** | 1.724* | 9.398*** | 10.533*** | 11.069*** | 11.020*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 27 - Only LEV1 as control variable for hypothesis 2*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| INDEP | -.026 | -.046 | -.044 | -.051 | -.060 | -.063 | -.078* | -.072 | -.089** | -.100*** | -.118*** | -.104*** |
| | (-.671) | (-1.123) | (-1.098) | (-1.239) | (-1.417) | (-1.435) | (-1.793) | (-1.617) | (-2.453) | (-2.674) | (-3.183) | (-2.760) |
| PWR1 | | .087 | | .079 | | -.093 | | -.104 | | -.070 | | -.079 |
| | | (1.015) | | (.919) | | (-1.015) | | (-1.120) | | (-.893) | | (-.996) |
| PWR2 | | | .272* | .299* | | | .260 | .239 | | | .309** | .227 |
| | | | (1.705) | (1.827) | | | (1.547) | (1.378) | | | (2.077) | (1.495) |
| INDEP x PWR1 | | -.066 | | -.075 | | .128 | | .124 | | .180** | | .176** |
| | | (-.760) | | (-.851) | | (1.375) | | (1.320) | | (2.250) | | (2.183) |
| INDEP x PWR2 | | | -.233 | -.269 | | | -.225 | -.202 | | | -.281* | -.197 |
| | | | (-1.459) | (-1.636) | | | (-1.338) | (-1.158) | | | (-1.885) | (-1.291) |
| LEV1 | -.097** | -.109*** | -.104** | -.118*** | -.057 | -.030 | -.054 | -.035 | -.217*** | -.187*** | -.218*** | -.192*** |
| | (-2.410) | (-2.608) | (-2.540) | (-2.795) | (-1.329) | (-.670) | (-1.238) | (-.777) | (-.5.778) | (-4.862) | (-5.783) | (-4.970) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 676 | 661 | 667 | 661 | 580 | 568 | 573 | 568 | 683 | 667 | 674 | 667 |
| Adjusted R square | .007 | .009 | .010 | .012 | .022 | .019 | .022 | .019 | .135 | .157 | .146 | .158 |
| F-statistic | 1.456 | 1.506 | 1.565* | 1.553* | 2.281** | 1.903** | 2.062** | 1.803** | 11.643*** | 11.382*** | 10.634*** | 9.955*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| PWR1 | | .083** | | .083** | | .038 | | .035 | | .132*** | | .132*** |
| | | (2.133) | | (2.133) | | (.935) | | (.851) | | (3.697) | | (3.682) |
| PWR2 | | | .000 | -.005 | | | .048 | .043 | | | .001 | -.006 |
| | | | (-.003) | (-.122) | | | (1.156) | (1.032) | | | (.040) | (-.170) |
| SIZE2 | -.090** | -.074* | -.092** | -.082** | .025 | .035 | .036 | .043 | -.250*** | -.221*** | -.249*** | -.228*** |
| | (-2.317) | (-1.868) | (-2.320) | (-2.029) | (.597) | (.810) | (.845) | (1.000) | (-6.816) | (-6.011) | (-6.747) | (-6.155) |
| LEV2 | .186*** | .176*** | .159*** | .161*** | -.218*** | -.211*** | -.220*** | -.213*** | .013 | .011 | -.032 | -.012 |
| | (4.561) | (4.260) | (3.808) | (3.837) | (-5.010) | (-4.784) | (-4.942) | (-4.750) | (.338) | (.296) | (-.841) | (-.299) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 692 | 683 | 678 | 672 | 595 | 587 | 584 | 579 | 699 | 689 | 685 | 678 |
| Adjusted R square | .029 | .028 | .021 | .024 | .056 | .054 | .051 | .049 | .137 | .157 | .150 | .167 |
| F-statistic | 3.078*** | 2.768*** | 2.316*** | 2.359*** | 4.553*** | 4.025*** | 3.829*** | 3.481*** | 12.120*** | 12.685*** | 11.990*** | 12.343*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 28 - Alternative control variables hypothesis 1*

| Variable | ROA (t+1) | | | | ROE (t+1) | | | | Tobin's Q (t+1) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| INDEP | -.029 | -.044 | -.045 | -.041 | -.047 | -.049 | -.069 | -.062 | -.015 | -.017 | -.033 | -.016 |
| | (-.685) | (-.997) | (-1.006) | (-.907) | (-1.074) | (-1.051) | (-1.482) | (-1.305) | (-.398) | (-.429) | (-.817) | (-.397) |
| PWR1 | | .119 | | .120 | | -.103 | | -.118 | | -.070 | | -.072 |
| | | (1.372) | | (1.369) | | (-1.116) | | (-1.266) | | (-.881) | | (-.897) |
| PWR2 | | | .197 | .171 | | | .267 | .240 | | | .263* | .140 |
| | | | (1.259) | (1.068) | | | (1.631) | (1.430) | | | (1.794) | (.947) |
| INDEP x PWR1 | | -.047 | | -.056 | | .149 | | .152 | | .225*** | | .220*** |
| | | (-.533) | | (-.638) | | (1.610) | | (1.623) | | (2.809) | | (2.712) |
| INDEP x PWR2 | | | -.196 | -.177 | | | -.213 | -.183 | | | -.264* | -.138 |
| | | | (-1.246) | (-1.098) | | | (-1.298) | (-1.086) | | | (-1.792) | (-.925) |
| SIZE2 | -.073* | -.065 | -.073* | -.069 | .045 | .061 | .062 | .069 | -.233*** | -.214*** | -.236*** | -.215*** |
| | (-1.704) | (-1.466) | (-1.665) | (-1.534) | (1.009) | (1.311) | (1.324) | (1.456) | (-5.910) | (-5.369) | (-5.841) | (-5.318) |
| LEV2 | .163*** | .166*** | .164*** | .164*** | -.211*** | -.202*** | -.212*** | -.211*** | -.030 | -.011 | -.030 | -.013 |
| | (3.937) | (3.946) | (3.896) | (3.873) | (-4.775) | (-4.508) | (-4.739) | (-4.679) | (-.764) | (-.287) | (-.766) | (-.326) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 687 | 672 | 678 | 672 | 591 | 579 | 584 | 579 | 694 | 678 | 685 | 678 |
| Adjusted R square | .021 | .024 | .022 | .023 | .053 | .052 | .054 | .054 | .143 | .176 | .153 | .175 |
| F-statistic | 2.345*** | 2.271*** | 2.182*** | 2.047** | 4.024*** | 3.437*** | 3.571*** | 3.210 | 11.519*** | 12.151*** | 10.504*** | 10.573*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 29 - Alternative control variables hypothesis 2*

| Variable | ROS (t+1) | | | | RET (t+1) | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| PWR1 | | .062* | | .062* | | -.008 | | -.008 |
| | | (1.831) | | (1.830) | | (-.209) | | (-.209) |
| PWR2 | | | -.126*** | -.129*** | | | .058 | .057 |
| | | | (-3.803) | (-3.917) | | | (1.506) | (1.456) |
| SIZE1 | -.209*** | -.200*** | -.211*** | -.205*** | -.051 | -.052 | -.046 | -.043 |
| | (-6.218) | (-5.799) | (-6.240) | (-5.945) | (-1.308) | (-1.294) | (-1.173) | (-1.055) |
| LEV1 | .206*** | .215*** | .195*** | .210*** | -.100** | -.094** | -.117*** | -.110*** |
| | (6.080) | (6.184) | (5.697) | (6.037) | (-2.554) | (-2.331) | (-2.956) | (-2.711) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 672 | 663 | 658 | 652 | 668 | 659 | 658 | 651 |
| Adjusted R square | .301 | .304 | .315 | .321 | .072 | .069 | .074 | .071 |
| F-statistic | 29.993*** | 27.315*** | 28.533*** | 26.714*** | 6.145*** | 5.446*** | 5.803*** | 5.168*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. The firm performance variables are analyzed at t + 1. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 30 - Different measurements of firm performance for hypothesis 1*

| Variable | ROS (t+1) | | | | RET (t+1) | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| INDEP | -.014 | -.004 | .016 | .025 | -.039 | -.023 | -.040 | -.033 |
| | (-.368) | (-.108) | (.424) | (.662) | (-.941) | (-.528) | (-.916) | (-.742) |
| PWR1 | | .122* | | .150** | | -.004 | | -.023 |
| | | (1.692) | | (2.090) | | (-.040) | | (-.251) |
| PWR2 | | | -.053 | -.088 | | | .249 | .259 |
| | | | (-.396) | (-.644) | | | (1.604) | (1.616) |
| INDEP x PWR1 | | -.072 | | -.101 | | -.006 | | .000 |
| | | (-.986) | | (-1.385) | | (-.069) | | (.000) |
| INDEP x PWR2 | | | -.078 | -.051 | | | -.190 | -.202 |
| | | | (-.577) | (-.371) | | | (-1.215) | (-1.256) |
| SIZE1 | -.203*** | -.205*** | -.218*** | -.219*** | -.027 | -.031 | -.029 | -.032 |
| | (-5.451) | (-5.273) | (-5.715) | (-5.656) | (-.635) | (-.700) | (-.655) | (-.699) |
| LEV1 | .197*** | .205*** | .193*** | .203*** | -.113*** | -.109*** | -.117*** | -.114*** |
| | (5.720) | (5.766) | (5.588) | (5.735) | (-2.870) | (-2.650) | (-2.934) | (-2.765) |
| Year dummy | YES | YES | YES | YES | YES | YES | YES | YES |
| Industry dummy | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 667 | 652 | 658 | 652 | 664 | 651 | 658 | 651 |
| Adjusted R square | .301 | .305 | .314 | .321 | .073 | .067 | .075 | .070 |
| F-statistic | 27.078*** | 23.003*** | 24.122*** | 21.519*** | 5.780*** | 4.608*** | 5.114*** | 4.283*** |

*Notes: this table reports the standardized coefficients. Annual data for the period of 2013 to 2017 are analyzed. The firm performance variables are analyzed at t + 1. All variables are described in Table 2. The numbers in parenthesis represents the t-statistics. ***, **, * shows the significance at 1%, 5%, and 10%, respectively.*

*Table 31 - Different measurements of firm performance for hypothesis 2*