The effect of board characteristics on CEO compensation

An empirical analysis of two-tier structured boards in the Netherlands

– Master thesis European Master in Law and Economics –

Executive Summary

This paper studies the effects of board of director characteristics on CEO compensation in a two-tier board setting. For this study, a panel dataset is used consisting of the 37 largest two-tier structured Dutch companies listed on the AEX and AMX for the period of 2013-2019. Three multi-layered fixed effects regressions have been performed on total compensation, variable compensation, and fixed compensation, respectively. Multiple board characteristics are found to have a significant effect on the level of compensation allocated to the CEO. First, board size is found to have a positive effect on all three types of compensation. Furthermore, both total and variable compensation increase significantly with an increase in both the number of busy directors and the number of internationals on the board. Moreover, an increase in the number of board meetings is found to have a negative effect on both total compensation and variable compensation. Additionally, a significant positive relationship is found between board tenure and total compensation. Lastly, significant effects are found for control variables CEO tenure, firm revenue, and firm return on assets.

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I hereby declare and confirm that this thesis is entirely the result of my own work except where otherwise indicated. I acknowledge the supervision and guidance I have received from prof. Lela Mélon. This thesis is not used as part of any other examination and has not yet been published.

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1 Introduction

Executive compensation has been one of the most discussed topics in corporate governance in the past decades. Mainly because of major corporate governance scandals in the early 2000s (e.g. Enron and Worldcom), the excessiveness of managerial compensation and the intrinsic motivation behind remuneration policies have become the subject of debate in many countries.

This is also the case in the Netherlands, where a corporate governance scandal at Ahold in 2003 sparked a heated political discussion about the checks and balances with regards to executive remuneration within Dutch corporations (De Jong, Roosenboom, De Jong, & Mertens, 2005). More recently, at the beginning of 2018, this discussion reached a peak when the excessive bonus of ING Chief Executive Officer (CEO) Ralph Hamers met with a lot of resistance from the Dutch society. ING at that time was facing a 775 million euro fine due to mismanagement, resulting in not only ING's shareholders but the whole Dutch society strongly opposing Mr. Hamers deserving an excessive bonus, even though on paper he was eligible to receive it (Dekker, 2018). Also, today, the vast majority of the shareholder meetings of large Dutch firms is dedicated to executive remuneration (Dekker, 2020). Due to Covid-19 forcing many companies to cut costs, shareholders expect the CEOs of firms to voluntarily reduce their compensation in order to share the burden. Some do this – for example Harry Noy (BAM Group NV) and Wim Pelsma (Aalberts NV) –, but those who fail to do so face considerable resistance by their shareholders (Couwenberg & Kakebeeke, 2020). For example, the remuneration policies of large Dutch stock listed companies such as Wolters Kluwer, BE Semiconductors and SBM Offshore got recently voted against by their shareholders (Dekker, 2020).

Now the question arises, why are CEOs often receiving excessive compensation? Previous academic literature suggests that weak corporate governance might be the cause. The determination of managerial compensation is a bargaining process between the board of directors (non-executives) and the management board (executives) (Bebchuk & Fried, 2003). The party that has the best bargaining position is ultimately the one who has the most influence in setting the amount and structure of the remuneration package. Managerial power theorists argue that under certain conditions the board of directors will be influenced by the executives, hence they are unable to prevent the executives form obtaining the best bargaining position and ultimately determining their own pay in a self-optimizing (excessive) way (Bebchuk & Fried, 2004). High CEO remuneration therefore signals ineffective control and monitoring of executive behavior by the board of directors, hence weak corporate governance (Core, Holthausen, & Larcker, 1999).

Whether the board of directors is easily influenced by managers is largely explained by the characteristics of the board, e.g. board independence, board tenure, board expertise, etc. (Core et al., 1999). One of the first scholars to argue the existence of a relationship between board characteristics and executive remuneration were O'Reilly, Main, and Crystal (1988). They came to the conclusion that similarity between board characteristics and CEO characteristics could have a significant influence on the power balance between the two parties and consequently affect the pay-setting process. In 1994, Boyd performed an empirical analysis of the relationship between the level of board control – measured by several director characteristics, such as director independence, director ownership, and director compensation – and the amount of CEO compensation and found a negative relationship. Over the years, the number of director characteristics examined expanded and later research by, among others, Core et al. (1999), Vafeas (2003), and Sapp (2008) confirmed that a wide variety of board characteristics explains a significant amount of variation in CEO compensation. Jointly, they came to the conclusion that CEOs earn greater compensation when corporate governance structures are less effective.

This is an interesting conclusion, however, most of the research done on the relationship between board characteristics and executive remuneration is based on Anglo-Saxion countries that adopt a one-tier board regime. Only little research has been performed on European countries, including the Netherlands, and even fewer studies have investigated the effects of board characteristics on CEO remuneration in a two-tier board regime (Randøy & Nielsen, 2002; Fernandes, 2008; Benkraiem, Hamrouni, Lakhal, & Toumi, 2017). In order to expand the limited European literature, this study will address the following research question:

What are the effects of board characteristics on the amount of CEO remuneration within the largest two-tier structured Dutch firms listed on the AEX and AMX?

To my knowledge, this study is the first to investigate the effects of board characteristics on CEO remuneration for a sample consisting of only two-tier structured corporations. It is chosen to investigate Dutch firms since the Netherlands is one of the few countries in Europe that adopts a two-tier board regime in which it is mandatory for large corporations to have a two-tier board structure. The clear separation between a management board and a supervisory board (in this study also referred to as 'the board of directors' or 'the board') in a two-tier structure might have interesting implications with regards to the level of board control in the pay-setting process. Furthermore, this research contributes to the existing literature by considering a complete set of board characteristics consisting of board size, board age, board tenure, board financial expertise, multiple directorships, board meetings, board gender diversity, board nationality diversity, board independence, and CEO duality.

The sample used in this study consists of the 37 largest two-tier structured Dutch firms that were listed on the AEX and AMX in 2019. For each of these firms, data has been gathered over the period 2013-2019 resulting in a total of 235 unique firm-year observations. In line with the methodologies applied in previous research, in this study, a fixed effects regression model is used to determine the explanatory power of board characteristics on the amount of CEO remuneration (Adams & Ferreira, 2009; Fernandes, 2008). More specifically, since this study contains multiple layers of fixed effects – time fixed effects and firm fixed effects – it is chosen to apply a multi-layered fixed effects regression (Cameron, Gelbach, & Miller, 2012). Three separate multi-layered fixed effects regressions are performed based on the natural logarithms of total compensation, variable compensation, and fixed compensation, respectively.

This study finds several board characteristics to have a significant effect on total CEO remuneration in a two-tier structured board. Both board size and board tenure are found to have a positive effect on the total amount of remuneration received by the CEO. Moreover, an increase in the number of both busy directors (directors holding three or more additional director seats) and international directors results in higher CEO compensation. An inverse effect is found for the number of meetings held by the board of directors, for which an increase in frequency leads to lower CEO compensation. Similar results are found for variable compensation, with additional effects of two firm related control variables (revenue and ROA). With regard to fixed remuneration, only limited effects were found. In addition to board size, board age and one CEO related control variable (CEO tenure) were found to have a positive effect on fixed compensation. More detailed results can be found in Chapter 4.

The remainder of this thesis is structured as follows. In chapter two, the agency theory, the Dutch Corporate Governance Code (the Code), and previous relevant academic literature with regards to board characteristics will be discussed. Then, in chapter three, the data and methodology of this study will be explained. In chapter four, the results of the multi-layered fixed effects regressions will be elaborated. And finally, in chapter five, a conclusion will be drawn and recommendations for further research will be briefly discussed.

2 Literature Review

As mentioned in the introduction, the pay-setting process is a bargaining process between the board of directors and the management board. To get a better understanding of the relationship between corporate governance and CEO remuneration, it is vital to have an in-depth understanding of the relationship between the board of directors and the management board within a company. The basis for this relationship can be explained by the agency theory, which will be discussed in more detail in this chapter. Moreover, since the Dutch corporate governance regime is significantly different from the previously studied Anglo-Saxion regimes, this chapter dives deeper into the rules, best practice provisions, and principles of good corporate governance that are applicable in the Netherlands. Furthermore, previous academic literature on board structure, corporate governance, and executive remuneration will be analyzed in order to address relevant explanatory board characteristics.

2.1 The agency theory

The agency theory has been initially introduced by Coase (1937) and later developed by Jensen and Meckling (1976) and Fama and Jensen (1983). In general, the agency theory describes the relationship between a principal and its agent. In corporate governance, most commonly this denotes the relationship between the shareholders of a company and its management. Within this relationship, there is a separation of ownership (shareholders) and control (management) in which the shareholders delegate the decision-making authority to the management (Shleifer & Vishny, 1997). It is expected that the agent makes decisions in the best interest of the principal, i.e. that management runs the day-to-day business in a way that optimizes long-term shareholder value. However, when interests are not aligned or when there is a conflict of interests between the shareholders and the management, self-interested decision-making by the management results in a so-called agency problem, or more specific, a principal-agent problem (Jensen & Meckling, 1976). An example of self-interested managerial behavior is empire-building behavior, in which a manager is more concerned about increasing its own power and authority than by increasing shareholder value (Williamson, 1964; Jensen, 1986). Another example is entrenchment behavior; when a manager makes decisions that make him very costly or even impossible to replace for another manager even though he might be no longer competent or qualified to run the firm (Shleifer & Vishny, 1989). From an economic efficiency point of view, a situation in which there is a principal-agent problem due to self-interested managerial behavior is undesirable since this leads to agency costs and results in a suboptimal outcome in terms of total welfare (Jensen & Meckling, 1976).

According to Bebchuk and Fried (2003), there are two different views on how executive remuneration is linked to the aforementioned agency problem. The widest accepted approach among financial economists is the 'optimal contracting approach', which can be seen as a remedy to the agency problem (Jensen & Meckling, 1976). As mentioned before, the pay-setting process is a bargaining process between the board of directors – who are representatives of the shareholders – and the management board. Under the optimal contracting approach, it is assumed that both parties have equal bargaining positions and that arm's-length bargaining results in remuneration schemes that provide managers the incentive to maximize shareholder value (Bebchuk & Fried, 2003). In other words, this process leads to non-excessive amounts of compensation and the desired compensation structure which aligns the interest of the manager with that of the shareholders. In accordance with this theory, throughout the years we have seen increased adoption of variable compensation which directly links the manager's payout to firm performance (alignment of interests) (Frydman & Jenter, 2010).

The other approach – which is known as the 'managerial power approach' – on the other hand, does not consider executive remuneration as a solution to the agency problem, but rather as part of the problem. More specifically, it considers executive remuneration as a tool for self-interested managerial behavior. In contrast to the optimal contracting approach, this view suggests that compensation arrangements often deviate from those obtainable under arm's-length bargaining (Bebchuck & Fried, 2004). The reason for this is because boards of directors are often *"influenced by management, sympathetic to executives, insufficiently motivated to bargain over compensation, or simply ineffectual in overseeing compensation"* (Bebchuk & Fried, 2009, p. 4). This gives managers substantial influence in determining their own pay, allowing them to reap benefits at the expense of shareholders (rent-seeking) (Bebchuk & Fried, 2009). In line with this theory, empirical research by Jensen, Murphy, and Wruck (2004) shows that managerial power – caused by the board's lack of information, time, expertise, and skills – results in CEO favored (excessive) compensation schemes.

In conclusion, the executive pay-setting process is highly sensitive to the power relationship between the shareholders – represented by the board – and the management. The efficient contracting theory, on the one hand, argues that there is an equal power balance which results in a jointly agreed remuneration package that aligns the interests of both parties. The managerial power theory, on the other hand, argues that managers have significant influence over the board of directors which results in unilaterally determined self-optimizing (excessive) remuneration packages by the managers. Which theory ultimately prevails in practice is – at least in part – depending on the characteristics of the board and its ability to control management.

2.2 Dutch Corporate Governance

The characteristics of the board of directors and its ability to control managerial remuneration are shaped by a country's corporate governance regime. The Dutch corporate governance regime entails some unique features with respect to other countries' regimes, which makes the Netherlands an interesting country to investigate. In the Netherlands, the governance of corporations is established in both binding and non-binding legislation. Below, an oversight is given of legislation that might have interesting implications on the relationship between board characteristics and executive compensation in Dutch firms.

2.2.1 Binding legislation

The binding rules of civil law relating to corporate governance are laid down in Book 2 of the Dutch Civil Code (Raaijmakers & Rutten, 2017). Among other things, this book contains general rules regarding firm structure, capital structure, shareholder meetings, annual account transparency, etc. But most importantly for this study, this book contains rules concerning the board structure of the firm.

Traditionally, the Dutch Civil Code provides a two-tier board structure regime in which there is a separation between a management board and a supervisory board (Maassen & Van den Bosch, 1999). However, in the mid-2000s, most other countries applied a one-tier regime in which executives and non-executives function in the same single board, which made it unattractive for foreign companies to establish in the Netherlands in that time (Jungmann, 2006). In order to become internationally more attractive, the Dutch legislative authority, therefore, in 2011 adopted the possibility for firms to opt for a one-tier board structure (Calkoen, 2011). With leaving firms the possibility to choose between a one-tier or two-tier board structure, the Netherlands took a unique position in Europe.

Nevertheless, in practice, we observe that the vast majority of large Dutch companies adopts a traditional two-tier board nowadays. The reason for this is that, according to art. 2:153 of the Dutch Civil Code, a public firm subject to the 'structure regime' is obliged to adopt a two-tier structure. *"A company is subject to the structure regime if, for a period of three consecutive years:*

a. *Its issued capital and reserves amount to not less than €16 million;*
b. *It has a works council instituted pursuant to a statutory requirement; and*
c. *It regularly employs at least 100 employees in the Netherlands"*
   (Raaijmakers & Rutten, 2017, p. 198)

Put differently, firms of significant size are deprived of choosing a board structure themselves and are obliged to adopt a two-tier structure, limited exceptions aside. This has the implication that most Dutch firms listed on the AEX and AMX have a two-tier board structure.

As mentioned before, so far, most research has focused on the relationship between board characteristics and executive remuneration in one-tier firms (e.g. Hallock, 1997; Core et al., 1999; Adams & Ferreira, 2009; Sapp, 2008). Since two-tier boards have – on paper – a stricter separation between management and control, the relationship between board characteristics and executive compensation for Dutch firms might be different from earlier researched firms with a one-tier board.

2.2.2 Principles and best practices

Alongside the binding rules of the Dutch Civil Code, the Netherlands provides principles of good corporate governance and best practices which are codified in the Dutch Corporate Governance Code. The Code entered into force in 2003 (DCGC, 2003) and has been amended twice in 2008 (DCGC, 2008) and 2016 (DCGC, 2016), respectively. The Code applies to public firms who have their statutory seat in the Netherlands and whose shares are traded on a regulated market (DCGC, 2016, p. 7). Together, the management board and the supervisory board are responsible for compliance with the Code (DCGC, 2016, p. 11). Contrary to the Dutch Civil Code, the provisions in the Code are not legally binding but instead based on a 'comply-or-explain' principle. This means that the management and the board either comply with the provisions laid down in the Code or they explain to the shareholders why they have deviated from certain provisions (DCGC, 2016, p. 11).

Among other things, the Code contains principles and best practice provisions regarding effective supervision by the supervisory board. To ensure effective supervision, the Code provides a number of important guidelines and recommendations on the composition of the supervisory board (board characteristics) (DCGC, 2016, p. 19). Emphasis is put on the presence of expertise, background diversity, and independence. With regard to expertise, only a broad principle is provided which states that each member of the board should have the 'specific expertise' required for the fulfillment of his duties (DCGC, 2016, p. 19). Furthermore, the Code lays down a provision which suggests that companies should communicate a diversity policy stating diversity targets regarding age, gender, nationality, education, and work background (DCGC, 2016, p. 20). Again, this provision does not provide clear targets and leaves the interpretation to the supervisory board itself. Only for gender diversity, a non-binding target of at least 30% of the board consisting of women got codified in 'art. 166 Wet Bestuur en Toezicht' in 2013. Just recently, in 2019, a majority of the Dutch parliament voted to make this target binding (Parliamentary paper 35300 XIII, nr. 55, 2019). Remarkably, as many as four extensive principles are devoted to the independence of supervisory board members (DCGC, 2016, p. 20-21). Contrary to the principles on expertise and diversity, these principles indicate very specifically when a board member is regarded to be independent or not. The bottom line is that firms are not allowed to have more than one dependent director in its

supervisory board (DCGC, 2016, p. 20). Moreover, according to principle 2.1.9, the chairman of the supervisory board should be independent of the management board, i.e. CEO duality is not best practice (DCGC, 2016, p. 21). Finally, with regards to board size, the Code adopts a broad provision which suggests the size of the supervisory board to be as such for it to be able to carry out its duties properly (DCGC, 2016, p. 19). The code remains silent on the number of additional directorships held by a director, the number of board meetings, and director tenure.

Furthermore, the Code devotes a chapter to remuneration. Provided is that if a supervisory board consists of more than four members, it should appoint a remuneration committee which is responsible for drafting a remuneration policy (DCGC, 2016, p. 23). Principle 3.1 states that *"The remuneration policy applicable to management board members should focus on long-term value creation for the company […] should not encourage management board members to act in their own interest." (DCGC, 2016, p. 31).* The Code provides that in determining a manager's remuneration the remuneration committee should consider the concerned manager's view on the amount and structure of its own pay (DCGC, 2016, p. 32). Referring to the agency theory, this provision makes the remuneration-setting process sensitive to managerial power.

As an answer to the sensitivity to managerial power in the pay-setting process, in 2004 the Dutch Corporate Governance Committee (Tabaksblat Committee) adopted the requirement of a binding vote in which 50% + 1 of the shareholders has to agree with the executive remuneration policy that is presented on the annual meeting (DCGC, 2003, p. 12). This principle aimed to eliminate possible power imbalances in favor of the manager by giving the shareholders the ultimate "say-on-pay". However, throughout the years, practice showed that managers could fairly easily obtain a majority of the voters to vote in favor of their remuneration even though the amounts increased significantly. Therefore, just recently in 2019, the EU Directive 2017/828 on promoting the long-term commitment of shareholders was implemented in the Netherlands. This guideline expands the power of the shareholders by requiring now more than 75% of the shareholders to accept the remuneration policy. With the implementation of extensive powers of the shareholders with regards to say-on-pay, the Netherlands advocates for the optimal contracting theory in which remuneration is used as a tool to align interests and to overcome principal-agent problems.

It can be concluded that there is a great emphasis within Dutch corporate governance on the composition of the supervisory board and executive remuneration. All rules, principles, provisions, and best practices aim for the same goal of balancing the power relationship between the supervisory board and the management board in order to develop a remuneration package in which shareholder and manager interests are aligned. However, most of the legislation is based on the comply-or-explain principle and therefore the question remains to what extent compliance can be seen in practice.

2.3 Previous literature

As we have seen, the Dutch Corporate Governance Code provides a great number of guidelines and recommendations on the composition of the supervisory board in order to ensure effective supervision. It emphasizes the importance of board size, director expertise, director independence, and board diversity in terms of age, gender, and nationality. In addition to the Code, there is a great amount of academic literature discussing the relationship between board characteristics and the quality of corporate governance. In this section, on the basis of previous literature, we examine which board characteristics are possibly related to the effectiveness of corporate governance, more specifically to the setting of executive compensation.

2.3.1 Board size

First of all, in previous literature, board size is often cited as a possible determining factor in the effectiveness of supervisory board control. Within this literature, there is however mutual disagreement about how board size affects corporate control. The first theory argues that larger boards may have a broader range of experience and therefore are more capable of effectively monitoring management (Dalton, Daily, Johnson, & Ellstrand, 1999; Xie, Davidson, & DaDalt, 2003). The other – more dominant – theory argues that larger boards are less effective in executing corporate control for two main reasons. First, Lipton and Lorsch (1992) state that when the number of members on the board increases it becomes more difficult to have effective discussions that lead to efficient and fast decision-making. And second, large boards are prone to the 'safety-in-numbers effect' which means that directors in large boards feel less responsible for the acts of the board (Andjelkovic, Boyle, & McNoe, 2002). Conclusively, Yermack (1996) and Jensen (1993) state that the benefits of having more experienced board members are outweighed by the costs emerging from communication, coordination, and organization problems.

In line with the latter theory, Conyon and Peck (1998) found evidence that board size is inversely related to effective monitoring and corporate performance. With regard to the direct relationship between board size and executive compensation, a comprehensive study by Core et al. (1999) – in which 205 US firms were investigated – found a significant positive relationship. They conclude that if boards are too large it is more difficult for directors to organize in opposition of the CEO which in turn leads to managerial power (weak governance) and higher executive compensation. Based on this finding, in combination with the more widely adopted theory that larger boards are less effective in monitoring management, it is expected to find a positive relationship between board size and the amount of CEO compensation for Dutch firms.

2.3.2 Board tenure

A second often mentioned explanatory board characteristic in academic literature is board tenure. In his research, Vafeas (2003) argues that director tenure can be regarded as an important measure of director quality. He distinguishes two conflicting theories on how board tenure could have an effect on corporate control: the 'expertise hypothesis' and the 'management friendliness hypothesis'. The expertise hypothesis suggests that longer tenure of a director can be associated with greater experience, commitment, and competence of the director (Vafeas, 2003). On the contrary, the management friendliness hypothesis suggests that long-term directors are more likely to get affiliated with management which makes them less likely to strictly control management (Vafeas, 2003).

To see which theory prevails, Vafaeas (2003) empirically tested the relationship between board tenure and executive compensation. He found evidence in support of the management friendliness hypothesis that seasoned directors become less effective in monitoring management. Firms with senior directors (tenure of more than 20 years) in the compensation committee tend to compensate CEOs significantly higher than firms without senior directors in the compensation committee. Later in 2008, Sapp also found evidence in support of the latter hypothesis by finding a positive relationship between director tenure and CEO compensation in Canadian firms. Based on these unambiguous findings, it is expected to find a similar positive relationship between director tenure and CEO compensation for two-tier structured Dutch firms.

2.3.3 Board age

In close relationship with board tenure, board age is assumed to have an effect on the effectiveness of corporate governance within a firm. With regard to this relationship, there are two theories that could be distinguished. Fairly similar to Vafeas' (2003) expertise hypothesis on board tenure, one theory suggests that age can be seen as a measure of expertise as age brings experience and competency (Fairchild & Li, 2005). According to this theory, higher director age is assumed to lead to better monitoring of management, hence lower executive compensation. On the contrary, the other theory suggests that directors of a higher age might be less critical and thus less effective in monitoring management (Core et al., 1999). For this reason, countries such as the US, the UK, and France adopt rules stating a maximum age for directors. The Netherlands, however, argues that the competence of the director should be assessed independently from age and therefore it dropped their legislation on maximum director age in 2002.

The scientific literature on the direct relationship between director age and executive remuneration is relatively scarce. Only Core et al. (1999) find a significantly positive relationship indicating that older directors are less effective in controlling the management,

which in turn leads to higher CEO compensation. This finding is in line with more general research on the effect of director age on firm performance. Bonn, Yoshikawa, and Phan (2004), Fairchild and Li (2005), and Shiah-Hou and Cheng (2012) all found evidence for a negative relationship between director age and firm performance. Although scientific literature on the direct relationship between director age and CEO remuneration is scarce, based on the finding of Core et al. (1999) and the more general findings of a negative relationship between board age and corporate governance/firm performance, the present research is expected to find a positive effect of director age on CEO compensation in Dutch firms.

2.3.4 Board financial expertise

A board characteristic that is related to expertise and which has a more of an indisputable effect on executive remuneration is the number of financial experts on the board. Xie et al. (2003) did research on the role of financial experts on the board of directors and found that financial experts have a significant influence on managerial monitoring. They examined this by testing the relationship between the financial expertise of the board and the likelihood of a firm engaging in earnings management. The idea behind this is that CEOs use earnings management as a tool to ensure that their firm meets certain financial expectations, which in turn makes them look good (Loomis, 1999). It is the task of the board of directors to limit the managerial power of the CEO and to constrain earnings management. To be successful in fulfilling this task, it is recommended to have financial experts on the board since they are considered better in recognizing and preventing earnings management than directors without a financial background. In accordance with this theory, the results of the research done by Xie et al. (2003) show that there is a negative relation between the number of financial experts on the board and earnings management. More generally, it suggests that financial expertise results in more effective financial monitoring of management. This line of thought is also reflected in Dutch national law – based on the EU Statutory Audits Directive (Directive 2006/43/EC) – which requires at least one member of the audit committee to have competence in the preparation and auditing of the financial statements (DCGC, 2016, p.45).

Moreover, Sapp (2008) provides evidence with regard to the relationship between financial expertise and executive remuneration. He finds that the financial expertise of the board has a negative effect on executive remuneration, indicating that financial experts are better in restraining managerial compensation. Additionally, Güner, Malmendier, and Tate (2008) found a limited negative relationship between the presence of a finance professor on the board and executive compensation. Based on the indisputable evidence provided in previous literature, it is expected that the presence of financial experts on the board will have a negative effect on the amount of CEO compensation in Dutch firms.

2.3.5 Multiple directorships

A less frequently investigated board characteristic, but nonetheless argued as an important determinant of the quality of corporate governance, is the number of additional directorships held by a director. With regard to the relationship between the number of directorships and corporate governance, there are again two opposite theories: the 'reputation theory' and the 'busy director theory'. Previous literature is undecided which theory dominates.

The line of thought forming the base of the reputation theory is that the number of board seats held by a director signals the director's reputation in the market for outside directors (Fama & Jensen, 1983; Kaplan & Reishus, 1990; Ang, 2000). In the first instance, only (former) well-performing managers/decision-makers will be nominated by management teams to become an outside director. Once a director holds his first board seat, he is incentivized to do his job effectively to get asked to more boards (Mace, 1971). The number of director seats held by a director therefore serves as an indicator for the market's acknowledgement of effective directorship (Yermack, 2004). The more outside directorships held by a director, the better he is assumed to be in monitoring management. Sarkar and Sarkar (2009) provide evidence in support of the reputation theory by finding a positive relationship between the number of directorships and firm performance in India.

The busy directory theory, on the other hand, argues that directors who serve on many boards are not able to effectively monitor management (Shivdasani & Yermack, 1999). According to this theory, directors holding multiple directorships have to spread their scarce time and attention over multiple boards which makes it difficult (if not impossible) to monitor effectively in every board (Lipton & Lorsch, 1992; Ang, 2000). Fich & Shivdasani (2012) found evidence in support of this theory by finding a negative relationship between the number of directorships and corporate governance, measured by firm performance.

We can conclude that the evidence on the relationship between the number of directorships and corporate governance in general remains inconclusive. Nevertheless, research on the direct relationship between busy directors and executive remuneration provides more unambiguous evidence. In 1999, Core et al. found a positive relationship between busy directors and executive remuneration, indirectly indicating that busy directors are less effective in monitoring management. Sapp (2008) did similar research on Canadian firms and also found a positive effect of the number of additional board seats on executive compensation. Even though previous literature on the general relationship between busy directors and corporate governance remains ambiguous, the literature on the direct relationship between busy directors and the amount of executive remuneration appears to be more consistent. Therefore, it is expected to find a positive relationship between the average number of additional board seats held by the directors of a board and CEO compensation in Dutch two-tier structured firms.

2.3.6 Board meetings

In contrast to the previously mentioned characteristics, a board characteristic that is not directly linked to individual directors is the number of board meetings. Not surprisingly there are multiple theories about the relationship between board activity and corporate governance.

One view sees the number of board meetings as a measure of shareholder representation within a company. This theory suggests that directors who participate in boards that meet more frequently are more likely to perform their controlling and monitoring duties in accordance with the shareholder's interest (Vafeas, 1999). In other words, the number of board meetings serves as an indicator of good corporate governance. The other view argues that board meetings are nothing more than meaningless formal gatherings rather than that they are real representations of the shareholders' voice. The line of reasoning behind this theory is that the limited time that directors meet is often spend on routine tasks rather than on meaningful discussions between themselves and management (Vafeas, 1999). The inability of directors to effectively monitor and control management during these meetings is enhanced by the fact that CEOs often set the agenda of these meetings (Jensen, 1993). This theory therefore assumes no effect of the number of board meetings on corporate governance.

Although there is – to my knowledge – no research done on the direct relationship between board activity and executive remuneration, there is academic evidence of a relationship between board activity and corporate governance measured by other corporate governance related measures. In his research, Vafeas (1999) finds evidence in support of the first theory by finding a positive relationship between board activity and firm value/performance. Moreover, Xie et al. (2003) found a negative relationship between the number of board meetings and the earlier-mentioned earnings management. This indicates that regularly meeting boards are more effective in monitoring and controlling undesired management behavior. Based on the positive relationship between board meetings and corporate governance found in previous literature, it is therefore expected to find a positive relationship between board meetings and executive remuneration within Dutch firms in the present research.

2.3.7 Board gender diversity

Gender diversity in the board of directors is a widely discussed topic not only by scholars, but also by business professionals, politicians, and many social pressure groups. The core of the discussion is that company boards often lack the presence of women, which does not accurately reflect the society in which they operate (Brammer, Millington, & Pavelin, 2007). From the assumption that board diversity contributes to good corporate governance, a huge movement has arisen that advocates for more women on the board (Van der Walt & Ingley, 2003).

In the Netherlands, this subject has frequently been the topic of debate. In 2008, this debate resulted in the Dutch Corporate Governance Code Committee including a new best practice provision which stated that firms should aim for a diverse composition of the supervisory board in terms of gender (DCGC, 2008, p. 22). In 2013, this 'aim' got codified in a non-binding target of at least 30% of the board consisting of women (art. 166 WBT). To emphasize the need for diversity even more, the Code got revised in 2016 and firms are now expected to draw up a diversity policy that addresses concrete targets relating to gender diversity (DCGC, 2016, p. 20). Despite the increasing number of women on boards, the alleged aim of 30% is often not met in practice. Therefore, in December 2019, a majority of the Dutch parliament agreed on a motion for binding legislation requiring at least 30% of the firms' supervisory board to be represented by women (Parliamentary paper 35300 XIII, nr. 55, 2019).

In line with the large social demand for more women on boards, scientific research shows evidence of a positive relationship between gender diversity and corporate governance effectiveness. First of all, there are several studies that show a positive relationship between gender diversity and firm performance (Francoeur, Labelle, & Sinclair-Desgagné, 2008; Mahadeo, Soobaroyen, & Hanuman, 2012; Lückerath-Rovers, 2013). Furthermore, Adams and Ferreira (2009) show that women are more likely to attend board meetings and that they are more likely to participate in a monitoring committee of the board, suggesting that gender-diverse boards allocate more effort to monitoring. They did however not find a reliable relation between gender diversity and CEO compensation because in their sample women were under-represented in the remuneration committee (Adams & Ferreira, 2009).

Nevertheless, more recent research shows that there is indeed a direct relationship between the number of women on the board and CEO compensation. Both Lucas-Perez, Mínguez-Vera, Baixauli-Soler, Martín-Ugedo, and Sánchez-Marín (2015) and Benkraiem et al. (2017) find a positive relationship between the number of women on the board and variable compensation as a percentage of total compensation received by managers. These results suggest that gender diversity is likely to lead to more effective CEO compensation monitoring. Therefore, a negative relationship between gender diversity – measured by the percentage of women on the board – and CEO compensation is expected to be found for Dutch firms.

2.3.8 Board nationality diversity

Another type of diversity that has received a lot of interest in the past decades is nationality diversity. Previous scientific literature names several advantages and disadvantages of the presence of multiple nationalities within the board of directors. A frequently mentioned drawback of an internationally diversified board is that it may increase the likelihood of cross-cultural communication problems slowing down the decision-making process (Cox Jr, 1991). Moreover, multicultural boards are often assumed to be less effective in performing coordinated tasks (Milliken & Martins, 1996). On the other hand, there are multiple reasons why having international directors on the board could be beneficial to a firm. First of all, having an internationally oriented board could remove the barriers and information gaps to foreign resources such as capital, customers, suppliers, cooperative partners, etc. (Carpenter, Sanders, & Gregersen, 2001). Secondly, a multi-cultural view on specific issues could enhance the overall group's problem-solving capacity (Hoffman & Maier, 1961). And most importantly, board internationalization could have positive effects on the quality of corporate governance within a firm.

Among others, Oxelheim and Randøy (2003) investigated the relationship between the board's nationality diversity and corporate governance. Historically, the Anglo-American corporate governance regime has been known as highly demanding in terms of control and monitoring. To test the effectiveness of the corporate governance (monitoring) in European firms they therefore looked at the effect of foreign (Anglo-American) board membership on corporate performance. Their findings show a significantly higher firm value for firms that have Anglo-American directors on the board, indicating that foreign directors have a significant influence on the board's monitoring effectiveness (Oxelheim & Randøy, 2003). In line with the findings of this research, later investigations done by Ruigrok and Kaczmarek (2008), Choi, Park, and Yoo (2007), and Ararat, Aksu, and Tansel Cetin (2010) find positive relationships between board nationality diversity and firm performance in the UK and the Netherlands, Korea, and Turkey, respectively.

Another suggested effect of board nationality diversity on corporate governance is that board diversity contributes to board independence which is an important factor in limiting the power of the CEO (Mace, 1971). By increasing board heterogeneity in terms of nationality, a CEO is less able to manipulate the board and it is therefore expected to see reduced CEO entrenchment (Randøy, Thomsen, & Oxelheim, 2006). In line with this argument, Ruigrok, Peck, and Tacheva (2007) find significant evidence that foreign directors are more independent and thus more effective monitors of management. Although there is no direct evidence for the effect of nationality diversity on CEO remuneration, based on the empirical evidence discussed above, it is expected to find a negative relationship between the number of international board members and CEO compensation in Dutch firms.

2.3.9 Board independence

Another very important board characteristic is board independence. Director independence is probably the most researched characteristic of the board of directors. Most previous literature investigates the impact of board independence on corporate governance from the perspective of a one-tier board (Boyd, 1994; Hallock, 1997; Core et al., 1999). In a one-tier system, a distinction is made between executive and non-executive directors, the latter being considered independent directors. In the Netherlands, a two-tier regime applies in which the executives are represented in the management board and the non-executives in the supervisory board. In contrast to most one-tier boards, in the Netherlands, the non-executives in the supervisory board are not directly assumed to be independent. Instead, they must meet the demanding criteria of independence set out in the Dutch Corporate Governance Code (DCGC, 2016, p. 20). As mentioned before, the Code considers the board to be independent if not more than one director does not meet the independence criteria.

Board independence plays an important role in the determination of executive compensation. Again, there are two opposing theories on this matter. One theory suggests that inside (dependent) directors – who are related to the firm or the CEO – have more knowledge about the firm and are therefore more capable of determining an accurate compensation package for the CEO (Mobbs, 2013). The other – more dominant – theory on the other hand, argues that dependent directors are more loyal to the management and thus the CEO can exert more power over a dependent board than over an independent board (Pfeffer, 1981). A less independent board therefore allows the CEO the opportunity to determine his compensation in its own best interest (Ryan & Wiggins, 2004).

In accordance with the latter theory, multiple previous empirical studies find evidence in support of a negative relationship between board independence and CEO compensation. Hallock (1997) tested the relationship between board independence and CEO compensation by looking at the effect of ‘interlocked CEOs’ on CEO pay. A CEO is assumed to be interlocked when the CEO of firm A serves as a director of firm B and the CEO of firm B serves as a director of firm A. He found that interlocked CEOs earn a significantly higher amount of compensation which confirmed his theory that an interlocked director rewards another interlocked CEO more assuming that he will do the same for him. Furthermore, Core et al. (1999) found a similar negative relationship between board independence – measured by the number of outside directors that were interlocked, ‘grey’, or appointed by the current CEO – and CEO compensation. Later, in 2009, Chhaochharia and Grinstein measured the effect of board independence by performing a difference-in-difference test on CEO compensation in the period before and after a tightening of the corporate governance requirements regarding board independence. By performing a difference-in-difference test, they were able to find more accurate effects of director independence since this method reduces the endogeneity problem.

They found the total amount of CEO compensation in firms that previously did not meet the independence requirements but after the newly introduced rules did meet the requirements to have decreased by approximately 15%. This result strongly indicates that there is a negative relationship between board independence and CEO compensation.

However, Guthrie, Sokolowski, and Wan (2012) revised the research by Chhaochharia and Grinstein (2009) and found that their results were heavily biased due to two outliers. After removing these outliers, there was no significant relationship visible anymore. Moreover, four years later than the earlier mentioned research by Core et al. (1999), Wan (2003) performed identical research based on a later time period and found only a very weak relationship between board independence and CEO compensation. Additionally, Fernandes (2008) investigated the relationship for Portuguese firms and found that one-tier boards with more (independent) non-executive directors pay higher CEO compensation. The results found by Guthrie et al. (2012), Wan (2003), and Fernandes (2008) cast doubt on the effectiveness of independent directors in corporate governance and more specifically in setting the CEO compensation. Since previous literature is ambiguous on the effect of director independence on CEO compensation, we formulate our predictions as if we do not expect there to be a relationship between the two.

2.3.10 CEO duality

Lastly, several researchers argue that CEO duality should be regarded as a board characteristic that could have a possible effect on CEO compensation (Boyd, 1994; Core et al., 1999; Adams & Ferreira, 2009). CEO duality occurs when the CEO of a company is also the chairman of the board of directors of that company. Duality is generally assumed to distort arm's-length bargaining since the CEO is now part of both parties in the bargaining process (Finkelstein & D'aveni, 1994). Moreover, in his role as chairman, he is the person to ultimately accept or decline his own (CEO) compensation package. This gives the CEO extensive managerial power and allows him to push for a self-optimizing remuneration package (Hambrick & Finkelstein, 1987).

In accordance with this theory, among others, Boyd (1994), Core et al. (1999), and Adams and Ferreira (2009) find positive relationships between CEO duality and CEO compensation. Based on these unambiguous results, CEO duality is therefore expected to have a positive effect on the level of compensation allocated to the CEO. However, it should be mentioned that this prediction is based on previous literature that investigated the role of CEO duality in a purely one-tier board context. Since it can be expected that overlapping roles are more likely to occur in one-tier boards than in two-tier boards, the question remains whether we will find cases of CEO duality in two-tier structured Dutch firms at all.

2.4 Conclusion

To conclude. Throughout the years we have seen an increased interest in the relationship between the board of directors and CEO remuneration. Both legislators and researchers emphasize the importance of having the right set of board characteristics in order for boards to make good corporate governance (remuneration) decisions. Previous literature has found a variety of board characteristics that have an effect on the amount of compensation allocated to a CEO: board size, board age, board tenure, board financial expertise, multiple directorships, board meetings, board gender diversity, board nationality diversity, board independence, and CEO duality. In this study, the aforementioned set of board characteristics will be used as a proxy for the quality of Dutch corporate governance. The next chapter will discuss how the relationship between the board characteristics and CEO remuneration will be analyzed.

3. Data and methodology

It can be concluded from the established literature that the choice of method that is used to test the relationship between board characteristics and corporate governance depends on the specific context of the research. Since this research focusses on multiple board characteristics, it is important to apply a research method that is able to measure the features of each specific board characteristic. Moreover, the model should account for the multiple layers of fixed effects that arise in this context. For this research, it is therefore chosen to use a multi-layered fixed effects regression model. In this chapter, the methodology applied in this research will be discussed in more detail. Furthermore, the data gathering process, the dependent and independent variables, and the descriptive statistics will be elaborated.

3.1 Methodology

The basis for the methodology applied in this research is formed by Core et al. (1999). They were one of the firsts and one of the few that investigated the effect of multiple board characteristics on executive remuneration in a single model. They applied a simple multiple regression under the strong assumption that the regression coefficients were assumed to be the same across firms and over time. They partially controlled for potential industry and time period differences by incorporating indicator variables to capture mean shifts for the dependent variable (Core et al., 1999). Furthermore, they manually controlled for economic determinants (e.g. revenue, return on assets, stock return) and ownership structure (e.g. stocks owned by the CEO, outside blockholder presence).

Nonetheless, this approach should be considered incomplete as it (partially) ignores the existence of firm-specific and time-specific fixed effects on executive remuneration. In this context, firm fixed effects are unobservable effects on executive remuneration of firm-specific variables that are time-invariant but differ across firms, such as corporate culture, corporate strategy, or complexity of the CEO's tasks within a specific firm (Conyon, 1997; Adams & Ferreira, 2009; Chhaochharia & Grinstein, 2009). Time fixed effects are unobservable effects on executive remuneration of time-specific variables that are constant across firms but that differ over time, such as technology shocks, the occurrence of an economic downfall, or a society's resistance against excessive remuneration (Bebchuck & Grinstein, 2005). When examining panel data of multiple firms in multiple time periods, not or partially taking into account firm and time fixed effects results in a so-called 'omitted variable bias'. This means that the model fails to include relevant explanatory variables which causes an over- or underestimation of the key parameters. To prevent this from happening, it is therefore advised to perform a fixed effects analysis.

However, since there are multiple types of fixed effects in this context – firm fixed effects and time fixed effects – a simple fixed effects model won't be sufficient. When controlling for only one type of fixed effects, you ignore the possible simultaneous correlation of residuals both across firms and over time (Cameron et al., 2012). This would result in misleading underlying parameters and overestimated t-statistics. Therefore, it is important to apply a multi-layered fixed effects model that simultaneously controls for unobserved firm-level heterogeneity and common time-level heterogeneity that jointly affect the level of total compensation. This model clusters the standard errors by company and year (multiple cluster dependence), which results in a more robust inference on the key parameters (Cameron et al., 2012).

For this research, three different multi-layered fixed effects regressions will be performed to test the relationship between board characteristics and the amount of CEO compensation. Each of the regressions comprises a different dependent variable; total compensation, variable compensation, and fixed compensation. For each of these types of compensation, the model regresses the natural logarithm of compensation to the ten board characteristics while controlling for CEO characteristics, firm characteristics, firm fixed effects, and time fixed effects. This translates to the following formulas:

1) $$\ln(Fixed\ Compensation_{it}) = \alpha + \beta_1\ Board\ Characteristics_{it} + \beta_2\ CEO\ characteristics_{it} + \beta_3\ Firm\ characteristics_{it} + \varepsilon_{it},$$

2) $$\ln(Variable\ Compensation_{it}) = \alpha + \beta_1\ Board\ Characteristics_{it} + \beta_2\ CEO\ characteristics_{it} + \beta_3\ Firm\ characteristics_{it} + \varepsilon_{it},$$

3) $$\ln(Total\ Compensation_{it}) = \alpha + \beta_1\ Board\ Characteristics_{it} + \beta_2\ CEO\ characteristics_{it} + \beta_3\ Firm\ characteristics_{it} + \varepsilon_{it},$$

Where $Fixed\ Compensation_{it}$, $Variable\ Compensation_{it}$, and $Total\ Compensation_{it}$ are the amounts of fixed, variable, and total compensation allocated to a CEO of a certain firm *i* at time *t,* respectively. In accordance with Core et al. (1999), the natural logarithm of compensation is used to control for skewness and heteroskedasticity. $Board\ Characteristics_{it}$ represents the ten board characteristics of a certain firm *i* at time *t*, $CEO\ Characteristics_{it}$ includes the two types of individual CEO characteristics (CEO age and CEO tenure) of a certain firm *i* at time *t*, and $Firm\ Characteristics_{it}$ represents the size and performance of a certain firm *i* at time *t*, measured by revenue, Return On Assets (ROA), and Earnings Per Share (EPS). Where the residual ε_{it} is clustered by firm and year.

3.2 Data

3.2.1 Sample and data gathering

The underlying aim of this research is to examine the quality of Dutch corporate governance. As we have seen in section 2.2.2, the Dutch Corporate Governance Code applies to public firms who have their statutory seat in the Netherlands and whose shares are traded on a regulated market. In constructing a sample for this study, it is therefore important to select companies that meet both requirements. Annual research done by Elsevier in collaboration with Bureau van Dijk (Dijkstra, Jongsma, Heijn, & Van den Hout, 2020), shows that the vast majority of companies meeting both requirements are either listed on the Amsterdam Exchange Index (AEX) or on the Amsterdam Midcap Index (AMX). For this reason, it is decided to use a sample consisting of the 37 largest two-tier structured Dutch public companies that were either listed on the AEX or on the AMX in 2019 (Appendix 1). Originally the AEX and AMX compile a total of 50 companies, however, nine firms are excluded because they did not hold their statutory seat in the Netherlands and one company is excluded because it was first listed in 2019. Moreover, Unilever, OCI, and Altice Europe NV are excluded from the sample because they adopt a one-tier board structure (Appendix 2). The 37 companies are investigated over the time period 2013-2019, which after eliminating missing values results in a total of 235 firm year observations.

The research question addressed in this study requires information about the remuneration of the CEO and the characteristics of the supervisory board for each of the 37 Dutch firms. The data on CEO remuneration was manually gathered from company annual reports and company remuneration reports. Information on the individual director characteristics and general board characteristics was gathered from company annual reports and company corporate governance reports. Furthermore, the website www.managementscope.nl was consulted to gather complete data on the financial expertise and the additional directorships of a director. In the few cases when the above-mentioned documents were not sufficiently informative, the official company's website was consulted to gather the missing information. Additionally, data to control for the characteristics of the CEO was gathered from company annual reports. Lastly, in order to control for firm characteristics, financial company data was gathered from Compustat Global.

3.2.2 Variables

Based on the previously discussed literature, multiple variables have been constructed from the gathered data. In this section, the definitions of the CEO compensation variables, the board of director characteristics variables, the CEO characteristics variables, and the firm characteristics variables will be discussed accordingly.

Early research, before 2000, mainly focused on testing the effect of board characteristics on either total CEO compensation or on cash compensation (salary + bonus) (Boyd, 1994; Hallock, 1997; Core et al., 1999). The reason for this was that early corporate governance rules did not oblige companies to disclose full information on the different components of a CEO's remuneration package and therefore only a rough distinction between cash and other compensation could be made. However, throughout the years, companies have become more and more transparent on their CEO's remuneration packages which allows for making clearer distinctions between different components. Moreover, there is increasing interest from shareholders in the variable component of CEO remuneration that is used to align the interests of CEOs and shareholders. Therefore, today's research often distinguishes between fixed remuneration and variable remuneration. In accordance with this development, this study examines the effects of board characteristics on fixed remuneration, variable remuneration, and total remuneration.

According to Fernandes (2008, p. 4), "fixed remuneration consists of monthly, regular, and periodical remuneration with an invariable amount, paid during the year". The fixed component used in this research exists of salary, pension allowances, and other benefits that a CEO received during a year. The variable remuneration consists of payments that are related to a set of individual and company performance indicators (Fernandes, 2008). The variable component used in this research exists of short-term incentive payments (STI: bonus) and long-term incentive payments (LTI: restricted shares, performance shares, and options), excluding severance payments. Accordingly, total CEO remuneration consists of salary, STI, LTI, pension allowances, and other benefits. All remuneration components are measured based on the costs incurred under IFRS accounting standards as disclosed in the annual reports. Consistent with previous research (Finkelstein & Hambrick, 1989; Core et al., 1999; Fernandes, 2008), the natural logarithm of compensation is used to reduce heteroskedasticity problems.

With regard to board characteristics, ten different variables have been constructed. A *CEO duality* dummy variable has been created which takes on a value of 1 if a company's CEO is also the chairman of the supervisory board. *Board size* is measured by the total number of directors on the board (Core et al., 1999). Furthermore, *board independence* is measured by the number of independent directors as a percentage of board size (Fernandes, 2008). A director is considered independent when he or she meets the independence criteria laid down in the Dutch Corporate Governance Code. *Board age* represents the average age in years of the directors on the board (Adams & Ferreira, 2009). *Board tenure* captures the average time in years that the directors of the board are in their function as director (Vafeas, 2003). The *busy director* variable is measured by the percentage of 'busy directors' of the total number of directors on the board. In accordance with Core et al. (1999), a director can be considered

busy when he holds three or more additional (non-executive) board seats in publicly listed companies. The *financial expert* variable represents the percentage of board members that can be considered a finance expert. In line with Güner et al. (2008), a director can be classified as a finance expert when he has previous or current experience as an executive in a financial institution (bank, insurance company, pension fund, or investment company), as a financial executive (Chief Financial Officer, accountant, treasurer, or Vice President of finance), or as a professor in finance (finance, economics, accounting, or business). The *board meetings* variable denotes the number of actual board meetings held during the year (incl. conference calls) (Xie et al., 2003). To account for gender diversity, a *women* variable has been constructed which measures the number of female directors as a percentage of board size (Lucas-Perez et al., 2015). Lastly, the *international* variable measures the percentage of non-Dutch directors on the board (Randøy et al., 2006).

Furthermore, several control variables have been constructed to control for CEO and firm characteristics. With regard to CEO characteristics, *CEO age* measures the age of the CEO in the relevant examined year (Brick, Palmon, & Wald, 2006). Furthermore, *CEO tenure* represents the number of years the CEO has been CEO of the investigated firm (Brick et al., 2006). Concerning firm characteristics, firm size and complexity are controlled for by including the natural logarithm of total *revenue* (Core et al., 1999). Moreover, *Return On Assets (ROA)* and *Earnings Per Share (EPS)* are used to control for firm performance (Core et al., 1999).

3.2.3 Descriptive statistics

A detailed overview of the descriptive statistics of the aforementioned variables can be found in Table 1. Data has been collected on 37 companies for the period of 2013-2019, resulting in a total of 238 observations. For the EPS variable, three observations are missing, resulting in a final sample size of 235 observations that are used in the regression analysis. With regards to CEO compensation, we see that the average variable compensation of ≈ €1,4 million is higher than the average fixed compensation of ≈ €1,1 million, which is in line with the trend of increased use of 'pay-for-performance'. The average total CEO compensation amounts to approximately €2,5 million, with the least and most earning CEO receiving an amount of €408.000 (Just Eat Takeaway) and €9,4 million (Heineken), respectively.

Concerning board characteristics, remarkably, but as expected for two-tier boards, not a single CEO holds the position of chairman of the supervisory board. Moreover, the average board size is between six and seven directors. Of these directors, an average of six can be qualified as independent under the strict requirements of the Dutch Corporate Governance Code. This relatively high average indicates that the great emphasis placed on independence in the Code results in a high compliance rate. Furthermore, the average age of a board is 63 years and the average tenure of the directors is approximately five years. Moreover, on

average, a board contains one director who holds more than three additional board seats and almost four directors who qualify as a financial expert. Then, we see that the average board meets ten times a year, with the board of Akzo Nobel denoting the maximum by meeting 38 times in 2017. Furthermore, there are on average two women on the board who represent approximately 25% of the average total board size. Although this does not meet the Dutch legislator's diversity target of 30%, it gets close. Moreover, an average of three internationals is present on the board, which represents a fair amount of nationality diversity.

With regard to CEO characteristics, the average CEO is 56 years old and has a tenure of approximately eight years. Noteworthy is that Jeremy Lewis is already 29 years in his role as CEO of Eurocommercial. Concerning firm characteristics, the average revenue is more than €9 billion. This high average is caused by some very large firms, such as Ahold Delhaize, ING Group, and Aegon. The average ROA is 3,35% and the average EPS is €1,72. Lastly, the relatively high standard deviations of total compensation, variable compensation, and fixed compensation are caused by the large differences in compensation levels between the largest firms listed on the AEX and the smallest firms listed on the AMX. The same applies to revenue. Therefore, the natural logarithms of these variables will be used in the regression analysis.

Table 1 Descriptive statistics

Variables	N	Mean	SD	Min	Max
CEO Compensation					
Total compensation (in thousands)	238	2518,5	1824,954	408	9480
Variable compensation (in thousands)	238	1442,3	1530,671	0	7315
Fixed compensation (in thousands)	238	1076,2	572,527	94,6	3442
Board Characteristics					
CEO duality (dummy)	238	0	0	0	0
Board size (#)	238	6,46	1,754	3	14
Board independence (#)	238	5,92	1,794	2	14
Board age (years)	238	62,58	4,207	47,8	72,3
Board tenure (years)	238	5,21	1,855	1	11,2
Busy director (#)	238	1,13	1,099	0	5
Financial expert (#)	238	3,50	1,738	0	10
Board meetings (#)	238	9,53	4,220	3	38
Women (#)	238	1,58	1,027	0	4
International (#)	238	2,59	1,952	0	10
CEO Characteristics					
CEO age (years)	238	55,9	5,877	39	74
CEO tenure (years)	238	7,5	5,929	1	29
Firm Characteristics					
Revenue (in millions)	238	9380,2	13841,447	6,8	67344
ROA (%)	238	3,35	8,481	-48,11	67,81
EPS (in Euro)	235	1,72	2,288	-5,65	16,64

4 Regression results

Based on the final dataset of 235 observations, three multi-layered fixed effects regressions are performed to study the relationship between board characteristics and CEO remuneration. In this chapter, the results of each of the multi-layered fixed effects analyses will be discussed in more detail.

4.1 General remarks

Columns one, two, and three of Table 2 show an overview of the coefficient estimates of the multi-layered fixed effects regressions on total compensation, variable compensation, and fixed compensation, respectively. For each type, the natural logarithm of compensation is regressed on the board characteristics and the earlier mentioned CEO related and firm related control variables. Since the natural logarithm of compensation is used as the dependent variable, care should be taken when interpreting the coefficients. Formula 4 can be consulted to calculate the percentage effect of a one-unit increase in the individual board characteristic on CEO compensation.

4) $(\exp(\beta) - 1) * 100$

Additionally, care should be taken when interpreting the effect of revenue as this variable is the only independent variable presented in a natural logarithmic form. Formula 5 can be consulted to calculate the percentage effect of a 10% increase in revenue on CEO compensation.

5) $\left(1{,}1^{\beta} - 1\right) * 100$

Furthermore, when looking at the results at first instance, it immediately stands out that the CEO duality dummy is omitted in all three analyses. The CEO duality dummy is not taken into account because not a single firm in the sample employs a CEO who is also the chairman of the supervisory board. As mentioned before, this finding might be explained by the presence of a two-tier board structure in which there is a strict separation between the management board and the supervisory board. This strict separation makes it less likely to have CEO duality in a two-tier board than in a one-tier board where directors are united in a single board and where functions may sometimes overlap. Additionally, the Dutch Corporate Governance Code provides a principle which states that the chairman of the supervisory board should be independent of the management board (DCGC, 2016, p. 21). This finding proves a high compliance rate with this principle.

Table 2 Multi-layered fixed effects regression results

Variables	ln(TotalCompensation)	ln(VariableCompensation)	ln(FixedCompensation)
Board Characteristics			
CEO duality	Omitted	Omitted	Omitted
Board size	0.152***	0.556*	0.047*
	(0.039)	(0.230)	(0.020)
Board independence	-0.240	0.314	-0.054
	(0.354)	(2.094)	(0.322)
Board age	0.008	-0.057	0.050*
	(0.014)	(0.133)	(0.021)
Board tenure	0.051**	0.293	-0.003
	(0.020)	(0.255)	(0.020)
Busy director	0.508*	3.600*	-0.023
	(0.260)	(1.829)	(0.271)
Financial expert	-0.236	-1.361	0.039
	(0.150)	(1.549)	(0.193)
Board meetings	-0.026***	-0.317**	-0.005
	(0.005)	(0.100)	(0.006)
Women	0.243	1.799	0.722
	(0.274)	(2.554)	(0.428)
International	0.665**	4.451**	-0.022
	(0.218)	(1.741)	(0.179)
CEO Characteristics			
CEO age	0.005	-0.031	0.002
	(0.012)	(0.082)	(0.005)
CEO tenure	0.005	-0.056	0.014*
	(0.014)	(0.043)	(0.006)
Firm Characteristics			
ln(Revenue)	0.041	-0.788**	0.174***
	(0.027)	(0.272)	(0.028)
ROA	1.158	10.311*	0.027
	(1.020)	(4.777)	(0.288)
EPS	-0.006	-0.262	-0.014
	(0.022)	(0.170)	(0.014)
Constant	11.757***	31.454**	6.288***
	(0.964)	(9.105)	(1.669)
Observations	235	235	235
R-squared	0.615	0.419	0.678

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

4.2 Total compensation results

With regard to total compensation, we find several board characteristics to be significantly related to CEO compensation. In accordance with Core et al. (1999), we see a significant positive effect of board size, indicating that larger boards allocate higher amounts of remuneration to their CEOs. This finding is in line with the dominant theory that larger boards are less effective in monitoring management due to communication, coordination, and organization problems (Yermack, 1996; Jensen, 1993).

Furthermore, as expected, a significant positive effect is found for board tenure. The positive coefficient suggests that boards with a high average director tenure give their CEOs significantly more compensation than boards with lower average tenures. This finding corresponds with the 'management friendliness theory', indicating that directors with long tenure are more likely to get affiliated with management which makes them less likely to strictly control management (Vafeas, 2003; Sapp, 2008).

Additionally, a significant positive relationship is found between the number of busy directors and total CEO compensation, suggesting that the presence of more busy directors (directors who hold three or more additional board seats) results in higher amounts of remuneration paid to the CEO. This finding supports the 'busy director theory' which implies that busy directors are less effective monitors as they have to spread their scarce time and attention over multiple boards (Lipton & Lorsch, 1992; Core et al., 1999; Sapp, 2008).

Furthermore, to my knowledge, this study is one of the firsts to investigate the direct relationship between the number of board meetings and CEO remuneration. A highly significant negative effect is found, which indicates that more frequently meeting boards provide their CEOs with lower amounts of compensation. This finding argues in favor of Vafeas' (1999) theory that directors who participate in boards that meet more frequently are more likely to perform their monitoring duties in accordance with the shareholders' interest.

Moreover, a significant positive relationship is found between nationality diversity and CEO remuneration. Contrary to our expectations, we see that more foreign directors on the board results in higher executive pay. This finding contradicts the widely held idea – also advocated by the Dutch legislator – that board diversity contributes to good corporate governance decision-making. Moreover, it contradicts the theory that a more diversified board would be more independent and therefore be better in restricting CEO compensation (Ruigrok et al., 2007).

Lastly, a non-significant result is found for board independence, which can be explained by all boards being highly compliant with the independence principles provided in the Code. Furthermore, despite the Dutch legislator arguing for more women on the board, no significant relationship was found between the number of women on the board and CEO compensation. Neither, an effect was found for board age and financial expertise, nor for the control variables.

4.3 Variable compensation results

With regard to variable compensation, several interesting effects are found. Similar to the results on total compensation a significant negative effect is found for the number of board meetings. Moreover, similar significant positive effects are found for board size, the number of busy directors, and the number of internationals.

Additionally, two effects have been found on firm characteristics. First, a significant negative relationship is found between firm revenue – used to measure firm size and complexity – and variable compensation. This is a surprising result since most previous research found evidence for a positive relationship between firm size and CEO compensation (e.g., Zhou, 2000; Sapp, 2008). The dominant idea is that large firms are often more complex and therefore demand higher-quality CEOs who are paid more than lower quality CEOs in smaller companies (Smith Jr & Watts, 1992; Murphy, 1999). Findings in previous literature are however often based on total compensation and not on variable compensation. The reverse effect of revenue on variable compensation could possibly be explained by recent scandals with regards to variable pay components in large public firms (e.g. Enron, Worldcom, Ahold). These scandals have attracted a lot of media attention, causing large firms to be strictly monitored by different media outlets. The characteristic of the popular media is that most attention will be drawn to the largest firms with the most money while the smaller firms remain in the shadow (Desai, 2016). The boards of these large firms might therefore feel more public pressure than the boards of smaller firms to restrict the variable compensation of their CEOs (Core, Guay, & Larcker, 2008).

Secondly, a significant positive relationship is found between ROA – used to measure firm performance – and variable compensation. This finding makes sense since many firms link their CEO's variable compensation to the financial performance of the firm. Therefore, when the financial performance of a company increases, an increase in CEO compensation can logically be expected. Moreover, this finding can be seen as counterevidence for the suggestion that managers abuse their managerial power to get paid without performing (Bebchuck & Fried, 2009). On the other hand, no significant positive relationship is found between EPS and variable compensation, which in turn casts doubts on whether CEOs are paid for the right type of performance.

Lastly, no significant effects are found for board size, board independence, board age, board tenure, board financial expertise, and the number of women present on the board. Neither are results found for CEO age and CEO tenure.

4.4 Fixed compensation results

Lastly, limited significant effects of board characteristics are found with regards to fixed compensation. Similar to total and variable compensation, board size is found to have a positive effect on fixed compensation. Additionally, the only board characteristic that seems to be significantly related to the amount of fixed compensation is board age. A significant positive effect is found, indicating that older boards pay their CEOs relatively more than younger boards. This effect is in line with the results found by Core et al. (1999), who argue that older directors might be less critical and more affiliated with the CEO and therefore less effective in restricting managerial pay.

Furthermore, we see a significant positive effect at the 10% level for the control variable CEO tenure. This effect could logically be expected since it is common for firms to pay employees a higher base-pay for each year they stay longer in the firm (pay for promotion and loyalty). In his research, Crumley (2008) finds a similar positive effect of CEO tenure on salary for CEOs in the US banking industry.

Additionally, a highly significant positive effect is found for firm revenue. Contrary to the negative effect of revenue on variable compensation, this positive effect is in line with the expectations. As mentioned earlier, larger firms are often more complex and therefore demand higher-quality CEOs who are consequently paid more (Smith Jr & Watts, 1992). The complexity and size of a firm are ex-ante determined fixed variables and are therefore more likely to be represented/valued in the fixed compensation component than in the variable compensation component which mainly depends on ex-post variable performance indicators. This theory explains why it is more likely that we find revenue to have a significant positive effect on fixed pay than on variable pay. However, it does not explain why we find a significant negative effect on variable pay.

Lastly, in the analysis of fixed remuneration, no effects are found for board size, board independence, board tenure, number of busy directors, board financial expertise, board meetings, women diversity, or international diversity. This suggests that the fixed compensation component is only modestly affected by the characteristics of the board.

5 Conclusion and discussion

5.1 Conclusion

Due to several major corporate governance scandals in the early 2000s, the excessiveness of managerial compensation and the intrinsic motivation behind remuneration policies have become the subject of debate in many countries. The question got raised why firms pay such high amounts of compensation to their CEOs? Previous academic literature suggests that the characteristics of the board of directors play a significant role in the determination of managerial compensation. Throughout the years, an extensive amount of research has been performed on the effects that board characteristics have on managerial remuneration (e.g. Boyd, 1994; Hallock, 1997; Core et al., 1999; Sapp, 2008; Fernandes, 2008). Significant results were found for board characteristics such as board size, board independence, board tenure, board age, board financial expertise, etc.

However, most of the prior literature is based on corporations in Anglo-Saxion countries where a one-tier board structure regime prevails. Only limited research has been done on the relationship between board characteristics and CEO compensation in two-tier structured companies. The strict separation of executive directors and non-executive directors in a two-tier board could have interesting implications for the role that board characteristics play in the determination of CEO remuneration Therefore, this study investigates the effect of board characteristics on CEO compensation for the 37 largest two-tier structured Dutch companies listed on the AEX and AMX for the period of 2013-2019.

Three multi-layered fixed effects regressions have been performed on the natural logarithms of total compensation, variable compensation, and fixed compensation, respectively. The regression on total compensation shows that an increase in board size, board tenure, the number of busy directors, and the number of internationals on the board results in a significantly higher amount of total compensation allocated to the CEO. Furthermore, an increase in the number of board meetings is found to have a negative effect on both total compensation and variable compensation. Moreover, similar to total compensation, significant positive effects on variable compensation are found for board size, the number of busy directors, and the number of internationals on the board. Additionally, in line with our expectations, we find a positive relationship between firm performance (ROA) and variable compensation (pay-for-performance). Surprisingly, a negative effect was found for firm size measured by the natural logarithm of revenue. Furthermore, only limited results were found with regards to fixed compensation. The only board characteristics having a significant explanatory power are board size and board age (both positive). Lastly, both CEO tenure and total revenue are found to have a positive effect on fixed compensation.

Based on the results found in this study, it can be concluded that a variety of board characteristics has an effect on the amount of compensation allocated to the CEO of a two-tier structured company. If we compare our results to prior literature on one-tier structured boards, we see that comparable significant effects are found. Despite the fact that this study might be too limited to conclude that the Dutch corporate governance regime is of good quality, we can argue that the Dutch legislator is putting in a great effort in regulating board characteristics that are found to have a positive effect on CEO remuneration.

5.2 Discussion

In this last section, the current research will be critically examined and several recommendations for further research will be discussed.

First of all, this study examines the effects of a broad set of board characteristics on CEO remuneration. However, this set is not exhaustive. Prior literature suggests additional characteristics to have possible explanatory power in the CEO pay-setting process. For example, it is argued that a relationship exists between the level of CEO compensation and the level of individual director compensation. Brick et al. (2006) find CEO compensation to be positively affected by an increase in the amount of the compensation received by the board directors themselves. Furthermore, several researchers have studied the relationship between CEO compensation and board stock ownership (e.g. Finkelstein & Hambrick, 1989; Boyd,1994). Boyd (1994) finds evidence that CEO remuneration increases when a board's stock ownership in a firm increases. Due to time constraints, these factors have not been taken into account in this study. However, to get a more complete view on the effect of board characteristics on CEO compensation, it could be of added value to expand the current analysis by including the aforementioned board characteristics.

Secondly, the compensation components used in this research are measured based on the costs incurred under IFRS accounting standards as disclosed in the annual reports. This value does however not always represent the actual value of compensation that is earned or received by the CEO in a specific year. The difference between those values can be explained by the way in which the long-term variable compensation (performance shares and options) is valued. Some studies use the IFRS cost value, some use the grant value, some use the vesting value, etc. Each method has its advantages, but financial economists argue that the most correct method to value long-term variable compensation is by applying the Black and Scholes formula. Due to the lack of required information provided by some company annual reports, this method has not been applied in this study. To get the fairest value of earned CEO compensation it is however recommended to use the Black and Scholes valuation method.

Thirdly, the sample used in this study is relatively small. To get a more complete view of the effects of board characteristics on CEO remuneration in the Netherlands, the 25 companies that are listed on the Amsterdam Small Cap Index (AScX) could be included in the analysis. Care should be taken with regards to the large differences in company size and amounts of remuneration that could arise by implementing these relatively smaller firms. Moreover, it would be interesting to expand the sample with (foreign) companies that apply a one-tier board structure, to be able to make a direct comparison of the effects of board characteristics between one-tier structured companies and two-tier structured companies.

Lastly, in addition to firm fixed effects and time fixed effects, it is likely that there are both unobserved fixed effects associated with the individual directors and the CEO (Gregory-Smith, 2012). These unobserved fixed effects might include the director's/CEO's suitability for the job, their intrinsic motivation, their network, their attitude towards risk, their reputation, etc. (Conyon, Peck, & Sadler, 2000). If any of these variables would be correlated with the explanatory variable used in this study, the coefficient estimates might not be robust (Conyon et al., 2000). When building forth on this study, this limitation should be taken into account.

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Appendix

Appendix 1 List of companies in sample

ID	Company	Stock Exchange
1	ABN AMRO Bank NV	AEX
2	Adyen	AEX
3	Aegon	AEX
4	Ahold Delhaize	AEX
5	Akzo Nobel	AEX
6	ASM International	AEX
7	ASML Holding	AEX
8	ASR Nederland	AEX
9	DSM	AEX
10	Heineken	AEX
11	IMCD	AEX
12	ING Group NV	AEX
13	Just Eat Takeaway	AEX
14	KPN	AEX
15	NN Group	AEX
16	Philips	AEX
17	Randstad NV	AEX
18	Wolters Kluwer	AEX
19	Aalberts NV	AMX
20	Arcadis	AMX
21	Bam Group	AMX
22	Basic-Fit	AMX
23	BE Semiconductors	AMX
24	Boskalis Westmin	AMX
25	Corbion	AMX
26	Eurocommercial	AMX
27	Flow Traders	AMX
28	Fugro	AMX
29	Grandvision	AMX
30	Intertrust	AMX
31	NSI NV	AMX
32	Pharming Group	AMX
33	PostNL	AMX
34	SBM Offshore	AMX
35	Signify NV	AMX
36	TKH Group	AMX
37	Vopak	AMX

Appendix 2 List of excluded companies

ID	Company	Stock Exchange	Reason
1	ArcelorMittal	AEX	Non-Dutch
2	Galapagos	AEX	Non-Dutch
3	RELX	AEX	Non-Dutch
4	Royal Dutch Shell	AEX	Non-Dutch
5	Unibail Rodamco	AEX	Non-Dutch
6	Air France - KLM	AMX	Non-Dutch
7	Aperam	AMX	Non-Dutch
8	Fagron	AMX	Non-Dutch
9	WDP	AMX	Non-Dutch
10	Altice Europe NV	AMX	One-tier
11	Unilever	AEX	One-tier
12	OCI	AEX	One-tier
13	Prosus	AEX	First listed 2019