



Supervisory Board Compensation:

Paying for Complexity

An empirical investigation of the aspects influencing
supervisory board pay in the Netherlands

Author:

S. van der Meer

Supervisor:

Dr. K. van Veen

Co-assessor:

Prof. Dr. C.L.M. Hermes

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University of Groningen

Faculty of Economics and Business

Department of International Business & Management

ABSTRACT

This thesis investigates the development of the roles and responsibilities of the supervisory board in the Netherlands and the aspects influencing the supervisory board compensation. Ten variables reflecting the complexity involved in the role of the supervisory board are constructed. Using a data sample comprising 74 different Dutch listed companies, and covering a period of 2004 until 2007, annual multiple regression analyses are performed. The evidence indicates that supervisory board members are only to a certain extent compensated for the complexity in their job. Of the ten variables reflecting complexity, only the proxies for firm size, the present subcommittees, supervisory board size and the average number of additional board memberships appear statistically significant over the years. Lastly, although an increase in supervisory board compensation is noticeable over the years, we find inconclusive evidence for the potential adjustment of supervisory board pay to the changes in the constructed complexity variables linked to the supervisory board's duties.

Sanne van der Meer
meer.s.vander@gmail.com
Student number: 1384953

PREFACE

This thesis forms the conclusion of my Msc International Business & Management at the *University of Groningen*. The last six months, I have studied the development of the supervisory board and its compensation in the Netherlands.

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1. INTRODUCTION

“We have a two-tier board structure in the Netherlands, but due to the increasing involvement of the supervisory board’s chairman, we seem to be moving towards a one-and-a-half tier board structure and considering the differences in the compensation of the chairman of the one-tier and two-tier board, these differences are extraordinary”

(Annual General Meeting of Shareholders Akzo Nobel, 2008, p.34)¹

The traditional perspective of the supervisory board as a group of older, wise men who have won their spurs in the Dutch business environment and serve as supervisors and sparring partners for a firm’s management board nowadays is superseded. Although -at least in theory- this traditional supervisory board may seem a proper way to preserve and guide managers through the (management) issues of the day, supervisory boards have more than once failed in their supervising duties. Corporate scandals at multinationals (e.g. Enron, WorldCom and Ahold) in the beginning of this century and excessive amounts of executive compensation have startled societies throughout the world and made corporate governance, and the functioning of the supervisory board a focal point of public discussion. These events seem to indicate that supervisory boards face increasing difficulties in complying with the expectations of all stakeholders. Consequently, the events have led to a loss of confidence of society in corporate governance and have raised the question whether monitoring and supervision of the executives by the supervisory board is still effective and sufficient.

1.1. Dutch Corporate Governance

Confidence in the Dutch corporate governance structure and supervision also decreased at the beginning of this century. The public scrutiny was that the power balance between the supervisory board and the management board was unbalanced; the management board was said to be *too* dominant (Dutch Corporate Governance Code, 2003). In the public debate on corporate governance, the executive pay packages (including the excessively high variable compensation packages that were awarded to executives) have typically been important examples corroborating the public scrutiny towards these executives. The increasing transparency on the remuneration and the explanations given for these high pay levels and structures seem to have led to more negative public exposure and increasing public scrutiny on Dutch corporate governance. Therefore, particularly the last decade, developments in Dutch

¹ Mr. Karel Vuursteen, chairman of the remuneration committee of Akzo Nobel, substantiating the increase of the chairman’s compensation level at Akzo Nobel’s Annual General Meeting (AGM) on 22 April, 2008.

corporate governance accelerated and have changed the Dutch governance system, including the roles and responsibilities of the supervisory board noticeably (Peij, 2007).

1.2. Problem Statement

Both the current corporate governance discussion and academic research typically paid much attention to the developments in the role of the supervisory board. Yet, remarkably, whereas academic scholars have often researched the influence and developments of the supervisory board on corporate management and the executive compensation setting, very little attention has initially been given to the incentives of these supervisory board members. However, apart from the interesting developments in the executive pay packages, supervisory board compensation shows some interesting developments as well. And with society becoming increasingly aware of the importance of effective and adequate supervision of the management board, this topic gains more and more interest. Public opinion and corporate governance experts progressively stress the importance of an adequate reflection of this increasing complexity in the supervisory board compensation. For instance, the Advisory Committee on the Future of Banking (hereafter: Committee Maas)², that recently proposed recommendations on corporate governance in the banking sector supports this perspective. As stated in this Maas report: *“Holding a Supervisory Board Membership at a bank will take up a greater amount of time than was the case to date. Therefore the remuneration should be increased accordingly”* (Advisory Committee on the Future of Banks in the Netherlands, 2009, p.13).

Still, research on the supervisory board compensation in the Netherlands is predominantly limited to descriptive research on the development of the size and structure of supervisory board compensation, where the relation between the level of supervisory board pay and the potentially influencing aspects of the pay levels have been ignored (*PricewaterhouseCoopers*, 2007).

In addition, the exceptions that *have* studied the determinants of supervisory board compensation are predominantly based on companies operating in Anglo-Saxon countries (e.g. Unites States and United Kingdom) which make it difficult to generalise the implications of these researches. The corporate governance developments, board structures and compensation structures differ to such an extent that these results might lose their worth when applying them outside the Anglo-Saxon context.

² This Advisory Committee on the Future of Banks in the Netherlands was set up in November 2008 by the Netherlands Bankers' Association (*Vereniging van Banken*) and is also referred to as the 'Committee Maas', named after the chairman of the Committee Cees Maas

The interesting developments in the roles and responsibilities of the supervisory board and its compensation, and the relatively limited amount of existing research on supervisory board compensation form the principal motives to further explore the topic in this study.

The objective of this thesis is to provide additional general insights in the development of the supervisory board and its compensation in the Netherlands. However, in addition to merely describing the developments in the role of the supervisory board and its compensation separately, this thesis intends to relate these two areas and improve our understanding of the aspects influencing supervisory board compensation. It aims to explore whether, and to what extent, supervisory board pay is related to these aspects reflecting the increasing complexity of the supervisory board's duties. Furthermore, we attempt to identify future practical implications for policy makers as well. The following research question is formulated:

In what way have the roles and responsibilities of supervisory board and supervisory board compensation developed in the Netherlands, and what aspects influence the level of supervisory board compensation?

In order to answer this main research question, the following sub questions are formulated:

1. How have the roles and responsibilities of the supervisory board developed?
2. What potential influences on supervisory board compensation can be derived from existing literature?
3. How has the actual supervisory board compensation levels developed in the period 2004-2007?
4. To what extent does a significant relationship between the potential influences derived from the literature and the level of supervisory board compensation exist?

By formulating the research questions, the structure of the research is taken into account. The first three questions are answered by performing a literature study. This part serves as a theoretical analysis describing the developments in the supervisory board's roles and responsibilities and the development of supervisory board compensation (setting). It further explores existing executive- and supervisory board compensation literature in order to formulate hypotheses regarding the potential aspects influencing supervisory board compensation.

The empirical research that follows intends to answer the last sub questions. This empirical part serves as a reflection on our expectations established in the literature study. It explores the applicability of the created conceptual model and discusses our results in perspective of the existing. This is followed by the establishment of the practical implications of this research.

1.3. Contribution

This thesis intends to contribute to the existing supervisory board compensation literature in several ways. In general, it provides additional insights in the relatively limited amount of empirical research on the aspects influencing supervisory board compensation. Whereas existing literature concerning the supervisory board in the Netherlands is primarily focused on the composition of the board and the professionalization of the supervisory board roles, empirical research on how the developments influence their compensation is missing. This thesis attempts to extensively analyse the aspects potentially influencing the compensation paid to the supervisory board, by performing both a literature review and empirical research. Moreover, since existing empirical research is primarily based on data from companies operating in the U.S., studying supervisory board compensation based on a sample of companies with a two-tier board structure that operate in the Netherlands improves our understanding of supervisory board compensation setting in this rather different governance structure.

1.4. Thesis Structure

This thesis consists of two main parts; an extensive literature review and an empirical analysis on supervisory board compensation.

The literature review starts with exploring existing literature on the role of the supervisory board and examines the development of the supervisory board's duties and responsibilities in the broad context of (developments in) corporate governance. Subsequently, the current role of the supervisory board and the current compensation setting process of supervisory board pay is described. After describing the role and compensation of the supervisory board and the developments that have influenced these aspects, the literature review focuses on the existing compensation research. In order to determine possible determinants of supervisory board compensation, both research on supervisory board compensation and executive compensation is explored. As Hengartner (2006) states, even though existing research on supervisory board compensation is still in its infancy, the studies that did research director compensation often found that company characteristics as determinants of executive remuneration also explain supervisory board compensation. Therefore, reviewing both executive and supervisory board pay literature is anticipated to be relevant. The outcome of this literature review is a conceptual model of the potential aspects influencing the level of supervisory board compensation.

The second part of this thesis concerns an empirical analysis of supervisory board compensation. In this part, the changes in the compensation level and its components are described and the established conceptual model based on the literature study is empirically tested; the relationship between the hypothesized influencing aspects of supervisory board pay and the compensation level is examined.

2. THE DEVELOPMENT OF THE SUPERVISORY BOARD

In order to explain the changing role and responsibilities of the supervisory board, this chapter pays attention to the developments in corporate governance. Dutch corporate governance has experienced, and is in fact still experiencing, important institutional changes. These changes have had substantial consequences for the national institutional governance features and resulted in the institutions and corporate governance issues we nowadays know. In this chapter, special attention is given to the development of corporate governance in the Netherlands during the last decade. First, corporate governance in general and the origin of corporate governance are briefly described. Then, we will focus on corporate governance in the Netherlands and the role of the supervisory board. Last, the developments in corporate governance over the last decade are discussed, followed by a discussion of the influence these changes have had on role of the supervisory board.

2.1. Corporate Governance

2.1.1. Defining corporate governance

While the term ‘corporate governance’ before 1977 did not exist in the English language (Frentrop, 2002), corporate governance now plays a crucial role in business and society. Corporate governance is defined in many different ways. Schleifer & Vishny (1997) give the following description: “Corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment” (Journal of Finance, 1997, p.737). Whereas this definition is mainly concerned with the interest of the shareholders and relationship between the shareholders and management, the following definition of OECD (1999) provides a more comprehensive description, including all stakeholders concerned with corporate governance: "Corporate governance is the system by which business corporations are directed and controlled. The corporate governance structure specifies the distribution of rights and responsibilities among different participants in the corporation, such as, the board, managers, shareholders and other stakeholders, and spells out the rules and procedures for making decisions on corporate affairs. By doing this, it also provides the structure through which the company objectives are set and the means of attaining those objectives and monitoring performance" (OECD, April 1999).

Although the definitions of corporate governance may differ in scope, both definitions are based on the main condition underlying corporate governance, that is the separation of ownership and control in a firm, first pointed out by Berle & Means (1932). Separation of ownership and control in a firm may lead to

diverging interests between the firm's owners (i.e. the shareholders) and the firm's manager (Jensen & Meckling, 1976). The basic concern of corporate governance is how to align the interests of these two actors.

2.1.2. The origin of corporate governance

Ever since the establishment of firms financed by external capital, corporate governance and issues involved in corporate governance have been focal points of public debate. The origin of corporate governance issues in the Netherlands dates back four centuries to the East India Company (hereafter: VOC). This Dutch company was established in 1602 and attracted external capital by issuing shares to external investors in the Netherlands in order to finance the journeys overseas. This led to a separation of 'ownership' of the company by the investors, the so called participants, and 'control' by the managers that managed the business and journeys to Asia and created agency problems between these actors we still recognise today. The investors criticised the information asymmetry between the managers and them, disapproved of the fact that the investors had no say in the appointment of the managers and moreover, the investors had suspicions that the managers were serving their own interests more than those of the investors. By privately trading part of the goods that were imported by the VOC and selling them second hand, the managers personally profited from the VOC instead of creating profit and thereby value for the investors.

And, as the events that occurred in the last decade, nowadays the discussion regarding the right balance in -and structure of- the relation between ownership and control that was evident four centuries ago, still appears to be a relevant discussion.

2.2. Corporate Governance Models

In corporate governance, two prevalent governance structures exist, that is to say the one-tier board structure and a two-tier board structure. The one-tier board structure (also referred to as the monistic board structure) is a typical Anglo-Saxon governance model. This model is characterised by one collective board containing both executive and non-executive directors. Here, the division of management and control is not formally separated and the non-executive directors are usually much more involved in the daily corporate decision-making.

When considering corporate governance in the Netherlands, the second governance model, that is to say the two-tier board structure is most prevalent. This two-tier board structure is also referred to as a dualistic board structure, or the Rhineland model.³ In this two-tier board structure, two separate corporate bodies exist: the management board and supervisory board. The management board is responsible for the

³ Given the geographic location where this board structure is the prevalent board structure.

day-to-day management of the company and the supervisory board is responsible for the supervision and monitoring of the management board.

2.3. Role and Responsibilities of the Supervisory Board

The supervisory board is a corporate body that owes its existence to the specific characteristics of this Dutch governance system.

The duty of the supervisory board as admitted in Dutch Law is as follows: “The Supervisory Board has the duty to supervise the management of the Management Board and the general course of affairs in the Company and the business connected with it. The Supervisory Board assists the Management Board by giving advice. In performing their duties the Supervisory Board members shall act in accordance with the interests of the Company and the business connected with it”(art.2:140(2), Dutch civil code).

When performing its duties, the supervisory board is supposed to consider the interests of all stakeholders, and the members of the Dutch supervisory board are all presumed to be independent.

This specific independent character and the supervisory board’s position as most important corporate body in the governance model has initially been shaped by the ‘*structure regime*’-Act, introduced in 1971 in the Netherlands. The Act made the establishment of the supervisory board in a firm mandatory when a firm satisfied a number of criteria regarding the size of the firm.⁴

With this regulation, the power balance between the supervisory board and the shareholders was amended, resulting in the establishment of the supervisory board as being the ‘most influential’ corporate governance mechanism monitoring the management. The role of the supervisory board became a neutral and independent position; all board members were expected to consider the interests of the company and the stakeholders involved with this company. Furthermore, the board was expected to function independently from both shareholders and employees.

The changes in the supervisory board’s duties linked to the establishment of the Act encompassed granting the supervisory board certain responsibilities initially reserved for the Annual General Meeting of shareholders (AGM). The supervisory board gained the responsibility to for the appointment of management, final settlement of the firm’s annual financial statement and approval on important corporate decisions. Furthermore, appointment of supervisory board members by co-optation was established. This implies that the existing supervisory board members appoint potential new members of the supervisory board (Van het Kaar, 2005).

⁴ The structure regime applies to private limited companies and limited liability companies that (for at least 3 years) have an equity capital of at least € 16,000,000, more than 100 employees and has installed a works council (Van het Kaar, 2005).

2.4. Developments in Dutch Corporate Governance

Over the last decade, corporate governance in the Netherlands has experienced great processes of change. These changes have, for a large part, been shaped by the corporate governance codes in the Netherlands and the legal reforms that supported these developments.

2.4.1. Dutch corporate governance codes

The first independent committee investigating and structuring Dutch corporate governance is the Committee Peters, established in 1997 and named after the chairman of the committee Jaap Peters. The committee recognized the shareholder activism from institutional investors on the international stock markets and claimed that the increasing internationalization of the Dutch economy and the international debate on the existing shareholder influence were important reasons for setting up this committee. The committee published a corporate governance report that included 40 recommendations regarding good corporate governance and believed that “[...] *it is accountability and openness [...] which will benefit Corporate Governance in Dutch companies, many of which operate within an international context.*” (Corporate Governance, 1997, p.10). The committee’s report was set up as a self-regulation tool and did not suggest any legal reforms. Although the report by the committee Peters did not result in high compliance among Dutch companies, it did form the basis for future Dutch corporate governance (Frentrop, 2004).

In the beginning of the 21st century, the American corporate scandals, the Ahold scandal and the existing discussion on executive compensation led to the public opinion that Dutch corporate governance (again) had to be revised. The power balance between the supervisory board of the firm and its management board was said to be unbalanced; the management board was considered *too* overriding (Dutch Corporate Governance Code, 2003).

In March 2003, the Corporate Governance Committee (Committee Tabaksblat, named after the chairman of this committee as well) was installed. The Committee established the Dutch Corporate Governance Code (hereafter: the Code) consisting of principles of good corporate governance and best practice provisions, hereby taking into account the international corporate governance developments (e.g. the Combined Code in the UK). The main differences in the Code compared to the report of the committee Peters is that the principles and best practice provisions in the Code are described in more detail and the ‘comply or-explain’- approach (i.e. the requirement that the Dutch listed firms need to report whether they comply with the recommendations in the Code or otherwise explain the deviations from these recommendations) now has a legal basis in Dutch corporate law.⁵

⁵ With the establishment of the voluntary code of conducts regarding good corporate governance and this ‘comply-or-explain’-approach, the Netherlands followed the UK example. The British Cadbury Report (1992) was the first

Since 2005, the Monitoring Committee Corporate Governance, better known as the committee Frijns, named after its chairman Jean Frijns, published a report yearly in which the compliance of Dutch listed companies with the Code was evaluated. In addition, recommendations regarding the amendment of principles on specific aspects that still left much to be desired were proposed by the committee Frijns (Monitoring Committee Corporate Governance Code, 2008). This had led to the new version of the Dutch Corporate Governance Code that is published on 10 December, 2008 (also referred to as Code Frijns or Amended Code). In this code, more emphasis is placed on the duties of the supervisory board and its subcommittees and moreover, the supervisory board's roles and responsibilities in the executive pay setting process and in risk management of the company are enhanced.⁶

2.4.2. Legal reforms

The current corporate governance environment is not only established and altered by the Corporate Governance Codes, but by legal reforms as well. Important legal reforms are the modification of the Dutch *structure regime* and the modification of the legally approved governance structures for Dutch listed companies.

1. Amendment *Structure Regime*

In October 2004, a legal reform concerning the amendment of the Dutch *structure regime* was enacted. This modification partly restored the influence of the AGM on the management, by stating that the AGM is responsible for the approval of the company's annual financial statement again and therefore also determines the amount of dividend. Furthermore, it increased the influence of the AGM on the composition of the supervisory board. The AGM now has the formal right of appointment regarding potential new supervisory board members, after these potential supervisory board members are recommended by the supervisory board, and has the power to discharge the supervisory board members. In addition, the works council gained more influence on the composition of the supervisory board, since it now has the right to recommend one third of the supervisory board members. Furthermore, the amendment provides the legal ground for the aforementioned 'comply-or-explain'-principle of the Dutch Corporate Governance Code.

code of conduct and initiated the 'comply-or-explain'-principle. The choice for this self regulation approach instead of creating statutory measures is motivated as follows: "*Statutory measures would impose a minimum standard and there would be a greater risk of boards complying with the letter, rather than with the spirit, of their requirements.*" and additionally, this approach still allows for "[...]some flexibility in implementation"(Cadbury Report, 1992, p.12)

⁶ Recommendations among which increased involvement of the supervisory board with potential mergers or acquisitions and further specification of the roles and responsibilities of the remuneration committee is recommended (Best Practice III.5 and Best practice VI, Monitoring Committee Corporate Governance Code, 2008)

2. Amendment Governance Structure

Another legal reform that particularly influences the role and responsibilities of the supervisory board is the bill regarding the amendment of the corporate law, establishing the use of a one-tier board structure in Dutch corporate law, proposed in November 2008. The underlying reasons for the bill are the increasing internationalization of the Dutch market and the European integration leading to a growing need to enhance the attractiveness and practicability of the Netherlands as favourable place of establishment for companies. When this bill is accepted, it allows Dutch listed companies to choose between the one-tier governance structure and the traditional two-tier structure.⁷ This legal reform has great consequences for the accountability of the supervisory board and the allocation of the tasks between the management board and the supervisory board, since the non-executive directors in a one-tier structure typically have higher accountability and more intensified tasks.

2.5. The Supervisory Board: Changing Roles and Responsibilities

The role and responsibilities of the supervisory board have been influenced noticeably by these developments in corporate governance.

Concerning the legal reforms, the amendment of the *structure regime* in 2004 facilitated the influence and control by the shareholders more and limited the responsibilities of the supervisory board. And with the amendment of the governance structure that facilitates the use of a one-tier governance structure for Dutch firms, the quality of the management of the company, consequently the accountability for potential mismanagement becomes the responsibility of the total board -including both executives and non-executives- thereby increasing the accountability.

Generally, the developments in corporate governance have led to an increasing professionalization of the roles and responsibilities of the supervisory board. The amendments resulted in an expansion of the board's responsibilities and an increasing complexity of the board's tasks. First, the supervisory board has become more and more involved with the actual management of the company. Organisational changes such as mergers and acquisitions more and more often and the supervisory board is expected to be increasingly involved in these processes (Van Hezewijk and Peij, 2006). Consequently, these developments increased the work load and required knowledge and expertise of the board members. Second, as a result of the continuing globalisation of the business environment, Dutch supervisory boards increasingly face the challenge of balancing the Dutch expectations of good corporate governance with the expectations of their international shareholders, particularly the Anglo-Saxon shareholders.

⁷ Currently, the bill is accepted by the Council of Ministers and is submitted for approval to the Parliament.

Third, the corporate governance codes and corporate law have increased the rules of conduct regarding (the disclosure of) business practices and accountability of the supervisory board. Because of this, it has become easier for not only direct shareholders to monitor the functioning of the supervisory board, but made monitoring by all stakeholders possible, thereby increasing the public pressure and public expectations on supervisory board performance and increasing the (perceived) risk on loss of face for these members.

Particularly in view of the current financial crisis and collapse of several financial institutions, the trend in the corporate governance debate now seems to incline towards the importance of the stakeholder in the corporate governance environment. And since it is the supervisory board's legal duty is expected to consider all stakeholders involved with this company, an important duty and increasing responsibility is given to the supervisory board.

The enhanced responsibility was already noticeable in the updated Dutch Corporate Governance Code (2008), and the recently published report of the Committee Maas seems to put this increasing responsibility of the supervisory board further into practice. The in April (2009) published report, with 'restoring trust' in the Dutch bank sector as main focus, argues that society has lost confidence in the functioning of banks and the ethical behaviour of the managers at the banks. "These doubts are further fuelled by the high variable remunerations (bonuses) which used to be and on occasion still are awarded to bankers" (Advisory Committee on the Future of Banks in the Netherlands, 2009, p.7). Consequently, eight recommendations are established, specifying the additional requirements for the full supervisory board and its individual supervisory board members operating in the bank sector (e.g. the expertise, knowledge and composition). The Committee further recognizes the increasing work load and required expertise accompanying these recommendations and therefore recommends larger boards and a compensation level that adequately reflects the increasing complexity and amount of duties.

3. COMPENSATION SETTING PROCESS

This chapter discusses both executive pay setting and supervisory board pay setting separately. In 2002, the ‘Act on disclosure remuneration and share ownership management board and supervisory board’ was included in Dutch Law. This Act obliges the company to include the current remuneration policies and the actually granted remuneration to the management board members and supervisory members in its notes on the financial statements (art.2:145, Dutch civil code). The Act aimed at increasing the transparency on non-executive and executive pay policies and consequently also provided more insight in the companies’ pay policies for the general public which facilitated the amount of research and public debate on particularly executive compensation. The following sections describe the different compensation components; pay setting processes and the role of the supervisory board in both processes is clarified.

3.1. Executive Pay Setting

In determining the level and structure of executive compensation, compensation policies typically are established in order to attract, retain and motivate the managers and encourage the type behaviour of wished for. For example, as Philips (2007) states in its annual report, its executive remuneration policies are designed “*to focus on improving the performance of the Company and enhancing the value of the Philips Group, to motivate and retain them, and to be able to attract highly qualified executives*” (Philips annual report, 2007 p.119).

3.1.1. Components of executive compensation

Executive compensation commonly consists of a fixed compensation part (typically in the form of a base salary and benefits granted in cash) and an additional variable compensation part. This variable part serves as an instrument in order to align the interests of the executive with that of the principal (the shareholders). Typically, this variable component is therefore linked to company performance based on predetermined targets and is paid out in the form of an annual cash incentive and/or a long-term incentive in the form of equity-pay; share rights and/or options. Thus, setting executive pay policies is concerned with determining both the target level of pay and determining the pay structure.

3.1.2. Executive labour market

Many scholars state that a labour market for top executives exists (Harris & Helfat, 1997). Here, the demand side of the market consists of firms that are looking for executives with certain (managerial) skills and capacities. The supply-side regards current top executives and employees that desire a top

executive position. The executive compensation works as a pricing mechanism and reflects the market value of the managerial skills and capabilities of the executives of interest (Harris & Helfat, 1997). However, information concerning the managers' skills and capabilities is incomplete during the executive recruitment process and the *true* value of the executive's performance (e.g. added value to company performance), as perceived by the external market, changes over time, consequently resulting in the labour market for executives (Fama, 1980).

3.1.3. Pay setting process

To both executive compensation and supervisory board compensation it applies that determining the compensation is commonly based on proposal by the established remuneration committee or by the complete supervisory board if this remuneration committee is not installed.

In setting the executive pay policies, the supervisory board is commonly assisted by a remuneration consultant, offering advice and its expertise on the remuneration and labour market trends and insights in the peer group practices.

In order to compete for the executive talent on the executive labour market, it is considered important to offer a market competitive compensation structure to the potential top executives. Therefore, market practice regarding executive compensation is explored by performing a benchmark. Benchmarking starts with determining the company's labour market peer group; a collection of companies with which the company competes for this executive talent. Typically, this peer group involves companies with an equal firm size and operating in the same industry (Bizjak et al., 2008). Then, the firm's industrial competitiveness in the field of executive compensation is assessed by comparing the peer groups target pay levels. The median level of compensation in this peer group is calculated, which then serves as the 'base level' on which the target pay levels for the compensation are based. Here, Bizjak et al. (2008) state that "*In assessing target pay levels, salary and bonus and total pay below the 50th percentile are usually considered below market*" (2008, p.154). Companies may decide to pay above the median pay level as well, in order to better reflect the reputation of a company and/or risk exposure of the company (e.g. expect the best performance by paying above the market).

When the final compensation policy is determined, the remuneration proposal is submitted to the AGM for adoption (Dutch Corporate Governance Code, 2008).

Benchmarking involved in the executive pay setting process is a widespread, yet controversial practice in executive pay setting. First, the determination of the peer group is said to be a choice that is susceptible of manipulation (Eumedion, 2007). The relatively small group of companies included in a peer group and the divergence of executive compensation levels between companies may lead to a situation where the

final choice of companies in the peer group is modified in order to establish a peer group with a higher median compensation level.

Second, the ‘skewness’ of the executive compensation is heavily criticised. It is argued by Murphy (1999) that, since compensation levels below the median level are considered below market, supervisory boards predominantly place their executives and consequently their pay levels, in the upper two quartiles, thereby leading to a so called “ratchet effect” in executive compensation levels. Many scholars claimed that the compensation consultants have also contributed to this effect (Hall, 2003; Jensen, Murphy & Wruck, 2005; Murphy, 1999).

Third, basing the choice of a peer group merely on the equal size of firms and the industry in which companies operate is considered too limited in order to determining executive pay level. Additionally, it is argued to provide an inadequate reflection of the corporate complexity a management board has to deal with, and the required managerial skills of the board members when performing the job. As Murphy (1999, p.2497) claims, “*Company size is at best an imperfect proxy for managerial skill requirements, job complexity, and span of control.*”

3.2. Supervisory Board Pay Setting

As aforementioned, the supervisory board compensation setting process only recently started to attract public attention. Supervisory board pay is liable to a number of rules on the structure and disclosure of the policies. Here, transparency and independence are the focal aspects that concerns supervisory board compensation. Regarding the supervisory board’s compensation structure, principle III.7 in the amended Code states that: “*The remuneration of a supervisory board member is not dependent on the results of the company*” (Dutch Corporate Governance Code, 2008, p.28). The principle implies that the supervisory board compensation may not be incentive-based, i.e. not related to company performance. This is in contrast to the pay setting of non-executive directors in the Anglo-Saxon countries and in for example Germany, which award additional incentive-based compensation, apart from cash compensation, to align the interests of the non-executive directors with that of the company’s owners; the shareholders (Gerety et al., 2001). However, the best practice is included in the Netherlands in order to maintain the independent and objective role of the supervisory board towards all stakeholders involved. Therefore, equity based pay in the Netherlands is almost non-existent.⁸

⁸ Important exceptions are the firms Crucell (2004; 2005; 2006; 2007), AMG (2007), Pharming Group (2007) and Tele Atlas (2007). For the specific policies regarding the equity-based compensation policies, please refer to their annual reports.

3.2.1. Components of supervisory board compensation

Typically, supervisory board compensation in the Netherlands consists of three main elements, namely fixed annual fees, committee fees and additional compensation. Fixed annual fees are types of compensation granted to the supervisory board members for general board activities. These fixed annual fees are the most prevalent form of supervisory board pay. Additionally, the supervisory board members may receive separate ‘attendance fees’ related to the (number of) general board meetings attended.

Moreover, supervisory board members may be granted a specific committee fee for participation in the subcommittees of the supervisory board and/or specific attendance fees for attendance of the committee meetings. The most common three subcommittees are the audit committee, the remuneration committee and the selection and appointment committee. Usually, supervisory board members are compensated separately for each seat held in a committee.

The last compensation element discussed is the additional compensation. Additional compensation regards all types of remaining compensation, for example types of compensation in the form of travel allowances, expenditure allowances and unforeseen time commitment. Commonly, the work load resulting from attending board or committee meetings is taken into account when determining the annual fees for supervisory board members. However, in case of foreign supervisory board members that are obliged to travel intercontinental when attending board meetings, a travel allowance may be offered to compensate for the extra costs involved with this travelling. Moreover, companies may offer additional fees as compensation for unexpected circumstances when the exact work load is hard to determine in advance (e.g. supervisory board involvement in mergers and acquisitions).

3.2.2. Pay setting process

In contrast to the formal pay setting process of executive compensation, supervisory board compensation was initially determined in a relatively informal way. As Mr Peters (2009) described in our interview, supervisory board compensation was initially discussed in the supervisory board meetings and clear standards or measurements as a basis for the decision on the final level of supervisory board compensation did not really exist.⁹ In general, the level of compensation is related to the anticipated work load of the supervisory board; the number of meetings held by the supervisory board and the committees and the estimated preparation time for these meetings (Peters, 2009). However, the recent years, a trend towards a more formalized approach of supervisory board pay (setting processes) can be noticed. An increasing amount of companies retain external remuneration consultants to perform benchmarks for the supervisory board compensation and provide expert assistance on the trends and developments in the pay practices on supervisory board pay (Towers Perrin, 2008). Anecdotal evidence at Towers Perrin shows

⁹ For the complete description of this telephone interview, please refer to appendix E.

that remuneration consultants base the benchmarks for the supervisory board compensation predominantly on firm size, geographical activity of the firm and supervisory board's work load. Here, a firm's reference market mainly depends on a company's position based on its firm size relative to other companies. The board structure of a company is also considered an important factor in determining the compensation level.¹⁰

Nevertheless, clear standard figures for the determination and evaluation of supervisory board pay still seem to be limited. Increases in the supervisory board pay are typically motivated by addressing the increasing complexity, time commitment and examining the pay levels at other firms. For instance, in the notes of the agenda for the AGM of ASM International, an increase of the supervisory board pay level was proposed and explained as follows (ASM International, 2006, p.5):¹¹ *“The Supervisory Board has pondered whether the current remuneration is still adequate in the light of the importance of and time involved with the activities, and given what is presently considered a competitive and suitable remuneration for the position at similar companies. The Board believes that, reviewed against these criteria, the current remuneration needs to be increased substantially.”*

3.3. Conclusion

In summary, supervisory board pay generally consists of three components, namely an annual base fee, committee fee and additional compensation. In contrast to international pay practices, Dutch supervisory board should not be awarded incentive-based compensation. While setting executive pay can be seen as a formal and institutionalized process, supervisory board pay levels were initially determined in a much more informal way. However, with the growing responsibilities, an increasing emphasis is put on establishing supervisory board pay levels that adequately reflect the increasing complexity and work load. The use of compensation consultants in the compensation setting process and benchmarks on supervisory board pay seems to become more common practice in setting supervisory board pay as well. Benchmarks for supervisory board pay typically focus on firm size, geographical activity and the anticipated work load. Yet, in the disclosed clarification of the need for pay increases in supervisory board pay, clear objectives measuring these developments at companies remain limited. Moreover, benchmarking is a rather controversial process. Although often claimed to be highly relevant and necessary to determine market competitive pay levels and thereby attracting and retaining the required skills, academic scholars and practitioners criticise the executive benchmarking processes and stress the potential limited focus scope of solely using firm size and industry to cover a firm's total scope and job complexity.

¹⁰ Generally, the level of compensation for directors in one-tier board structures is higher than that of supervisory board members in two-tier board structures resulting from differences in the responsibilities and work load between directors and supervisory board members.

¹¹ ASM International is a manufacturing multinational and the AGM was held on 18 may, 2006.

4. THEORETICAL FRAMEWORK

In this chapter, the existing literature on supervisory board compensation and relevant literature on executive compensation is discussed. Even though existing literature on the determinants of supervisory board compensation is limited, Hengartner (2006) states that research on director compensation often finds that company characteristics as determinants of executive remuneration also explain supervisory board compensation.

The following paragraphs start with describing the development of the research on supervisory board compensation.¹² It then reviews the existing literature on director compensation and evaluates the applicability of these theoretical perspectives on supervisory board compensation in the Netherlands. Next, a theoretical framework regarding the influence of complexity on supervisory board compensation is introduced. This framework is based on the review of the existing literature and empirical evidence in director compensation- and executive compensation research. It discusses and assesses to what extent these existing studies present determinants that are strong candidates for being determinants of supervisory board compensation as well.

4.1. Development of Supervisory Board Compensation Research

4.1.1. From shareholders' representatives...

Several explanations for the scarcity of supervisory board compensation research are opted in literature. First, the majority of executive compensation studies focus on the pay-performance relationship between compensation and firm performance. The prevailing theory in explaining executive compensation research has been the agency theory. As mentioned earlier, the foundation of the agency theory is formed by the separation of ownership and control in a firm, first pointed out by Berle & Means (1932). Separation of ownership and control in a firm may lead to so called *principal-agent* problems; the problems concerning diverging interests between the firm's owners (i.e. the *principal*) and the firm's manager (i.e. the *agent*) (Jensen & Meckling, 1976). Apart from the assumption that the interests of the managers do not necessarily align with those of the firm's principals (e.g. shareholder value maximization), the theory also assumes that agents are risk averse and that information asymmetry exists between the shareholders and managers of the firm (Berle & Means, 1932). Information asymmetry refers

¹² Supervisory board members are also named (non-executive) directors or outside directors. Outside directors are non-executive directors that have no existing (past) affiliations with the company and thus are independent from the company and its management. In this research, supervisory board members will only be named (non-executive) directors or outside directors when studies on compensation of the supervisory board members in one-tier board structures (predominantly research focusing on the U.S. and U.K.) are discussed that use these terms as well.

to the fact that shareholders do not have complete information regarding the company's investment opportunities and the manager's behaviour and this information asymmetry hinders perfect monitoring by the shareholders.

The agency theory, combined with the optimal contracting perspective, argues that alignment of the interests of the two actors can be achieved by setting the executive pay package through arm's length contracting (Jensen & Meckling, 1976). Arm's length contracting means determining an executive's pay contract in a way that provides the right incentives to managers in order to maximize shareholder value and minimize potential agency costs; the optimal contract. As representatives of the firm's shareholders, the supervisory board has the responsibility to set this contract and establish the alignment of interests between shareholders and the management. Traditionally, the agency theory ignored the supervisory board's potential role as shareholder's agent when monitoring the company's general course of affairs. The members of the supervisory board were presumed to be actors acting fully in service of the shareholders of a firm. Therefore exploring the pay-performance relationship on supervisory board pay seemed less relevant.

Second, the pay setting process of supervisory board compensation hampers the application of the traditional executive remuneration theories on supervisory board compensation. Typically, the supervisory board sets its own pay structure. This process creates a relatively indistinct working relationship between the supervisory board and shareholders compared to the more traditional working relationship between the management board and the supervisory board that is in accordance with the agency theory and optimal contracting.

Third, the difficulty of evaluating the supervisory board's functioning may further explain the limited amount of research; whereas the consequences of the actions and decisions of the manager directly have a great influence on company performance, the role and effect of the supervisory board's monitoring seemed less important (Bryan et al., 2000).

4.1.2. ...To shareholders' agents

However, the past years interest in supervisory board compensation has increased. More and more, academic researchers find restraints of the somewhat simplified description of the actors and relationships involved in the traditional agency theory. For example, although in theory the presumptions on which arm's length contracting is based could be correct, empirical research points out many cases in which *executive* remuneration policies cannot be explained by the agency theory and many researchers have

therefore criticized this traditional agency view on executive remuneration (Brick, Palmon & Wald, 2006). Otten & Heugens (2007) comment that, when presuming arm's length contracting as *the* explanation for executive remuneration, one perhaps mistakenly presumes the members of the supervisory board to be acting out of complete unselfishness. Further, Bebchuk et al. (2002) and Bebchuk & Fried (2006) remark that, while the agency theory claims that there is no reason to believe that a manager will automatically choose its activities in order to maximize shareholder value, one has no reason to assume that members of the board of directors will behave in such a way either. Moreover, Linn & Park (2005) claim that, in order to maintain consistency between the supervisory board monitoring and approving actions and stakeholders' interest, the supervisory board has to be provided with the correct incentives as well, with compensation being one of these incentives. As a result, an increasing number of researchers have come up with explanations for the level and structure of supervisory board compensation, acknowledging the importance and influence of the role of the supervisory board (*vis-à-vis* the management board).

4.2. Supervisory Board Compensation: Prevailing Theories

This section discusses the prevailing theories and researched determinants of supervisory board compensation.

4.2.1. Agency theory

In line with the perspective that directors are indeed shareholders' agents, the research of Bryan, Hwang, Klein & Lilien (2000) argue from the perspective that directors are indeed shareholders' agents, potential diverging interests between directors and shareholders may exist and incentive-based compensation will lead to the alignment of interests of these two actors. In this example, the agency theory and optimal contracting theory are used to argue that compensation packages for directors should also be structured in such a way that alignment with shareholders' interest is realised. The researchers examine economic determinants of the structure and size of director compensation and find a positive relationship between the total level of compensation and a firm's growth opportunities. However, this positive relationship mainly results from the strongly positive coefficient regarding the level of stock-option awards and a firm's growth opportunities. Moreover, the proportion stock-based compensation (in relation to cash compensation) is negatively related to firm leverage and managerial stock ownership. The researchers explain the negative relation with leverage by the fact that debt is accompanied by predetermined interest payments that limit the manager's drive to keep investing in projects that do not create value. In addition, companies with large managerial stock ownership have a reduced need for additional monitoring incentives in the form of equity-based compensation for directors (Bryan et al., 2000). That is, alignment

between the interests of shareholders and managers is established through stock ownership by the managers. This led to the researchers' conclusion that outside director compensation packages are in fact developed in order to mitigate agency costs.

The potential difficulty of using the agency theory in order to explain the structure of compensation packages of the supervisory board in the Netherlands is the fact that performance related compensation in the Netherlands is (almost) non-existent. The Code states that the remuneration of the supervisory board should not be dependent on company results, and therefore the use of performance related compensation in the form of stock or option grants is not used very often.

4.2.2. Managerial power theory

The agency theory explained above is by far the most often applied theory in compensation research (Bebchuk & Fried, 2004). An extension of the agency theory is the managerial power theory. The basic assumption for managerial power equals the agency theory's underlying assumption that separation of ownership and control (often) leads to diverging interests (Bebchuk & Fried, 2004). However, one of the key points of criticism of the managerial power theory proponents is that compensation setting should be seen more as a process influenced by the relative power of the actors involved in the process. Managers are presumed to use this relative power over the supervisory board in the pay setting process, which *frustrates* optimal contracting and leads to a contract that reflects the wishes of the executive more. Therefore, this theory argues that the compensation should not so much be seen as a tool to align the diverging interests, but more as an agency problem in itself.

Ryan & Wiggins (2004) have studied managerial power as a determinant of director compensation. This study suggests that directors implicitly or explicitly set their own compensation and that the pay setting process can be seen more as a bargaining model between executives and board of directors; the party with relatively the most power has the most influence over the structure and level of their compensation. The research investigates the influence of board-of-director independence on outside director compensation and confirms that an increase of managerial power decreases board-of-director independence which subsequently leads to a director compensation level and -structure that increase the agency problem (Ryan & Wiggins, 2004).¹³ Further support for the perspective of managerial power is provided by the research of Brick et al (2002). The empirical results of the study show that a larger proportion of inside directors in the board and a higher amount of managerial stock ownership are negatively related with the level of outside director compensation.

¹³ Here, board of director independence is measured by board size, board composition, director affiliations, CEO tenure and CEO/ Chairman duality

4.2.3. Marginal productivity theory

Another perspective used to explain compensation is based on the marginal productivity (i.e. the added value) of board members for a company. The marginal product of the executive can be seen as the amount by which a firm's production or firm value decreases when this particular executive was not employed by the company (Gomez-Mejia, 1994). Typically, the decisions of top executives have a relatively great influence on organisational outcomes. Considering the impact of the decisions, it is worthwhile to assign the individuals with the most talent to these positions with the greatest influence.

Relating marginal productivity theory to executive compensation, this level of compensation reflects the marginal product of an executive's actions on firm value. The final value of the board members' marginal product is determined by the equilibrium between supply and demand on the executive labour market. As Rosen (1982) states: "Large wage payments to superior managers in large firms are sustained by corresponding increments of productivity, rendering the observations squarely consistent with the marginal productivity theory of distribution (demand) and with the theory of rent (supply)" (Rosen, 1982, p.321).

Regarding the supervisory board, this marginal productivity theory may also serve as an explanation for supervisory board compensation when arguing that supervisory board members add value to the company by means of their monitoring and controlling actions and the decisions they make. Consequently, in case the 'need for monitoring' of the firm increases, attracting supervisory board members with a high marginal product is desired, since their impact on the firm's value increases as well. Consistent with the notion of the executive labour market, a labour market for supervisory board members exists, which sets the final marginal product value of these supervisory board members.

The empirical results of Linn and Park (2005) support this perspective. This research uses the marginal productivity theory as the theory underlying their established hypotheses and found that the level of outside director compensation increases as the need for monitoring by the firm increases (Linn & Park, 2005). They operationalised the need for monitoring in the research by firm size and the firm's growth opportunities.

In addition, Brick et al (2005) researched several proxies for the monitoring difficulties and necessary effort required of directors (among which firm size and R&D expenditures and firm performance) and found significant results that director compensation is indeed related to the need for monitoring.

4.2.4. Human capital theory

The human capital theory can be considered a complement of the marginal productivity theory: a board member's marginal product is affected by its amount of accumulated skills and knowledge (Harris & Helfat, 1997). In existing executive compensation studies, the human capital theory proponents claim that

the individual value of executives is determined by their accumulated skills and knowledge, also named their human capital (Laing & Weir, 1999). The assumption holds that the more human capital an executive possesses, the better this executive is in performing its duties and the higher its remuneration level will be. In other words, a member's human capital reflects the individual's *ability* for adequate monitoring. Consistent with the reasoning underlying the marginal productivity theory, the (non-) executive labour market determines the final value of this human capital.

In this thesis, we will predominantly focus on the managerial power perspective and the marginal productivity approach complemented by the human capital theory on supervisory board compensation. We extend the application of these theories on supervisory board compensation in the Netherlands. After having described the developments in corporate governance that have led to an increasing complexity in the role and responsibilities of the supervisory board, it is considered relevant and particularly interesting to research the extent to which supervisory board members are compensation for their marginal product and characteristics reflecting the need for monitoring may explain the compensation levels.

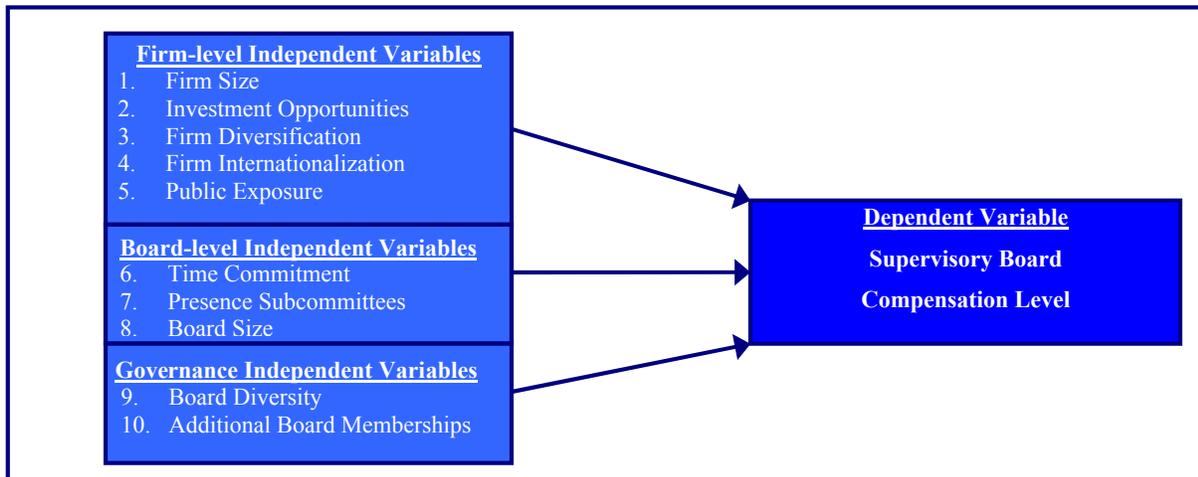
In addition, the managerial power theory is considered to be an interesting approach in researching the determinants of supervisory board compensation. Existing compensation research has predominantly related the composition, consequently the independence of the supervisory board members to the level and structure of *executive* compensation. Yet, Ryan & Wiggins (2004) have found evidence that independence of the supervisory board may well be related to the supervisory board members' own compensation level as well. In addition to these findings, the Dutch Corporate Governance Code has established several principles of good practice in order to safeguard the independence of the supervisory board. Given the developments in Dutch corporate governance, it is found interesting to examine the extent to which characteristics of the supervisory board composition is related to its own (i.e. supervisory board) compensation level in the Netherlands.

4.3. Theoretical Framework Supervisory Board Compensation

As was mentioned in the description of the compensation setting process of supervisory board compensation, the compensation level is typically determined by a benchmark based on firm size and type of industry. However, after having described the developments of the roles and responsibilities of the supervisory board and the compensation setting process, it may be argued inadequate to fully reflect the complexity faced by the supervisory board by using only these aspects as relevant proxies. Therefore, it is here argued that supervisory board compensation should at least consider all factors that address the complexity of the tasks of the supervisory board. These factors are divided into Firm level-, board- level

and governance variables and are further explained in this section. When taking these different elements into account, the following conceptual model is proposed (see figure 1).

Figure 1 Conceptual Model: Determinants of Supervisory Board Compensation Level



Source: Author

4.3.1. Firm-level variables

The independent variables on firm-level generally reflect the need for monitoring by the supervisory board of a firm. Corporate complexity can arise from several firm characteristics that complicate the monitoring and evaluating activities of the supervisory board members. In general, it is expected that the supervisory board members are compensated for the amount of complexity present in the companies. The general premise that applies to the various complexity variables is that: The greater the complexity of the companies operations, the higher the compensation level. The underlying reasons for the company characteristics as determinants for corporate complexity, consequently the level of compensation are discussed below.

Firm Size

The influence of firm size on the compensation level of both the management and supervisory board has been investigated many times before. Concerning executive compensation research, firm size is found to be the second most stated explanation for the executive compensation level (Gomez-Mejia, 1997). Furthermore, firm size is suggested as a proxy for firm complexity that increases the need for firm monitoring by the supervisory board (Brick et al., 2002). Based on the marginal productivity theory, one could argue that larger firms have more resources; therefore the potential total added value of the outside directors is higher (Linn & Park 2005). Empirical researches found that firm size is indeed positively related to director compensation (Brick et al., 2002; Linn & Park, 2005). Linn & Park (2005) used a

sample of the 200 largest firms in the US over the period 1996-2001 and found significant evidence that outside director compensation increases when firm size increases.¹⁴

Concluding, using the theoretical assumptions of the marginal productivity theory, firm size may increase the corporate complexity, thereby leading to higher director compensation. Therefore, the second hypothesis tested is:

H1: The level of supervisory board compensation is positively related with firm size

Growth Opportunities

A researched determinant of corporate complexity is a firm's investment opportunities set (IOS) (i.e. the total of investment options). Investment options can be seen as a firm's future growth opportunities. The difficulty with growth opportunities is that they are hard to predict in advance, resulting in a greater amount of information asymmetry between shareholders and the management. The potential impact of executives on organisational results in these firms is said to be higher, resulting in a higher potential marginal product of these executives. Prior research (Baker & Hall, 2002; Smith & Watts, 1991) has related the marginal product of the executives to the firm's investment opportunities.

However, a greater IOS also increases the possibilities of managerial opportunism and agency costs, resulting in greater monitoring difficulties for the supervisory board. Therefore, incentives provided to the supervisory board in order to fulfil this more complicated monitoring task should be higher (Linn & Park, 2005). Linn & Park (2005) explored the relation between the firm's IOS and director compensation, and confirm a positive relationship between these investment opportunities and director compensation. The results show that total outside director compensation in growth firms was indeed significantly more than in non-growth firms. Also, the proportion equity-based compensation was higher compared to the proportion cash compensation in growth firms, thereby confirming that outside director compensation interacts with the greater potential marginal productivity of outside directors in growth firms (Linn & Park, 2005). As mentioned earlier, Bryan et al. (2000) also found a positive relationship between the proportion of equity-compensation to cash compensation and a firm's growth opportunities.

Concluding, directors are supposed to receive a higher level of compensation in companies with greater growth opportunities in order to compensate for the greater exposure to risk by these firms, consequently the greater need for firm monitoring by the company's supervisory board members and accordingly the bigger impact of the directors' actions. Therefore, the following is hypothesized:

¹⁴ The researchers separately regressed total supervisory board compensation on the natural logarithms of total sales and total assets as proxies for firm size and found positive coefficients of 0.103 and 0.078 respectively, significant at the 1% significance level

H2: The level of supervisory board compensation is positively related with the firm's growth opportunities

Firm diversification

Firm diversification can generally be regarded as extending the firm's business into an industry that differs from the existing lines of businesses. Firm diversification can influence the complexity of the management's tasks: a manager is typically required to possess knowledge of different lines of business and therefore its activities become more complex. Finkelstein & Hambrick (1989) were one of the first researchers investigating the hypothesized positive relation between firm diversification and CEO compensation. The study focused on the relation between firm diversification and CEO cash compensation, based on the two components salary and bonus. Furthermore, a sample of American companies in the leisure industry in different years was used.¹⁵ In contrast to their expectation, the hypothesized positive relationship between diversification and compensation was not supported by the results. The researchers suggest that due to the strong correlation between firm size and firm diversification, the effect of diversification is reflected by the strong relationship between firm size and compensation.

Empirical research performed by Henderson & Fredrickson (1997) does confirm the positive effect firm diversification can have on the level of executive compensation. The researchers also reason that a company's number of different business lines increases the amount of information an executive has to process (i.e. information-processing demand) and increases the need for coordination by the manager, thereby leading to a greater complexity.

Concerning the supervisory board, when following the reasoning behind the marginal productivity theory, one could argue that firm diversification is a proxy for corporate complexity, since it complicates the strategic- and investment decisions that have to be made. Accordingly, it complicates the supervisory board's monitoring tasks (Eaton & Rosen, 1983). Following the general proposition, firm diversification is expected to show a positive relationship with the level of supervisory board compensation. Therefore, the following is hypothesized:

H3: The level of supervisory board compensation is positively related with firm diversification

¹⁵ The years are 1971, 1976, 1982 and 1983 (Finkelstein & Hambrick, 1989).

Internationalization

Another aspect often mentioned as important factor of complexity is a firm's degree of internationalization. Sanders & Carpenter (1998) examined the effect of firm internationalization on CEO pay and found a significant positive relationship.

Internationalization typically leads to more market-related diversity regarding the different cultures, type of customers and competitors a firm has to deal with. In addition, differences in the national institutional context may (such as differences in regulations and political institutions) increase the complexity of a firm's business environment. As Sanders & Carpenter (1998) argue, firm internationalization is accompanied by an increasing information-processing demand; the complex international business environment increases the need to process a vast amount of diverse and conflicting information. Moreover, due to the complex business environment, it is more difficult to predict the outcomes of certain management decisions, increasing the risks of a company. This increase in complexity is said to affect the tasks of the executive and consequently the required capabilities of managers (Henderson & Fredrickson, 1996). The study found that the level of CEO pay is positively related to this extra complexity resulting from firm internationalization. However, the researchers conducted a cross-sectional study and therefore could not say if causality between these variables exists. The results on internationalization and CEO pay are not only limited to research based on data from U.S. firms. Oxelheim & Randoy's research (2005) on Norwegian and Swedish firms also confirm the positive relationship between internationalization of the firm, measured by the percentage of a firm's revenues created by export and sales, and the level of CEO compensation.

The increasing information-processing demand and uncertainty regarding firm performance that is noticeable for executives again may complicate the monitoring function of the supervisory board as well. As complexity in the business environment increases and required knowledge becomes more specialised, it becomes more difficult to evaluate the management's activities. Hence, the researched relation between firm internationalization as a variable of complexity and the level of compensation may also exist for the supervisory board. The fourth hypothesis is:

H4: The level of supervisory board compensation is positively related with firm internationalization

Public Exposure

The last aspect of corporate complexity taken into consideration here is the firm's public exposure, or as Finkelstein & Hambrick (1989) name it the 'politicized environment'. As the recent developments in corporate governance have shown, public exposure and particularly public scrutiny has influenced the general role and responsibilities of supervisory board noticeably. This is also confirmed by Mr Peters

(2009). Supervisory board members of companies with great public exposure are therefore assumed to have a more complex task than companies with less public exposure; they not only have to take into account shareholders' opinions and interest, but are confronted with the 'voice' of the society as well. As many supervisory board members confirm with their statements, public exposure increases the (perceived) risk of loss of face or damage to one's reputation. Therefore, the increased complexity resulting from a firm's public exposure is assumed to result in a higher level of compensation for the supervisory board. The following is hypothesized:

H5: The level of supervisory board compensation is positively related with the firm's public exposure

4.3.2. Board-level variables

Complexity may not only arise from factors measured on firm-level, but can be reflected by aspects of complexity on board-level as well. As is stated in the public press, the establishment of the Code and the increased public attention on corporate governance in the Netherlands has led to the complication of the supervisory board's duties and increased the public attention on the functioning of the supervisory boards. From this perspective, a number of board-level variables regarding the need for monitoring are established in order to evaluate the determinants on board level on compensation. The board-level determinants are related to the increasing task complexity and professionalization of a supervisory board's duties and responsibilities.

Time Commitment

The first aspect of interest when examining the board-level variables is time commitment. One may reason that complexity of the supervisory board is reflected by the time spent on their function as supervisory board member; more complexity is likely to require more monitoring and controlling activities by the supervisory boards. In their annual report on non-executive director compensation in the UK, *PricewaterhouseCoopers* (2007; 2008) discusses changes in non-executive director pay simultaneously with changes in time commitment. An increase in the amount of time spent on the supervisory job would logically be accompanied by a higher level of compensation. Therefore, the following is hypothesized:

H6: The level of supervisory board compensation is positively related with time commitment

Presence Subcommittees

The professionalization of the supervisory board may be manifested by the establishment of subcommittees within the supervisory board as incorporated in the Dutch Corporate Governance Code. The establishment of the committees is said to increase both the work load and complexity of the supervisory board's tasks (Mr Peters, 2009). The presence of this type of committees clarifies the exact tasks of the supervisory board, and the duties within these committees are more detailed. In addition, the existence of these committees may enhance the 'perceived' responsibility for the eventual outcomes of the separate committees of which the supervisory board member in question is part (Mr Peters, 2009).

To my knowledge, research on the influence of subcommittees on *supervisory* board compensation is non-existent and is limited to the influence of the presence of remuneration committees on the structure and level of *executive* remuneration (Conyon, 1997; Conyon & Peck, 1998). Nevertheless, the relationship between the presence of subcommittees, consequently task complexity, and supervisory board compensation seems consistent. Therefore, the following is hypothesized:

H7: The level of supervisory board compensation is positively related with the number of subcommittees existing within the supervisory board

So far, the determinants discussed focus on the 'need' for monitoring by describing the determinants that address the complexity of the tasks. Yet, the extent to which the supervisory board members are *able* to perform these tasks seems of importance as well. Although existing research on this aspect is limited, we do believe that the '*ability*' of (adequate) monitoring affects the supervisory board compensation level too. Here, two aspects are considered to influence the ability of adequate monitoring, namely the supervisory board's independence relative to the management board and the amount of human capital in the supervisory board.

As is claimed by the managerial power theory, compensation setting should be seen as a 'political process' that is influenced by the relative power of the executive over the supervisory board. This relative power is said to influence the extent to which a supervisory board performs its monitoring duties adequately. Supervisory boards with a relatively greater power than the CEO are referred to as 'proactive' boards in the literature (Pearce & Zahra, 1991). Independence of the board is a focal aspect in order to establish this sufficient monitoring and increase the objectivity in the board's decision-making (Pearce & Zahra, 1991).

Board Size

Researching the relationship between board-of-director (B-o-D) independence and director compensation, Ryan & Wiggins (2004) base their study on the managerial power theory. The researchers consider the pay setting process to be a bargaining model between the management board and supervisory board. The board with the most power influences the structure and level of compensation the most. The researchers argue that B-o-D independence reduces the relative managerial power and increases the director compensation level. Here, B-o-D independence was operationalised in four characteristics; board size, composition, CEO/chair-duality and CEO tenure. The study found that larger boards of directors with more entrenched CEOs (i.e. less board independence) receive less total compensation (Ryan & Wiggins, 2004).

Applying the findings of Ryan & Wiggins (2004) to the corporate governance context in the Netherlands, this thesis first pays attention to the characteristics board size and composition when considering board independence.¹⁶ Whereas, supervisory board composition is predominantly described in the governance variables, one independent board-level variable related to board independence is described here, namely supervisory board size.

Regarding board size, it is argued that large boards experience greater coordination problems which result in greater managerial power. Therefore, larger boards are expected to be less independent (Ryan & Wiggins, 2004). The following hypothesis tested is:

H8: The level of supervisory board compensation is negatively related with supervisory board size

4.3.3. Governance variables

Historically, it often occurred that appointed supervisory board members were related to the management board of the company (e.g. providers of capital, relatives). Consequently, the independence of the supervisory board could not be guaranteed. Therefore, the current Dutch Corporate Governance Code contains several principles and best practice provisions establishing this independence, both within the board in general and the subcommittees (DCGC, Principle III.2, Principle III.3 & Principle III.5, 2008).¹⁷

¹⁶ In the Netherlands, legal separation between the management board and supervisory board is established and the influence of the CEO in the form of CEO/Chair-duality is therefore non-existent.

¹⁷ Establishing a diverse and independent board is explicitly stated in the principles III.2 and III.3 (Dutch Corporate Governance Code, 2008). Principle III.2 states that “*The composition of the supervisory board shall be such that the members are able to act critically and independently of one another [...]*” (Dutch Corporate Governance Code, 2008, p.20). Additionally, Principle III.3 states that “*The supervisory board shall aim for a diverse composition in terms of such factors as gender and age.*” (Dutch Corporate Governance Code, 2008, p.22).

Board Diversity

The first governance variable taken into consideration regarding supervisory board independence is diversity in the supervisory board's composition. The existing literature on diversity shows several positive effects of diversity, especially regarding an objective operation of the supervisory board's monitoring, advising en decision-making tasks.¹⁸ When decision-making is concerned, a diversity of backgrounds leads to a diversity of opinions thereby leading to a comprehensive consideration of the aspects involved and increasing the quality of the decisions (Carpenter, 2002).

Generally, when diversity is applied to the supervisory board, diversity is said to be positively related to independence of the supervisory board in relation to the management board (Van Ees et al., 2007). Prior research argues that diversity may decrease the supervisory board's potential feelings of grievance or gratefulness that could hinder decision-making, when decisions against the interest of the management board have to be made (Carleton, Nelson & Weisbach, 1998). Since board diversity is assumed to increase supervisory board independence and board independence subsequently is positively related to supervisory board compensation, one may suggest that board diversity is positively related to the level of supervisory board compensation.

One may also approach the application of diversity on the supervisory board from a marginal productivity perspective. The Code explicitly states in the principle regarding the composition and expertise of the supervisory board that the supervisory board should establish a profile regarding the composition of the board and that "The profile shall deal with the aspects of diversity in the composition of the supervisory board that are relevant to the company and shall state what specific objective is pursued by the board in relation to diversity" (Dutch Corporate Governance Code, 2008, p.22). Establishing this profile narrows the supply of potentially suitable new supervisory board members. The marginal productivity theory suggests that the final value of this marginal product is determined on the labour market and since this principle creates a certain shortage on the supervisory board labour market regarding suitable supervisory board members fitting the specific profile, the final value (i.e. the level of supervisory board pay) of the board members increases. Therefore, one may suggest that board diversity is positively related to the level of supervisory board pay. Following the two abovementioned approaches, the following is hypothesized:

H9: The level of supervisory board compensation is positively related with supervisory board diversity

¹⁸ For a comprehensive literature review on diversity, please refer to the Van Ees, Hooghiemstra, Van der Laan & Veltrop (2007)

Additional Board Memberships

Another aspect that is assumed to influence the ability of adequate monitoring and therefore supervisory board pay is the human capital that is present within a supervisory board. The greater the supervisory board members' qualities and experience (i.e. human capital), the better these supervisory board members are expected to perform their tasks. However, applying this premise on individual supervisory board compensation in the Netherlands is difficult. As shown in the section on the compensation process, supervisory board compensation is regularly determined for the board in total. Differences in compensation level are merely related to the function/ position a board member fills instead of individual qualities or experience. However, the average amount of human capital in the supervisory board may result in higher compensation levels for the board in total. So, we do not so much expect individual differences in supervisory board compensation to be related with differences in individual qualities, but we do assume that the average level of human capital in the supervisory board affects the level of supervisory board compensation in total.

The reputation as effective monitor and advisor of the board member may be reflected by the number of additional supervisory board seats held by the board member (Shivdasani & Yermack, 1999). The general assumption is that effective supervisory board members are granted additional supervisory board memberships: the number of additional supervisory board memberships thus reflects the director's individual qualities. Prior studies confirm this assumption that the number of supervisory board memberships reflects the supervisory board member's reputation (Gilson, 1990; Shivdasani, 1990).

From a company's perspective, firms may seek supervisory board members with particular personal characteristics that fit their supervisory board profile. In this case, supervisory board members with several additional board memberships may have specific advantages for a company. As Schoorman, Bazerman & Atkin (1981) state, supervisory board members with additional board positions can add valuable knowledge and expertise to the company. This advantage supports the underlying reasoning of the human capital theory that the supervisory board member's accumulated knowledge and expertise increases their human capital. Moreover, holding a number of supervisory board seats at (eminent) companies creates a certain amount of social prestige and status for the supervisory board members that have these relations. By attracting these prestigious and influential supervisory board members, companies may want to create this image for the company as well.

In addition, the class hegemony theory may also be of interest in this perspective. The class hegemony theory argues that with the establishment of relationships between board members across firms, a network of individual board members relating these companies is created. This separate 'network' (i.e. class) of firms can create mutual interests between these organisations and by using the collective power of these

organisations companies can protect and collectively lobby for their shared interests. By attracting influential supervisory board members, a company gains access to the supervisory board member's personal network and the influence this board member can exert.

In contrast to the perspective that more board memberships reflect the reputation of a supervisory board member as an effective monitor, research has also found evidence for the fact that 'busy' board members are less effective in performing their monitoring tasks (Fich & Shivdasani, 2004). Core, Holthausen & Larcker (1999) study the influence of busy supervisory board members on the level and structure of executive pay. The researchers qualify supervisory board members as busy board members when they have three or more additional board memberships and/ or holds six or more board seats when the member is retired. The results show that busy supervisory board members are positively related to executive compensation. The researchers argue that 'busy' directors weaken the governance because monitoring by the supervisory board members becomes less effective, consequently increasing the influence of the CEO. Fich & Shivdasani (2004) agree on this perspective and also found that 'busy' board members are less effective in performing their monitoring tasks.¹⁹ Following this reasoning, the Dutch Corporate Governance Code (2008) has established a principle of good corporate governance on the maximum number of five additional board memberships a supervisory board member should have (principle III.3). Here, being chairman of the supervisory board counts double (i.e. for two board seats). When linking the effectiveness of supervisory board members to their relative independence, we suggest that busy supervisory board members are relatively less independent and it therefore may be expected that supervisory board compensation is negatively related to additional board memberships.

Considering this contrasting view in the perspectives related to additional board memberships, it is decided to not predict the sign of the relation between compensation level and the number of additional board memberships. Therefore, the last hypothesis formulated is as follows:

H10: The level of supervisory board compensation is related with the number of additional board memberships

An overview of the hypothesized influences of all independent variables of the level of supervisory board compensation is shown below (see table 1).

¹⁹ Here, busy supervisory boards were measured as boards of which more than half of the members could be characterized as 'busy' supervisory board members.

Table 1 **Overview Hypotheses**

Independent Variable	Expected Sign
<i>1. Company-level Variables</i>	
H1. Firm Size	+
H2. Investment Opportunities	+
H3. Firm Diversification	+
H4. Firm Internationalization	+
H5. Public Exposure	+
<i>2. Board-level Variables</i>	
H6. Time Commitment	+
H7. Presence Subcommittees	+
H8. Board Size	-
<i>3. Governance Variables</i>	
H9. Supervisory Board Diversity	+
H10. Add. Board Memberships	0

5. VARIABLE CONSTRUCTION

This section discusses the variables used in the empirical analysis. The operationalisation of the variables is clarified and justified using existing research on supervisory board- and executive compensation. The dependent variable ‘supervisory board compensation’ is discussed in the section 5.1. Then in section 5.2, the independent company-level variables are firstly described, followed by a description of the board-level variables and last, the governance variables are described.

5.1. Dependent Variable: Supervisory Board Compensation

As aforementioned, supervisory board compensation generally consists of three compensation elements, namely annual fees, committee fees and additional fees. The annual fees and committee fees most often consist of a fixed cash retainer, but in some cases (a portion of) the fees are related to the attendance of the supervisory board- or committee meetings.

In this thesis, total supervisory board compensation is based on the compensation levels stated in the compensation policies. In order to give a representative and objective representation of the total compensation, the standard amounts stated in the remuneration policies are used in our calculation of the supervisory board compensation level. The individual actual compensation levels can differ to such an extent from the figures stated in the remuneration policies (due to prematurely resignations of supervisory board members for example), that conducting an empirical analysis based on the policy-based supervisory board compensation levels is considered most reliable.

Existing research on supervisory board compensation operationalised supervisory board compensation as the sum of the annual retainer, board meeting attendance fees and the value of equity-based compensation (Adams, 2003; Brick et al., Linn & Park, 2005; Ryan & Wiggins, 2004). Since supervisory board compensation in the Netherlands is usually not dependent on company performance, equity based in the Netherlands is almost non-existent.

Total supervisory board compensation in this research is measured by the sum of the general annual cash retainers, committee cash retainers and, if applicable, the attendance fees awarded to the supervisory board members.²⁰ In case compensation was stated in a currency different from the Euro, the currency is converted to the Euro using the average currency of the year of interest.²¹ Each measure concerns the

²⁰ Additional fees such as expense allowances and travel expenses are not taken into account in this calculation. These components are fringe benefits and data on the exact figures of these benefits is limited. Furthermore, the fringe benefits are assumed to only borne the costs made by supervisory board members, and are not meant as remuneration for the supervisory board members.

²¹ This was the case at SBM offshore in the years 2004, 2005, 2006 and at Univar in 2005, 2006, 2007.

average total compensation awarded to an individual supervisory board member.²² Concerning the applicable committee compensation, the actual committee seats held by the chairman of the supervisory board are derived from the annual reports and the committee fees linked to these committee memberships is added up to the annual chairman fee and relevant attendance fees.

Additionally, regarding the remaining committee seats, the assumption is made that these seats are divided equally over the supervisory board members and the fees related to these committee seats are equally divided as well.²³

Furthermore, two additional assumptions are made in order to consistently calculate the total supervisory board compensation. In line with the assumptions set up by Linn & Park (2005), it is assumed that:

1. Each supervisory board member has served on the supervisory board for the whole year of interest.
2. Each supervisory board member has attended all board- and committee meetings.

Consistent with existing research, total compensation is operationalised as the natural logarithm of total supervisory board compensation awarded to each individual supervisory board member (Adams, 2003; Brick et al., 2006; Ryan & Wiggins, 2004).

5.2. Independent Variables

After having discussed the operationalisation of our dependent variable, this section will focus on the independent variables in the research.

5.2.1. Firm-level variables

In this research, the dependent variable total supervisory board compensation is lagged one year with respect to the independent firm-level variables. This means that, whereas the dependent variable supervisory board compensation refers to the period 2004-2007, the independent firm-level variables refer to 2003-2006. It is argued that potential adjustments in compensation are based on the level of the firm variables in the previous year and that this time lag therefore reflects the supervisory boards' compensation policies better. Moreover, the use of a one-year lagged dependent variable in relation to the company-level variables decreases the chance of endogeneity, consistent with earlier research on director compensation (Brick et al., 2006; Linn & Park, 2005).

²² Preliminary analysis in which a distinction in the compensation of supervisory board members is made between the chairman and the remaining supervisory board members did not result in remarkable differences. Therefore, for brevity, we only report the empirical regression results for the average level of supervisory board compensation as dependent variable.

²³ In case a vice-chairman board function is installed within the supervisory board of interest, this vice-chairman is treated as supervisory board member and thus contends for these remaining board seats.

The independent variable *firm size* is measured as the natural logarithm of sales revenues in the year prior to the compensation observation. This is a widespread measure of firm size in executive and director compensation research (Tosi et al., 2000).

The firm's *growth opportunities* are measured by the firm's market to book ratio. The ratio reflects the market value of the company in relation to its current book value. This measure is in line with the operationalisation used in Bryan et al. (2000) and Linn & Park (2005).

The variable *firm diversification* is often measured by the number of different Standard Industry Classification (SIC) codes in which a company is active (Finkelstein & Hambrick, 1989; Hengartner, 2006; Rose & Shepard, 1997).²⁴ Following these existing researches, the number of different business lines is used as a proxy for firm diversification in this research and is measured by the number of four-digit SIC codes in a particular year.

Firm internationalization is measured as the proportion of foreign sales to total sales. This measure reflects a company's dependence on foreign markets and is a prevalent proxy for a firm's degree of internationalization in earlier studies (Geringer, Beamish & Da Costa, 1989; Sullivan, 1994).

The last firm-level variable operationalised is *public exposure*. Similar to Hengartner (2006), public exposure is measured by the number of newspaper articles that is published on the particular company in a given year. Here, the number of newspaper articles in a given year reflects the total amount of articles with the company name included in the article's headline and published in the national newspapers in the Netherlands. In line with the research by Hengartner (2006), the natural logarithm of the number of published newspaper articles is used. Newspaper articles are assumed to reflect the topics of public interest in a given period. The number of publications may therefore reflect the amount of publicity a company has (had). Furthermore, public scrutiny may be greatly influenced by (the number of) publications in the newspapers. Consequently, an increase of a firm's public exposure may enhance the perceived risks on loss of face for the supervisory board members.

5.2.2. Board-level variables

Regarding the independent variables on board-level, the first construct of interest is *time commitment*. The count variable is operationalised as the absolute number of supervisory board meetings held in a given year. The supervisory board compensation level is not lagged one year with respect to this independent variable, since attendance fees for the supervisory board meetings are obviously calculated based on the number of board meeting in that specific year. The *presence of subcommittees* is operationalised as a count measure of the number of subcommittees present in the supervisory board in the year of interest.

²⁴ This Standard Industry Classification is a classification system created by the US government in order to classify the different industries by assigning a four-digit code to the industry. Therefore, the number of different SIC-codes attached to a company indicates the number of different industries a company is active in.

The dependent variable is not lagged one year on the measures of this variable either. It is assumed that the compensation linked to a certain subcommittee is determined when this committee of interest is actually established. Therefore, a time lag on the number of present subcommittees is not considered relevant.

In line with earlier studies of director compensation (Brick et al, 2006; Ryan & Wiggins, 2004) the last independent board-level variable *board size* is operationalised as the total number of members in the supervisory board in the year of interest. The composition (e.g. board size) of the supervisory board is measured on the 31st of December of the year of interest and is considered to represent the board composition of that whole year. Based on this composition, supervisory board size and the governance variables described in the next section are measured.

5.2.3. Governance variables

The independent governance variables are constructed as follows. First, the proxies for *supervisory board diversity* are taken into account. Two aspects of diversity considered in this thesis, which is diversity regarding gender and board internationalization. Both diversity measures are expected to be positively related to the level of supervisory board compensation. In order to calculate both *gender diversity* and *nationality diversity*, the Blau-parameter is calculated. This indicator is an often used measure to calculate diversity in non-numerical variables, as is the case with these variables. The Blau-indicator is calculated as follows (Van Ees et al., 2007):

$$\text{Blau}_{dj} = 1 - \sum (x_{ij} / n_j)^2 \quad (1)$$

In this equation, d refers to the diversity characteristic considered, (x_{ij} / n_j) refers to the number x of supervisory board members in a specific group i of the characteristic (e.g. male/female, or Dutch/other nationality) divided by the total number n of supervisory board members in supervisory board j . This proportion is squared and the sum of the proportions of all group characteristics is subtracted from 1, resulting in the Blau-parameter.

The measure regarding nationality diversity in the supervisory board used in this research is based on the ‘country of origin’ of the supervisory board members. This operationalisation accurately reflects the board’s internationalization and is in line with other studies on nationality diversity (Caligiuri, Lazarova & Zehetbauer, 2004; Van Ees et al, 2007; Van Veen & Marsman, 2008).

The last governance variable considered in this research is the supervisory board’s average degree centrality as proxy for the *number of additional board memberships* of a supervisory board, which reflects the embeddedness and centrality of a firm in the business network. Here, the measure reflects the

average number of direct ties a company's supervisory board has to other boards (both supervisory and management boards) in the network. Thus, the higher the average degree centrality, the more linkages a supervisory board on average has to these other boards.²⁵

²⁵ Given the fact that the average degree centrality measured were collected and calculated by the graduate student Floris van der Lee, we will not elaborate further on the calculations for this measure. For an extensive explanation on degree centrality calculations, please refer to Wasserman & Faust (1994).

6. METHODOLOGY

In this chapter, the data collection method in the research is discussed and the composition of the data sample is clarified. Moreover, an explanation of the data analysis used in this thesis is given. The first two sections will focus on the data collection and the final

6.1. Method of Data Collection

The secondary data are collected from different data sources. Data regarding the dependent variable *supervisory board compensation* is mainly collected from the companies' annual reports and AGM minutes on the corporate websites.

Data on the independent board-level variables is mainly collected from publicly disclosed information such as the annual reports and AGM minutes of the listed firms. In addition, information concerning the composition of the supervisory board, required to measure the governance variables, is obtained from a database available at the University of Groningen.²⁶ Additionally, for the year 2007, required data on the dependent variable compensation as well as the board-level variables and the governance variable concerning board diversity are collected from the *Proxy Database 2007*, available at Towers Perrin. This database contains an extensive collection of publicly disclosed, company specific information on all the listed companies and important local funds in the Netherlands.

Data regarding the independent firm-level variables firm size, growth opportunities, internationalization and firm diversification are obtained using the financial databases Thomson DataStream and Worldscope. Data on the remaining independent firm-level variable concerning a firm's public exposure is obtained from LexisNexis, an online provider that offers access to searchable documents in news, business and legal sources.

6.2. Data Sample

This thesis focuses on Dutch companies listed on the Euronext stock exchange which are included in the AEX-, AMX-, or ASX-index. The use of a sample of listed companies was considered most relevant, since the principles and best practice provisions stated in the Dutch corporate governance code only apply to listed companies. Moreover, data availability for the privately held companies is limited. For these reasons, privately held companies are excluded from this research.

²⁶ The author wants to express her gratitude to the graduate Floris van der Lee. With the help of the created database by Floris van der Lee, information on the size and composition for the years 2004-2006 of the supervisory board could be easily obtained.

6.2.1. Descriptive statistics

First, we will examine the development of the supervisory board compensation in total and the development of the different pay components over the years. For this part of analysis, the period of interest is 2004-2007. The choice for 2004 as the start of this research period is based on the fact that the Dutch Corporate Governance Code became effective for all companies' financial years starting at, or after, the 1st of January, 2004. Therefore, any potential (disclosure) effects of the introduction of the Code on the compensation levels are assumed to be disregarded when researching the period 2004-2007.

In order to determine the composition of the indices for the years of interest, it is decided to look at the composition of the indices in March the year following the financial year of interest. The underlying reason for this decision is that typically, the companies' annual reports regarding a particular financial year of interest are presented in the first quarter of the following year. These complete indices comprise a total number of 300 firm-year observations over the entire period 2004-2007, which formed the point of departure for further decisions regarding the inclusion of companies in the data sample.

The first criterion that was applied to the companies is that the companies should have a two-tier board structure. Because the differences in board structure affect the task characteristics (e.g. time commitment) and the roles and responsibilities of the supervisory board, consequently the potential complexity of the supervisory board's activities and work environment, excluding companies with one-tier board structures from the data sample is assumed relevant. This brought the reduced sample to 260 firm-year observations, on 82 different companies. The descriptive statistics are based on this number of 260 firm-year observations. The division of this sample over the years is shown in the table below (see table 2).

Table 2 Overview Sample Size Supervisory Board Compensation

Year	2004	2005	2006	2007
Sample Size Descriptive Statistics	61	66	66	67

6.2.2. Multiple regression analysis

The empirical analysis further entails a multiple regression model in which the dependent variable supervisory board compensation is regressed on all independent variables in our dataset.

Resulting from the fact that the year 2007 contains the most firm observations, we will first run the regression analysis for the year 2007. In addition to the criterion concerning the board structure of the companies, firms of which data regarding the dependent variable or independent variables were missing in 2007 were excluded from the sample. This brought the data sample for the multiple regression analysis on 2007 to a total number of 65 firm observations.²⁷

²⁷ For an overview of all companies included in the samples concerning the descriptive statistics and the regression analysis, please refer to appendix C.

6.3. Multiple Regression Analysis

Based on the constructed variables in the previous chapter, the multiple regression analysis will be performed using the following equation:

$$\begin{aligned} SBComp = & \beta_0 + \beta_1(FirmSize_i) + \beta_2(GrowthOpportunities_i) + \beta_3(Diversification_i) + \\ & \beta_4(FirmInternationalization_i) + \beta_5(PublicExposure_i) + \beta_6(TimeCommitment_i) + \\ & \beta_7(Subcommittee_i) + \beta_8(BoardSize_i) + \beta_9(DegreeCentrality_i) + \\ & \beta_{10}(NationalityDiversity_i) + \beta_{11}(GenderDiversity_i) + \varepsilon_i \end{aligned} \quad (2)$$

Here, β_0 is the unknown intercept (i.e. constant), $\beta_{1,2,n}$ denotes the unknown parameter for the specific independent variable, ε_i is a standard error term and 'i' refers to one of the 65 firms taken into account. In order to examine the relative explanatory power of the firm-level, board-level and governance variables, we run the three categories of independent variables separately and run a multiple regression analysis with all independent variables included. This allows us to examine the relative influence of the different categories of variables. The underlying reasoning is that typically, existing compensation research has predominantly focused on firm-level variables when relating the complexity to the compensation level and/or structure. The influence of board-level variables and governance variables is relatively new in the research of supervisory board compensation. Yet, particularly *these* characteristics are subject to current developments in corporate governance. Therefore, investigating the relative influence of these different groups of variables is considered relevant.

6.3.1. Model specifications

When performing a multiple regression analysis, a number of assumptions are made that have to be satisfied in order to adequately perform this analysis.

Correlation

First, we check for multicollinearity. When multicollinearity exists, two or more of the independent variables used in our model are highly correlated. The difficulty with the high correlation is that it becomes difficult to determine the influence of the independent variables of interest on our dependent variable supervisory board compensation. Following Pallant (2007), a correlation coefficient of 0.7 or more, regardless the negative/ positive direction of the correlation, is usually considered to be an excessive correlation and leads to exclusion of one of the two correlating variables. In appendix A, the correlation matrix for the year 2007 is shown. As can be concluded from the matrix, the two independent variables highly correlating in our regression model are the variables firm size (*ln (sales)*) and public

exposure (*ln (exposure)*): the correlation coefficient is 0.706. Given this high correlation the independent variable public exposure is excluded from our regression analysis.

Some of the other independent variables included in the research are also highly correlated. For instance, the variable firm size and board size show a correlation of 0.675. This high correlation seems quite reasonable. It may be that large companies, apart from compensating their board members more in order to cope with the complexity linked to firm size, also appoint more supervisory board members in order to deal with the greater need for monitoring. Moreover, this explanation would be in line with the recommendations of the report published in April 2009 by the Advisory Committee on the Future of Banks in the Netherlands.

In addition, the correlation between firm size and the average degree centrality is 0.591, suggesting that the larger the firm, the higher is the average number of additional board memberships among the supervisory board members. This relation seems straightforward as well. Being a supervisory board member at a large firm may provide the board member with a reputation as effective monitor and advisor, since the supervisory board member is well able to cope with the public exposure and risks related to larger companies. Therefore, these members may be granted additional board memberships more. Moreover, given the greater amount of exposure these companies receive and the larger supervisory boards these firms generally have, the chance of having additional board memberships is quite straightforward.

In general, the high correlations indicate that the firm-level variable firm size and both the board-level variable board size and the governance variable average degree centrality have a great amount of overlap in contributing to the explanation of the variance in supervisory board pay. Testing the different categories of variables both separately and jointly allows us to address the potential problems regarding the high correlation between the abovementioned independent variables.

Outliers

Moreover, we check for potential outlying values in the data sample. The existence of potential outliers is examined by plotting the standardized residuals and exploring the Mahalanobis distances (Tabachnick & Fidell, 2006). In this data sample of 65 firm observations in the year 2007, one outlying value was detected, that is the firm Pharming Group. Given the relatively small sample size and the potential influence this outlier may have, Pharming Group is excluded from the sample.²⁸ The *Cook's Distance* values are examined to check whether other potential outliers may have an undue influence on the

²⁸ The Mahalanobis distance of 35.15 with the critical Chi-square value of 31.26 (P = 0.001) is considered too high, therefore Pharming Group is excluded from our sample.

coefficients in our regression equation. However, with a maximum *Cook's Distance* value of 0.418 we anticipate no problematic effects on the regression results.

Heteroskedasticity

Another assumption of multiple regression analysis is homogeneity of the variance (i.e. constant variance) of the standard error term. However, in the case of heteroskedasticity, this assumption is violated. The variance of the error term is in this case non-constant or, put differently, deviation in the constant variances exist. So, heteroskedasticity not so much biases the slope estimates (coefficients) of the regression, but it can undervalue the confidence interval in the tests, thereby increasing the possibility of type-II error. When a type-II error occurs, the statistics fail to reject the null hypothesis, when the null-hypothesis is in fact false. In order to check for this heteroskedasticity, the White's test is performed (for test results, see appendix B).

Linearity and normality

An additional assumption is linearity between the dependent and independent variables. In order to check for linearity we plotted the standardized residuals against the variables used, and examined whether a straight-line relation between the predicted supervisory board compensation measures and the residuals exists (Pallant, 2007). The assumption of linearity is not violated in our research. Last, in order to examine the last assumption underlying multiple regression analysis, that is the assumption of normality, the normal probability plots were analyzed. Exploring the normal probability plots, no other violations of the assumptions underling the regression analysis seem to be present in our model for the year 2007.

6.3.2. Additional analyses

The results found in the regression analysis for the year 2007 are not necessarily representative for the years prior to the year 2007. In order to examine to what extent the findings are consistent over the years included in our research period, we additionally perform regression analyses for the years 2004-2006 separately. In these additional tests, we follow the same methodology used in the regression analysis for the year 2007.

However, differences in the composition of the data samples over the years may perhaps bias the outcomes of the regression analyses. Therefore, in order to address this potential bias, the analyses are conducted with a data sample containing only those companies that are consistently present in the data samples over the four years in the research period 2004-2007 as well.²⁹

²⁹ For an overview of the companies included in the subsamples described in this section, please refer to the companies presented in appendix C.

Last, it may be suggested that investigating to what the extent the *changes* in the independent variables influence the changes in supervisory board pay level provides a more suitable answer on the question whether boards are compensated for increasing complexity in their duties. For the examination of the influence on the relative changes in supervisory board pay, we perform a multiple regression analysis on the 50 companies that were present in the data samples in the years 2004 and 2007. Here, we calculate the relative changes in both independent and dependent variables by subtracting the firm specific value in 2004 for the variable of interest from the value in 2007, and multiplying it by its value in 2004. Subsequently, the relative changes in supervisory board pay levels are regressed on the relative changes in the independent variables.

7. EMPIRICAL RESULTS

In this section, the empirical results are discussed. The different subsections discuss the descriptive statistics of the researched variables and the regression analyses conducted. First, section 7.1 present a comprehensive description of the developments in supervisory board pay. It examines the development of the total compensation level and its different components over the years included in our research period. Section 7.2 focuses on the variables included in our regression analysis on 2007. Last, section 7.3 presents the empirical results of the multiple regression analysis.

7.1. Development of Supervisory Board Compensation

This section provides an extensive description of the developments in the different compensation components and the total compensation awarded.

7.1.1. Fixed annual fee

The main component of the total compensation of supervisory boards is the fixed annual fee. In general, the size of the fixed fees awarded to the supervisory board members differs somewhat between the different board positions within the supervisory board. Typically, a distinction can be made between fees awarded to the chairman, vice chairman and member of the supervisory board. However, in this research the compensation components linked to the vice chairman are excluded from the empirical results. The reasoning of exclusion is that a relatively limited number of companies throughout the research period have established a vice-chairman fixed annual fee. In addition, the relatively small differences between the levels of vice-chairman fixed annual fees compared to member fees have further founded the decision for exclusion. Table 3 presents the fixed annual fees awarded to the members of the supervisory board.

Table 3 Supervisory Board Compensation: Fixed Annual Fee

<i>Year</i>	<i>n</i>	<i>Position</i>	<i>Mean</i>	<i>Median</i>	<i>Std.Dev.</i>	<i>Minimum</i>	<i>Maximum</i>
2004	61	Chairman	37,438	36,000	11,670.97	9,900	74,874
		Member	27,217	27,000	7,626.20	5,000	41,000
2005	66	Chairman	40,732	40,000	12,827.18	18,000	75,000
		Member	29,038	28,484	8,344.13	15,000	50,000
2006	66	Chairman	44,657	40,000	14,774.57	24,000	85,000
		Member	31,275	29,000	9,552.74	16,000	60,000
2007	67	Chairman	47,448	45,000	15,972.44	20,000	97,000
		Member	32,785	30,000	9,986.25	15,000	60,000

Note: All compensation figures are presented in Euros. The column ‘*n*’ refers to the number of firm observations per year taken into account in this research

As a result of the relatively large standard deviations related to the levels of supervisory board compensation and the increasing difference between the mean and median value, this latter value is considered to be more stable (i.e. less influenced by extreme observations) and will therefore be used in the descriptive statistics hereafter.

As can be noted from the table, the median annual fixed fees for the chairman and members range from € 36,000 and € 27,000 respectively in 2004, to € 45,000 and € 30,000 in 2007. This indicates a percentage increase of 25 percent of the median fixed annual base fee for the chairman and a percentage increase of approximately 11 percent of the median fixed annual fee for the supervisory board members.

Regarding these fixed annual fees, the lowest fees for all supervisory board positions are awarded by the biotechnology firm Crucell in 2004, listed on the AMX-index (i.e. € 9,900 for the chairman and € 5,000 for the member). However, these low values may be explained by the fact that, in addition to the annual fixed base fees, Crucell awards its supervisory board members share options. Since awards in shares (or options) are not taken into consideration in this research, this may explain the low rank for Crucell concerning the awarded fixed annual fees.

The highest base fee awarded to a supervisory board chairman in the research period is the fixed annual fee awarded by Unibail-Rodamco in 2007 (€ 97,000). ABN Amro has awarded the highest fixed annual fees to its supervisory board members. In 2006, the company awarded its supervisory board members annual fixed fees of € 60,000.

Generally, all companies have increased their annual fixed fees for the supervisory board in the researched period. Only one company included in the dataset has decreased its annual fixed fees. At the AGM of Wessanen in 2004, the shareholders approved a decrease of the annual fixed fee, which is explained by the introduction of separate committee fees in this particular year.

7.1.2. Committee fee

Typically, companies included in the dataset have installed two subcommittees, namely the audit committee and the remuneration committee. This average number remains fairly stable over the years. The establishment of these two committees is also described in principle III.5 of the Dutch Corporate Governance Code. The third committee described in the Code, the selection and appointment committee, is often combined with the remuneration committee.³⁰ When a company has established other committees that can not be classified under the three abovementioned committees, the committees are categorized

³⁰ In this research, in case a combined committee exists in the companies, this committee is categorized as 'remuneration committee'. In case a separate selection and appointment committee is established, the committee is mentioned separately.

under ‘other committee’. These committees vary from a ‘corporate governance committee’ to ‘strategy committee’.

In the table 4 below, the specific committee fees are presented. In general, the number of companies that have established specific committee fees and the level of the committee fees have increased over the years. Please note that the number of observations (n) in the early years of the research period is limited, particularly regarding the attendance fees. Therefore, the figures stated should be interpreted with caution. As can be concluded from the table, the number of companies that have installed separate committee fees for their established committees has increased. Additionally, the level of these fees has increased as well.

Table 4 Supervisory Board Compensation: Committee Fee

<i>Committee</i>	<i>Fee</i>	<i>n</i>	<i>2004</i>	<i>n</i>	<i>2005</i>	<i>n</i>	<i>2006</i>	<i>n</i>	<i>2007</i>
Audit	Chairman	26	5,000	34	6,000	34	7,000	40	7,500
	Member	25	4,263	30	4,500	33	5,000	38	5,000
	Att. Chair	8	1,750	8	1,500	7	1,500	6	2,000
	(Member)		(1,500)		(1,450)		(1,500)		(1,500)
Remuneration	Chairman	15	5,000	26	5,000	31	5,000	36	6,000
	Member	16	4,000	25	4,000	29	4,000	34	4,000
	Att. Chair	9	1,500	6	1,375	5	1,500	5	1,500
	(Member)		(1,250)		(1,125)		(1,250)		(1,250)
Sel. & App.	Chairman	4	5,000	12	5,000	16	5,500	20	5,500
	Member	4	4,769	11	4,000	14	4,000	18	4,250
	Att. Chair	6	1,375	4	1,375	3	1,500	3	1,500
	(Member)		(1,125)		(1,000)		(1,000)		(1,250)
Other	Chairman	4	3,425	8	4,550	10	7,250	8	7,000
	Member	4	2,275	8	3,000	10	5,000	6	5,000
	Att. Chair	3	567	3	1,250	3	1,250	3	1,250
	(Member)		(567)		(1,000)		(1,000)		(1,000)

Note: All compensation figures are presented in Euros. Abbreviations *Att.Chair* and *(Member)* refer to attendance fees for committee chairmen or attendance fees for committee member respectively. Column ‘ n ’ refers to the number of firm observations per year taken into account in this table

7.1.3. Total supervisory board compensation

An overview of the total compensation awarded to the supervisory board members is presented in table 5.

Table 5 Supervisory Board Compensation: Total Compensation

<i>Year (n)</i>	<i>Board Position</i>	<i>Mean</i>	<i>Median</i>	<i>Std. Dev.</i>	<i>Minimum</i>	<i>Maximum</i>
2004	Chairman	41,416.85	37,900	14,581.44	15,882	83,950
(61)	Member	30,661.63	30,000	9,475.369	15,000	60,843.75
2005	Chairman	45,634.94	43,018	16,701.55	18,000	85,500
(66)	Member	33,126.79	30,549.83	12,083.67	15,000	73,700
2006	Chairman	50,255.67	45,677.5	19,933.18	24,000	130,000
(66)	Member	35,844.91	30,550	13,254	16,000	69,250
2007	Chairman	52,977.70	52,500	19,209.44	20,000	112,000
(67)	Member	37,631.92	37,000	13,339.52	15,000	67,000

Note: All figures are presented in Euros. Total compensation comprises the annual fixed fees, committee fees and attendance fees awarded to the supervisory board members. The figures in parentheses ‘(n)’ refers to the number of firm observations per year taken into account in this table

Considering the research period, median chairman compensation (based on the firm’s compensation policies) has increased from € 37,900 in 2004 to € 52,500 in 2007, an increase of 38.52 percent. A similar trend in total compensation is observed for the median level of member total compensation. Total member compensation increased from the median level € 30,000 in 2004, to € 37,000 in 2007, thereby increasing 23.33 percent. The highest total supervisory board pay awarded to the supervisory board chairman is the compensation awarded to the chairman of ABN Amro in 2006, whereas the lowest compensation level, that equals € 15,882 is awarded to the chairman of BE Semiconductors in 2004. For the supervisory board member compensation, the highest pay level is awarded by Royal Ahold in 2005. The lowest value in this case is € 15,000 and this amount is awarded by two small-cap firms, namely Innoconcepts in the years 2004 and 2005, and Qurius in 2007.

7.1.4. Conclusion

In summary, both the total supervisory board compensation levels and the different compensation components have increased during the years of interest. The level of total compensation awarded to the chairman has increased with 38.52 percent over the period 2004-2007, and the total member compensation with 23.33 percent is the same period. Concerning the committee fees, an interesting development is that not only that the level of committee (attendance) fees increases, but in particular the number of companies that have installed separate committee fees for their established committees shows a substantial increase over the years.

7.2. Descriptive Statistics Variables

The following table 6 presents an overview of the dependent variable and all independent variables used in our regression model. The figures on the variables show no truly surprising statistics. However, it can be concluded from the table that a large variety in the level of total sales revenues exists, given the high standard deviation of total sales revenues in the separate years. Following existing executive compensation research and director compensation research, the natural logarithms of the average level of supervisory board compensation and total sales revenues are used in our regression analysis (Hengartner, 2006; Linn & Park, 2005).

Table 6 Descriptive Statistics Variables 2007

<i>Variable</i>	<i>Mean</i>	<i>Median</i>	<i>Std. Deviation</i>	<i>Minimum</i>	<i>Maximum</i>
Dependent Variable					
Avg. Total Compensation (€)	45,248.78	44,312.50	15,877.75	17,500	86,027.78
LN (Total Compensation)	10.657	10.699	0.363	9.770	11.362
Firm-level Variables					
Total Sales (mln €) _{t-1}	5,926.168	1,358.69	1,6604	20.396	120,294
LN (Sales) _{t-1}	7.157	7.214	1.76	3.015	11.698
Foreign Sales/ Total Sales _{t-1}	52.27	55.75	32.26	0	96.93
SIC-codes _{t-1}	1.8	2	0.912	1	5
Market-to-Book Value _{t-1}	3.167	2.73	1.869	1.07	9.78
Board Level Variables					
Annual Board Meetings	5.64	5	2.06	3	12
Established Subcommittees	2.06	2	1.28	0	4
Board Size	8.3	8	2.79	4	18
Governance Variables					
Gender Diversity	0.395	0.382	0.321	0	1.167
Nationality Diversity	0.090	0	0.146	0	0.5
Average Degree Centrality	0.312	0.32	0.280	0	0.81

Note: For the independent variables on firm-level, all values are measured at year t-1, in order to overcome potential causality/endogeneity problems. LN Total Compensation is the natural logarithm of the average supervisory board compensation and LN Sales is natural logarithm of total sales revenues. The variable foreign sales/ total sales refers to the proportion foreign sales over total sales.

7.3. Results Multiple Regression Analysis 2007

Table 7 presents the results of the regression analysis where the level of supervisory board compensation, reflected by the natural logarithm of the total compensation, is regressed on all independent variables considered relevant in this thesis.

Table 7 Multiple Regression Results 2007

<i>Independent Variables</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>	<i>Model IV</i>
LN Sales $t-1$	0.651 *** (0.000)			0.220 * (0.070)
Foreign Sales/ Total Sales $t-1$	0.250 *** (0.008)			0.195 ** (0.021)
Diversification $t-1$	-0.043 (0.635)			-0.061 (0.461)
Market-to-Book value $t-1$	0.033 (0.710)			0.058 (0.472)
Board Size t		0.467 *** (0.000)		0.298 ** (0.013)
Subcommittee t		0.376 *** (0.001)		0.200 ** (0.037)
Board Meetings t		-0.019 (0.832)		0.011 (0.884)
Gender Diversity t			0.164 (0.101)	0.007 (0.934)
Nationality Diversity t			0.251 *** (0.010)	0.123 (0.903)
Average Degree Centrality t			0.547 *** (0.000)	0.229 ** (0.022)
Intercept (constant)	9.558 ***	9.993 ***	10.274 ***	9.691 ***
R²	0.571	0.551	0.523	0.722
(Adjusted R²)	(0.541)	(0.528)	(0.499)	(0.669)
F-statistic	19.599	24.501	21.888	13.746
Probability	0.000	0.000	0.000	0.000
N	64	64	64	64

Note: Table 7 presents the multiple regression analysis for the natural logarithm of supervisory board pay level as dependent variable, in 2007. LN Sales is natural logarithm of total sales revenue measured at year t-1. The variables foreign sales/ total sales, firm diversification and market-to-book value are all measured at year t-1 to overcome potential causality problems. Remaining independent variables all equal the values measured in year t. P-values are in parentheses. ***, **, * means significant at 1%, 5% and 10% respectively

7.3.1. Firm-level variables

In model I, the results on the four firm-level variables are presented first. When examining the firm-level variables individually, firm size has a considerably high and positive coefficient, namely 0.651. This result thus indicates that, of the firm-level variables, firm size contributes the most to explaining the level of supervisory board compensation.

The second highly significant and positive beta-value is firm internationalization. With a coefficient of 0.250 and statistically significant at the 1% significance level, it seems that supervisory board compensation is positively influenced by a firm's internationalization.

The remaining two firm-level variables taken into account, that is to say the proxies for a company's growth opportunities and firm diversification do not show statistically significant relationships with supervisory board compensation.

The growth opportunities show a positive, statistically insignificant relation. Surprisingly, this is in contrast with our expectations, indicating that supervisory board pay is not significantly related to a firm's growth opportunities.

Regarding firm diversification, the beta-coefficient appears negative, although it is found to be not significant. This is in contrast with our reasoning that the level of supervisory board compensation would increase as a result of the increasing complexity in the monitoring and advising role related to the number of different segments a firm operates in. The results indicate that supervisory board members are not compensated more when companies are more diversified.

Overall, when exploring the explanatory power of the firm-level variables on the supervisory pay level, the firm-level variables show an adjusted R SQUARED value of 0.541.³¹ This value indicates that the set of firm-level variables explains 54.10% of the variance in compensation level.

7.3.2. Board-level variables

After having explored the contribution of the firm-level variables, we will now focus on the three board-level variables, shown in model II. The board-level variable that seems to have the most important influence on the total pay level of the supervisory board is the board size. With a beta-coefficient of 0.467, and a statistical significance at the 1% significance level, it seems that in contrast with our expectations, a larger supervisory board results in a higher level of compensation for the supervisory board members.

Apart from the variable board size, also the number of subcommittees present in the board shows a highly positive and statistically significant relation with the supervisory board pay level. In line with our expectations, it appears that supervisory board members receive a higher level of compensation when more subcommittees are present in the supervisory board.

The last board-level variable considered is the number board meetings held annually by the supervisory board. Contrary to our expectations, the number of board meetings is not significantly related with the level of supervisory board compensation in both the relative analysis of the groups of variables and when

³¹ Because of the relatively small sample size and large number of independent variables, it is considered relevant to pay attention to the *adjusted* R² value, which corrects the R² value in order to provide a more accurate estimation of the value for the entire population.

testing all independent variable jointly. These results indicate that the supervisory board pay level is not related to the number of annual board meetings held by the supervisory board.

All board-level variables together in model II explain 52.8% percent of the variance in the level of supervisory board compensation, given the adjusted R squared of 0.528. This adjusted R squared value is just below the contribution of the collection of the firm-level variables.

7.3.3. Governance variables

The last set of independent variables considered here, are the independent governance variables presented in model III. All three variables appear to have a positive relation with the supervisory board pay level.

Looking at the governance variables tested separately, the positive coefficients of our diversity variables appear consistent with our expectations that an increasing diversity increases supervisory board compensation. However, only the nationality diversity is significantly related at the 1% significance level, with a beta-coefficient of 0.251. Regarding the variable ‘average degree centrality’ as proxy for additional board memberships, this variable shows a highly positive relationship with supervisory board pay as well, statistically significant at the 1% significance level.

The three governance variables together account for 49.9% in the explanation of variance in the supervisory board pay level. The adjusted R squared value of 0.499 is just below the before mentioned figures related to the independent firm-level and board-level variables.

7.3.4. Aggregate multiple regression results

Overall, the explanatory power of the regression model ranges from an adjusted R squared of 0.449 to 0.669. Concerning the relative explanatory power of the three groups of variables, the lowest value of 0.449 belongs to the group of governance variables and the highest adjusted R squared value of 0.541 relates to the firm-level variables. It thus appears that the firm-level variables contribute the most to the explanation of variance in supervisory board pay.

The highest adjusted R squared is 0.669, belonging to the regression model in which all independent variables are included. This value indicates that the complete regression model explains a proportion of 66.9% of the supervisory board pay level: an expected result, since all independent variables considered relevant in our thesis are included in this regression model. Comparing model IV with the models I, II and III, the significance of the independent variables contributing to the explanation of the variance in pay differs somewhat in model IV. Moreover, nationality diversity appears insignificant when all variables are tested together. However, as mentioned earlier, the statistical relevance of these outcomes may be

doubted. Due to the rather high correlation between the independent variables *firm size*, *board size* and *number of additional board memberships*, there seems to be a severe bias in both the coefficients and the significance levels when testing the variables jointly.³²

7.4. Additional Tests

7.4.1. Additional regression analyses 2004-2006

To investigate the consistency of the results in 2007 over time, and explore potential developments in the explanatory power of the model, we additionally performed separate regression analyses for the years 2004, 2005 and 2006. The results of these multiple regression analyses are shown in table 8. For the descriptive statistics and correlation matrices regarding the years 2004, 2005 and 2006, please refer to appendix D.

Considering the explanatory power of the aggregate regression model, the size of the adjusted R squared value differs somewhat over the years. Whereas the model seems to explain 65.6% of the variance in supervisory board pay in 2004, this value fluctuates over the following two years of our research period from 69.6% in 2004 and 62.2% in 2006. The outcomes show a somewhat inconclusive explanatory power, but the explanatory power of the model remains rather high, explaining more than half of the variation in supervisory board pay.

Second, comparing the aggregate results on the year 2007 with the results in the three prior years, a number of changes are noticeable. For instance, whereas firm internationalization in the first two researched years seems unrelated to our dependent variable, the variable becomes significantly and positively related to supervisory board pay in the years 2006 and 2007. This suggests that supervisory board members are compensated more for the (complexities related to) internationalization of firms.

In addition, the coefficients on the variable firm diversification show that after the statistically significant relation of firm diversification with supervisory board pay, this variable appears unrelated in the three following years. Thus, the results indicate that the influence of the number of different industries a firm operates in on supervisory board pay decreased over the years.

³² This remark is further supported by the outcomes of conducted additional multiple regression tests. When supervisory board pay is regressed on the set of seven independent variables and each of the three highly correlating variables is separately included to these independent variables, the results then show highly significant beta-values for the separately included independent variables.

Table 8 Additional Multiple Regression Results

Independent Variables	Year 2004				Year 2005				Year 2006			
LN Sales $t-1$	0.335 ** (0.014)		0.152 (0.294)	0.616 *** (0.000)			0.287 ** (0.028)	0.638 *** (0.000)			0.169 (0.224)	
Foreign Sales/ Total Sales $t-1$	0.281 ** (0.017)		0.162 (0.120)	0.170 * (0.095)			0.061 (0.458)	0.283 *** (0.007)			0.177 * (0.086)	
Diversification $t-1$	0.276 ** (0.040)		0.186 * (0.085)	0.078 (0.450)			0.124 (0.132)	-0.004 (0.972)			0.087 (0.377)	
Market-to-Book value $t-1$	0.075 (0.501)		0.020 (0.836)	0.162 (0.099)			0.044 (0.584)	0.122 (0.252)			-0.078 (0.476)	
Board Size t		0.351 *** (0.004)		0.022 (0.864)		0.357 *** (0.002)		-0.089 (0.453)		0.473 *** (0.000)		0.134 (0.331)
Subcommittee t		0.501 *** (0.000)		0.481 *** (0.000)		0.541 *** (0.000)		0.451 *** (0.000)		0.239 * (0.063)		0.168 (0.147)
Board Meetings t		-0.109 (0.314)		-0.126 (0.253)		0.028 (0.757)		0.091 (0.277)		-0.065 (0.507)		0.069 (0.473)
Gender Diversity t			0.108 (0.336)	0.116 (0.219)			0.242 ** (0.011)	0.137 (0.115)			0.296 *** (0.003)	0.267 ** (0.011)
Nationality Diversity t			0.469 *** (0.000)	0.219 ** (0.040)			0.355 *** (0.000)	0.177 * (0.089)			0.444 *** (0.000)	0.269 ** (0.027)
Avg. Degree Centrality t			0.374 *** (0.000)	0.017 (0.887)			0.422 *** (0.000)	0.115 (0.247)			0.282 *** (0.003)	0.079 (0.428)
Intercept (constant)	9.664***	9.906***	10.053***	9.794***	9.490***	9.857***	10.166***	9.620***	9.504***	9.993***	10.224***	9.747***
R ²	0.444	0.535	0.433	0.723	0.529	0.550	0.514	0.750	0.566	0.420	0.493	0.689
(Adjusted R ²)	(0.397)	(0.506)	(0.398)	(0.656)	(0.493)	(0.393)	(0.490)	(0.696)	(0.523)	(0.392)	(0.468)	(0.622)
F-statistic	9.384	18.407	12.239	10.716	14.588	25.305	21.840	13.796	13.341	14.729	20.063	10.394
Probability	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	52	52	52	52	57	57	57	57	57	57	57	57

Note: Table 8 presents the multiple regression analyses for the natural logarithm of supervisory board pay level as dependent variable, in the years 2004-2006. LN Sales is natural logarithm of total sales revenue measured at year t-1. The variables foreign sales/ total sales, firm diversification and market-to-book value are all measured at year t-1 to overcome potential causality problems. Remaining independent variables all equal the values measured in year t. *P*-values are in parentheses. ***, **, * means significant at 1%, 5% and 10% respectively.

The variable board size seems unrelated to supervisory board pay when exploring the aggregate results. However, the relevance of these statistic outcomes may again be doubted and testing without the inclusion of the other correlation variables confirms this suggestion: the beta values for board size are found positive and highly significant.

As can be concluded from table 8, regressing supervisory board pay levels on the separate categories of variables, the six independent variables that were found significant and positively related in 2007 (e.g. firm size, firm internationalization, board size, the number of subcommittees, nationality diversity and average degree centrality) appear statistically significant and positively related in the prior years as well. The relative explanatory power of the different groups of variables varies however, indicating a growing importance of the firm characteristics in explaining the variance in supervisory board pay.

7.4.2. Sub sample analysis

Obviously, it may be argued that differences in the annual data samples contribute to the inconclusive results regarding the relative explanatory power of the different variable groups and individual beta coefficients. To explore whether these different data samples cause the inconclusive results, we performed all regression analyses on a sub sample in our dataset, including only the companies that are present in the data sample throughout the years. However, the outcomes of the subsample tests generally show the same (inconclusive) results. The sub sample tests show an almost equal adjusted R squared value in 2007 and equal fluctuations in the total explanatory power of the model are noticeable. Further, the tests show the same high correlation figures between the independent variables.

Differences between the samples concern the relations and the significance of these relations between supervisory board pay and the firm-level variables, in particular firm internationalization. This variable appears insignificantly related in the years 2004 and 2007, indicating that the influence of the complexity linked to firm internationalization on supervisory board pay is not as prevalent in firms consistently present in the data sample than is for the complete set of listed firms.

The fact that supervisory board pay in the sub sample appears to be explained more by the set of governance variables rather than the firm variables is most likely related to these differences in significance.

7.4.3. Multiple regression Δ 2004-2007

Given the current changes in supervisory board duties, it may be suggested that investigating the influence of the changes in the independent variables on the changes in supervisory board pay level provides a suitable answer on the question whether boards are compensated for the changing complexity in their duties. It seems reasonable that companies which have established many changes (e.g. in the composition or structure of the supervisory board) felt a stronger need to adjust the supervisory board pay level, compared to companies which were subject to a relatively small amount of change. Therefore, the last additional test examines to what extent changes in the independent variables explain changes in the supervisory board pay levels. The regression results of this additional test are presented in table 9. Looking at the results of this regression, it seems that the relative change in the variable firm size has a significant negative effect on the relative change in supervisory board pay, at the 5% significance level. Surprisingly, this indicates that a decrease in the proxy for firm size results in a higher supervisory board compensation.

Table 9 Multiple Regression Results Δ 2004-2007

Independent Variables	Beta-Coefficient
Δ LN Sales	-0.423 ** (0.012)
Δ Foreign Sales/ Total Sales	-0.093 (0.569)
Δ Diversification	0.079 (0.616)
Δ Investment Opportunities	0.059 (0.703)
Δ Board Size	0.313** (0.047)
Δ Subcommittee	-0.063 (0.677)
Δ Board Meetings	-0.166 (0.316)
Δ Gender Diversity	0.088 (0.581)
Δ Nationality Diversity	0.069 (0.643)
Δ Average Degree Centrality	-0.032 (0.849)
Intercept (constant)	0.027 ***
R²	0.232
(Adjusted R²)	(0.029)
F-statistic	1.146
Probability	0.356
N	49

Note: Dependent variable is relative change in natural logarithm supervisory board pay level in 2007, with respect to 2004. Independent variables are the relative changes in the measures for the 2007, with respect to 2004. *P*-values are in parentheses. ***, **, * means significant at 1%, 5% and 10% respectively

However, it may well be the reflection of the simultaneous occurrence of, on the one hand the declining economic growth over the last years where the influence of the supervisory board on realizing higher sales revenues is limited and, on the other hand, the general increasing complexity of supervisory board duties given that have led to practically only increasing supervisory board compensation.

The variable board size on the other hand shows a statistically significant positive effect on supervisory board pay, suggesting that an increase in board size leads to a higher level in supervisory board pay.

All other independent variables are found unrelated in the regression model. The low F-statistic with a significance of 0.356 additionally indicates that the null hypothesis that no relationship exists between the dependent variable and some or all of the independent variables cannot be rejected. This implies that any changes in our independent variables contribute almost nothing to the explanation of the changes in supervisory board pay level. This suggestion is further confirmed by the explanatory power of the model. An R squared of 0.232, but particularly an adjusted R squared of 0.029 indicates that 2.9% of the changes in supervisory board pay levels are explained by the changes in the independent variables taken into consideration in this research.

7.5. Discussion of the Results

In this section, the empirical results of the research will be discussed in relation to our theoretical framework and in perspective of the existing literature and developments.

The hypotheses established are mainly rooted in the marginal productivity theory (complemented by the human capital theory) and the managerial power perspective. Based on the marginal productivity theory, it is suggested that, as the need for monitoring of a company increases resulting from an increasing complexity, attracting talented supervisory board members with an appropriate (i.e. higher) marginal product is desired by companies. Since the impact of supervisory board members on firm value increases, it is feasible to pay the supervisory board member a higher compensation level in order to eventually achieve the maximum value for the pay level. On the other hand, the managerial power theory considers pay setting more as a political process (i.e. bargaining model) that is influenced by the relative power of the executive over the supervisory board. Here, supervisory board independence is suggested to be positively related to supervisory board objectivity in corporate decision-making. In addition, less supervisory board independence is said to increase the relative power of the manager over the supervisory board and appears to decrease the compensation level of the supervisory board.

7.5.1. Firm-level variables

First, the consistently positive and highly significant relation of the variable *firm size* is in line with existing research relating firm size to supervisory board compensation (Brick et al., 2005; Linn & Park, 2005) and indicates that supervisory board members are indeed compensated for the complexity involved with the size of a firm.

Firm internationalization is found positively, and since 2006 significantly, related to supervisory board compensation. To our knowledge, existing research has only related firm internationalization to *executive* compensation (Oxelheim & Randøy, 2004; Sanders & Carpenter, 1998). Yet, our results suggest that the supervisory board is compensated for the increasing complexity linked to differences in the national institutional context as well, consequently affecting the need for monitoring and the required amount of human capital of the supervisory board members (Sanders & Carpenter, 1998).

Contrary to the findings of Linn & Park (2005) and Bryan et al. (2000), we find an inconclusive and consistently insignificant relationship between a firm's *growth opportunities* and supervisory board pay levels. This result is not only found in the regression models in which all independent variables are taken into account, but in the relative analyses of the three groups of variables as well. As opted in existing research, this may indicate that the explanatory power of using only the market to book value as proxy for firm's growth opportunities is limited.³³ Additionally, we find no consistent significant relation with *firm diversification* either. Although contrasting our expectations, this finding is consistent with the research performed by Adams (2003). Adams (2003) suggests that the insignificant contribution of diversification to the level of supervisory board pay may be explained by the fact that directors in more diversified firms not so much increase their total compensation when diversification increases, but that it more determines *how* the board allocates its supervisory board pay and emphasizes the different board tasks with the compensation.³⁴

³³ Gaver & Gaver (1993) for instance claim that reflecting a firm's growth opportunities by employing measures that involve the market value of a firm's stocks, these ratios are influenced by a firm's specific capital structure choice, namely the use of leverage by the company. This is the case when using the market to book value as measure for a firm's growth opportunities. Therefore, the independent variable is said to contain a certain extent of noise when using this measure alone.

³⁴ Adams (2003) divides the subcommittees present in a board over the three main supervisory board tasks: monitoring, providing strategic direction and representing stakeholder interests. Subsequently, the compensation linked to these different subcommittees is divided into monitoring compensation, strategy compensation and stakeholder interest compensation. Adams (2003) found that firm diversification is only significantly positive related to monitoring compensation.

However, given the fact that supervisory board compensation in the Netherlands only recently (i.e. the last years) gained public and academic interest, it may well indicate that supervisory board compensation is not related to complexity arising from either a firm's growth opportunities or the diversification of a firm.

7.5.2. Board-level variables

With the positive and significant relation of our independent variable *board size* with supervisory board pay in the year 2007, our results are in contrast with the findings of Ryan & Wiggins (2004). The researchers found that smaller boards receive more total compensation than larger boards, implying a negative relation between board size and total supervisory board compensation (Ryan & Wiggins, 2004). An explanation for our positive relations may perhaps be that companies, apart from compensating their board members more in order to cope with the increasing complexity, also appoint more supervisory board members as a response to the increasing need for monitoring. This explanation may corroborate the positive and statistically significant relation of the relative change in board size and the change in supervisory board pay. Moreover, this would be in line with the recommendations of the report published in April 2009 by the Advisory Committee on the Future of Banks in the Netherlands. However, information on the timing and motivation of the appointment of new supervisory board members is missing and therefore conclusive statements on this effect cannot be done.

For the analyses conducted on the years 2004-2007 in our research, the *number of present subcommittees* shows a positive and predominantly significant influence on supervisory board compensation. This indicates that complexity arising from subcommittees positively affects supervisory board pay. The introduction of the Code most likely facilitated this noticeable effect on supervisory board pay. The Code prescribes the establishment of three separate subcommittees when the board consists of four or more board members. Since the establishment of subcommittees is often accompanied by the establishment of specific committee fees as well, and given the increasing number of companies that have established separate subcommittee fees, this may form a motivation for the highly significant and positive coefficient. Moreover, resulting from the developments in the roles and responsibilities of the supervisory board the work load of the supervisory board in general, but particularly that of the subcommittees, shows a remarkable increase the last year.

The last board-level variable discussed is the *time commitment* of the supervisory board. In all the performed analyses, number of board meetings held annually by the supervisory board unrelated to the variance in supervisory board pay, indicating that supervisory board pay is not related to the time commitment of the members. This result may seem surprising, especially given the fact that work load

was considered an important determinant of supervisory board pay levels. However, since the presence of subcommittees showed a strong positive relation, it may be that the (increasing) work load is particularly present in the activities of the subcommittees and not so much in the general board meetings.

7.5.3. Governance variables

The positive coefficients on diversity are in line with our expectations that *diversity* reduces the relative managerial power and subsequently increases the level of supervisory board pay.

The findings on our measure for the *average number of board memberships* support the perspective that supervisory board members with additional board memberships are compensated for their valuable knowledge, expertise and access to their personal networks. Or, put differently, the results may indicate that the average number of additional board memberships in this research is within the range where an increase in additional board memberships still increases the supervisory board members' valuable knowledge and expertise, instead of limiting the supervisory board's time and effort in effectively performing its duties (Core et al., 1999). Another perspective on this positive relationship may be a perspective embedded in the class hegemony theory, suggesting that with the establishment of relationships between supervisory board members across firms, a network of individual board members relating these firms is created and thereby the spread of equal levels of supervisory board pay/ equal compensation policies may be established within these networks of firms.

7.5.4. Relative explanatory power

The relative increasing explanatory power of the firm-level variables might be an indication of a growing importance of the firm characteristics in explaining the variance in supervisory board pay. However, one could also approach this development from a different angle by not focusing on the strong relative explanatory power of the set of firm-level variables in the last years, but rather focus on the declining relative explanatory power of the board-level and governance variables after the first researched years of interest.

These results may suggest that in the first years after the introduction of the Code, the part of companies that complied almost immediately with the principles on the roles and composition of the supervisory board were the first to be confronted with the (increasing) complexity involved with these changes. Therefore, the firms increased their supervisory board pay levels as well, leading to the relatively large explanatory power of these groups of variables. However, the years that followed, the principles -and compliance with these principles- have become rule rather than exception. Therefore, the accompanying complexity and subsequently the explanatory power of these variables have levelled out over all firms.

This development then brings us back to the explanatory power of the initial differences between firms, namely the firm characteristics. Another plausible explanation may also be that the firms that complied with the principles the earliest are the (large) firms that had already established relatively higher pay level for their supervisory board. For this alternative explanation, the same explanation for the decreasing relative power may apply as was mentioned above.

Yet, the fluctuating results on the other two other groups of variables and the sub sample tests make it rather complicated to make clear statements on the trends and developments in the relative power of the groups of variables.

Overall, our empirical results are to a certain extent in line with the general expectation that firms with a greater need for monitoring pay their supervisory board members more. In addition, the positive results on the governance variables indicate that more independent supervisory board members are also compensated more and members are compensated for their valuable knowledge and expertise.

Given the somewhat inconclusive results of our regression analyses and the focus on the increase of complexity, additionally examining the relative changes in the independent variables and their influence on changes in supervisory board pay over the period 2004-2007 is considered relevant. The results show almost no contribution of the relative changes in independent variables on the changes in supervisory board pay. Although the statistical significance of this regression should be challenged, the results may imply that, while the level of supervisory board compensation appears to some extent related to the independent variables reflecting the need for monitoring, the potential *alignment* of supervisory board pay to the changes in these variables seems to be neglected by the supervisory board.

Table 10 Overview Hypothesized and Empirical Signs

Independent Variable	Hypothesized Signs	Empirical Signs 2007	2004	Empirical Signs Additional Tests		
				2005	2006	Δ (2004-2007)
<i>Company-level Variables</i>						
H1. Firm Size	+	+ * (***)	+ (**)	+ ** (***)	+ (***)	- **
H2. Invest. Opportunities	+	+	+	+	-	+
H3. Firm Diversification	+	-	+ *	+	+	+
H4. Internationalization	+	+ **	+	+	+ *	-
H5. Public Exposure	+	NA	NA	NA	NA	NA
<i>Board-level Variables</i>						
H6. Time Commitment	+	+	-	+	+	-
H7. Presence Subcommittee	+	+ **	+ ***	+ ***	+	-
H8. Board Size	-	+ ** (***)	+ (***)	-(+ ***)	+ (***)	+ **
<i>Governance Variables</i>						
H9. Board Diversity	+	+	+	+	+ **	+
- Gender Diversity						
- Nationality Diversity	+	+	+	+ *	+ **	+
H10. Board Memberships	0	+ ** (***)	+ (***)	+ (***)	+ (***)	-

Note: Aggregate multiple regression results are presented in table.
Sign and/or significance changes when tested separate are in parentheses
NA: Not examined in final regressions
***, **, * means significant at 1%, 5% and 10% respectively

8. CONCLUSIONS

8.1. Conclusions

This thesis intends to contribute to the existing literature on supervisory board pay by providing additional insights in the (empirical) research on the development of the roles and responsibilities of the supervisory board in the Netherlands and the aspects influencing the supervisory board compensation. The following main research question is formulated:

In what way have the roles and responsibilities of supervisory board and supervisory board compensation developed in the Netherlands, and what aspects influence the level of supervisory board compensation?

In order to answer this question, both a literature study and an empirical research on the supervisory board and its compensation are conducted. The conclusions that can be drawn from this research are presented in the following sections.

Literature research was conducted in order to explore the first research question on the development of the roles and responsibilities of the supervisory board.

The main findings from this part of the research are as follows:

- Increasing professionalization of the supervisory boards' roles and responsibilities;

Over the years, supervisory boards' duties have noticeably expanded. And because of the increasing involvement of the supervisory board in actual management of the company and introduction of subcommittees within the supervisory boards, the work load and required knowledge and expertise of the supervisory board members have increased as well.

- Internationalisation of the business environment increases the complexity for the supervisory board of adequately balancing all stakeholders' expectations;
- The corporate governance codes and corporate law have increased rules of conduct regarding the (disclosure of) business practices and further increased the accountability of the supervisory board.

In order to answer the research question concerning the development of supervisory board compensation and its compensation components, descriptive research shows that both the total supervisory board compensation levels and the different compensation components have increased during the researched years. The level of total compensation awarded to the chairman has increased with 38.52 percent over the period 2004-2007, and the total member compensation with 23.33 percent in the same period. Moreover, not only the level of committee (attendance) fees shows an increase throughout the years, but in particular

the number of companies that have installed separate committee fees for their established committees shows a substantial increase over the years.

Apart from discussing the developments in the roles and responsibilities of the supervisory board and the supervisory board pay separately, this thesis intends to relate these two aspects with each other.

The thesis aims to do so by providing empirical evidence on the influence of aspects reflecting the complexity of the supervisory board's activities on the level of supervisory board compensation.

Using mainly the marginal productivity theory (complemented with the human capital approach) and the managerial power theory, we examined the empirical relation between a firm's need for monitoring and the level of supervisory board pay. We have eventually come up with ten independent variables reflecting the complexity of supervisory board's activities and divided these variables over three different categories, namely four firm-level variables, three board-level variables and three governance variables.

Subsequently, the formulated hypotheses are researched on data from a data sample comprising 74 different Dutch listed companies, covering a period of 2004 until 2007.

First, we tested the hypotheses by conducting a multiple regression analysis on the data available for 64 firms listed in the year 2007. The results suggest that supervisory board members are only to a certain extent compensated for the complexity in their jobs. The regression model showed that five out of ten variables reflecting complexity were positively and significant related to the level of supervisory board pay, that is to say firm size, firm internationalization, the presence of subcommittees, supervisory board size and the number of additional board memberships. These findings thus appear to moderately support the reasoning underlying the marginal productivity approach that in firms with a greater need for monitoring, supervisory board members receive a higher compensation to attract and retain the supervisory board members with a potentially higher marginal productivity. Moreover, the positive significant result on the additional board memberships is consistent with the perspective that supervisory board members are compensated for their ability of adequate monitoring and supervision.

The explanatory power of our regression model is quite high. With an adjusted R squared value of 0.669, the model indicates that the complete regression model explains a proportion of 66.9% of the variance in supervisory board pay levels.

An analysis on the relative explanatory power of the three different categories show that the set of firm-level variables is the strongest category in explaining the variance in supervisory board pays levels.

In order to provide a comprehensive perspective on the findings, additional tests are performed on all remaining years in our research period and all tests are performed on a sub sample of 46 firms which were

continuously present in the data sample throughout the researched years 2004-2007. Generally, the results on the sub sample were quite similar to the tests on the total data sample.

The analyses of the years 2004-2006 show a somewhat fluctuating explanatory power over the years, but the value remains rather high, consistently explaining more than half of the variance in pay levels. The results for the individual variables show an increasing contribution for firm internationalization and a decreasing contribution for firm diversification in explaining supervisory board pay levels. The relative analysis on the contribution of the three different categories shows an increasing relative power of the firm-level variables compared to the governance and board-level variables. This may indicate that the distinctive contribution of the governance and board-level variables in the level of supervisory board compensation is levelled out over the years.

Lastly, given the emphasis of the *increasing* complexity in the supervisory boards' duties, we examined the extent to what changes in the amount of complexity lead to changes in supervisory board compensation. However, our conducted analysis generally shows no valuable outcomes concerning the potential alignment of the changes in complexity concerning the duties of the supervisory board and their compensation level.

Although the statistical significance of this last test should be challenged, the results thus suggest that whereas supervisory board members are only to a certain extent compensated for the complexity in their jobs, the adjustment of supervisory board pay to the changes in the complexity of the supervisory board's duties seems to be ignored.

8.2. Practical Implications

The findings of this thesis might be of interest to the supervisory boards, remuneration consultants and policy makers.

Given the changes in corporate governance and the increasing complexity of the supervisory board's role, it is of great importance for a firm to attract and retain capable supervisory board members. By adequately aligning the supervisory board compensation with the complexity of their tasks, supervisory board pay can be used as a tool to attract the supervisory board members with the required capacities.

Our empirical findings on 2007 show that, whereas the complexity aspects influencing supervisory board pay are firm size, firm internationalization, board size, the number of present subcommittees and the average degree of additional board memberships, firm-level characteristics are the most important aspects. However, since a great deal of the increasing professionalization of the supervisory board currently is

related to changes in corporate governance and the consequences it has on the supervisory board's functioning, composition and work load (e.g. the board characteristics and the aspects reflecting good corporate governance), it is important that supervisory boards include these complexity aspects as well, when setting their compensation policies.

The empirical results on the different researched years show that it is difficult to identify complexity determinants of supervisory board pay that are consistently present over time. The relationships between the complexity aspects and the level of supervisory board pay are often unconvincing. This particularly applies when examining to what extent these determinants are related to the *changes* in supervisory board pay. Yet, this thesis suggests that clear and objective standards reflecting the complexity of the supervisory board's tasks can be established. By including these aspects in the pay setting process, actual measurable criteria are set that could objectively visualize the complexity in the supervisory board's duties. This could then form the basis for determining the level of supervisory board compensation. Furthermore, the use of these determinants could serve as a sound and clear explanation for potential changes in supervisory board compensation related to the changes in complexity towards all stakeholders. This increases the transparency on the supervisory board's pay policies.

Concluding, this thesis suggests that setting the right supervisory board compensation level can be used to attract the supervisory board members with the required capacities, which subsequently can improve the quality of monitoring and supervision, and improve firm value.

8.3. Limitations & Suggestions for Future Research

The explanatory abilities of the empirical results in this research are restricted by a number of limitations of the research.

First, given the fact that the regression analyses are performed separately over the years in our research period, limits the accuracy and certainty with which the empirical results of the additional tests can be interpreted. By performing a panel data analysis on the aspects influencing supervisory board pay, the changing characteristics of companies and their supervisory boards over time could be grasped more accurate and secure. It would further facilitate a more thorough investigation of the influence of changes regarding company characteristics on the supervisory board compensation level.

Moreover, due to data availability and given the scope of this research, the number of companies included in this research is limited. Extending the research by including more companies and perhaps by including

other countries would provide a more comprehensive overview of compensation policies regarding supervisory boards. The extension to other countries would furthermore allow for a cross-country analysis that enables the examination of country-specific influences and perhaps the influences of institutional aspects on supervisory board pay as well.

Third, as can be concluded from the results, complexity only partially provides an explanation for the variance in supervisory board pay in the Netherlands, leaving many other potentially influencing aspects available for future empirical research. Whereas existing director compensation research (Ryan & Wiggins, 2004) has related the independence of the outside directors to CEO and other executives' characteristics, this thesis did not include any CEO aspects. Therefore, more thoroughly investigating the influence managerial power on supervisory board pay might be an interesting topic for future research.

Moreover, the structure of supervisory board pay is left out of consideration in this thesis. Given the developments in the tasks and responsibilities of -and the public attention given to- the different subcommittees in the supervisory board, it may be interesting to research the developments in the role of these different committees, consequently the compensation related to these committees.

The limitations and suggestions for further research clearly indicate that the areas for further empirical research on supervisory board pay and the aspects influencing supervisory board pay are abound. And given the fact that the amount of attention paid to corporate governance and public debate on compensation policies for both the executives and supervisory board has currently reached record heights, now seems the time for future scholars to not only focus on what already has been studied, but break new grounds and explore new perspectives on this dynamic research topic.

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Appendix A Correlation Matrix 2007

Table XI Correlation Matrix 2007 (64 firm-observations)

	LN (comp)	LN (sales)	Internat	Diversif	LN (exposure)	GrowthOpp	Meetings	Subcom	Boardsize	GenderDiv	NatDiv	AvgCentral
LN(comp)	1,000											
LN(sales)	,716	1,000										
Internat	,432	,289	1,000									
Diversif	,130	,257	,049	1,000								
LN(exposure)	,490	,706	,056	,130	1,000							
GrowthOpp	,066	,091	-,136	-,177	,180	1,000						
Meetings	,114	,130	-,074	,174	,191	-,027	1,000					
Subcom	,633	,514	,286	,160	,527	-,023	,176	1,000				
Boardsize	,674	,675	,170	,341	,523	-,047	,143	,556	1,000			
GenderDiv	,421	,488	,218	,084	,320	,101	,085	,336	,394	1,000		
Natdiv	,402	,432	,208	,208	,408	,182	,089	,291	,517	,322	1,000	
AvgCentral	,645	,591	,316	-,016	,452	,090	,095	,441	,417	,322	,179	1,000

- LN(comp): Natural Logarithm average supervisory board compensation
- LN(sales): Natural Logarithm total sales revenues (firm size)
- Internat: Proportion foreign sales revenues / total sales revenues (firm internationalization)
- Diversif: Number of SIC codes (firm diversification)
- LN(exposure): Newspaper articles (public exposure)
- Meetings: Number of board meetings held (time commitment)
- Subcom: Number of established subcommittees (presence subcommittees)
- Boardsize: Number of supervisory board members (board size)
- GenderDiv: Gender Diversity (board diversity)
- Natdiv: Nationality Diversity (board diversity)
- AvgCentral: Average degree centrality (additional board memberships)

Appendix B White's Test Results

Table XII Heteroskedasticity Test Results: White's tests

	<i>F-statistic</i>	<i>Probability</i>
<i>2007</i>	1.341	0.206
<i>2006</i>	0.467	0.963
<i>2005</i>	0.461	0.966
<i>2004</i>	0.510	0.941

To account for potential problems due to heteroskedasticity, the White standard errors are checked.

Appendix C Data Sample – Company Overview

Table XIII Overview Included Companies Data Sample

Company	Abbrev.	2004	2005	2006	2007	Δ '04-'07	Sub Sample
Aalberts	AAL	X*	X*	X*	X*	X	X
ABN AMRO	ABN	X	X	X*			
AEGON	AEG	X*	X*	X*	X*	X	X
Ahold Kon	AHO	X*	X*	X*	X*	X	X
Akzo Nobel	AKZ	X*	X*	X*	X*	X	X
AM	AM						
AMG	AMG				X		
Arcadis	ARC		X*	X*	X*		
ASM Int.	ASI	X*	X*	X*	X*	X	X
ASML	ASL	X*	X*	X*	X*	X	X
Athlon Holding	ATH	X	X				
Ballast nedam	BAL		X*	X*	X*	X	
BAM	BAM	X*	X*	X*	X*	X	X
Beter Bed	BBH			X*	X*		
BE Semicond	BES	X*	X*				
Binck	BIN		X*	X*	X*		
Boskalis	BOS	X*	X*	X*	X*	X	X
Brunel Int.	BRU	X*	X*	X*	X*	X	X
Corporate Express NV	CEX	X*	X*	X*	X*	X	X
Corio	COR	X*	X*	X*	X*	X	X
Crucell	CRU	X*	X*	X*	X*	X	X
CSM	CSM	X*	X*	X*	X*	X	X
Draka	DRA	X*	X*	X*	X*	X	X
DSM Kon	DSM	X*	X*	X*	X*	X	X
Endemol	EML			X			
Eriks Groep	ERI				X*		
Euromm.Prop	EUR	X*	X*	X*	X*	X	X
Exact Holding	EXA	X*	X*	X	X*	X	
Fornix BioScience	FBI		X*				
Fugro	FUG	X*	X*	X*	X*	X	X
Getronics	GET	X	X	X			
Grontmij	GRN	X*	X*	X*	X*	X	X
Hagemeyer	HAG	X*	X*	X	X		
Heineken	HEI	X*	X*	X*	X*	X	X
Heijmans	HEY	X*	X*	X*	X*	X	X
Imtech	IMT	X*	X*	X*	X*	X	X
ING Groep	ING	X*	X*	X*	X*	X	X
Innoconcepts	INN	X*	X*		X*	X	
Kardan	KAR				X*		
Kendrion	KEN		X*				
KPN Kon	KPN	X	X*	X*	X*		X
Kon. Ten Cate	KTC	X*	X*	X*	X*	X	X
Laurus/Super	LAU	X*		X*	X*	X	
MacIntosh	MAC			X*	X*		
Van der Moolen	MOO	X*	X*	X*	X*	X	X
Nieuwe Steen Inv	NSI	X*	X*		X*	X	
Numico	NUM	X	X	X			

Nutreco	NUT	X*	X*	X*	X*	X	X
Company	Abbrev.	2004	2005	2006	2007	Δ '04-'07	Sub Sample
OCE	OCE	X*	X*	X*	X*	X	X
OPG Groep	OPG	X*	X*	X*	X*	X	X
Ordina	ORD	X*	X*	X*	X*	X	X
Pharming Group	PHA	X*	X*	X*	X		X
Philips Electronics NV	PHI	X*	X*	X*	X*	X	X
Qurius	QUR				X*		
Randstad	RAN	X*	X*	X*	X*	X	X
SBM Offshore	SBM	X*	X*	X*	X*	X	X
Sligro	SLI	X*	X*	X*	X*	X	X
Smit Internat.	SMI		X	X*	X*		
SNS Reaal	SNS			X	X*		
Stork	STO	X	X	X			
Tele Atlas	TEL				X*		
TKH Group	TKH				X*		
Telegraaf	TMG	X*	X*	X*	X*	X	X
TNT N.V.	TNT	X*	X*	X*	X*	X	X
TomTom	TOM		X	X*	X*		
Unit 4 Agresso	U4A	X*	X*	X*	X*	X	X
Univar	UNV	X*	X	X			
Unibail-Rodamco	URO	X*	X*	X*	X*	X	X
USG People	USP	X*	X*	X*	X*	X	X
Vedior	VED	X*	X*	X*	X*	X	X
Versatel	VER	X					
Van Lanschot	VLA	X*	X*	X*	X*	X	X
VNU	VNU	X	X				
Vastned Off/Ind	VOI			X*	X*		
Vopak	VOP	X*	X*	X*	X*	X	X
Vastned Retail	VRE	X*	X*	X*	X*	X	X
Wavin	WAV			X	X*		
Wegener	WEG		X*	X*			
Wereldhave	WER	X*	X*	X*	X*	X	X
Wessanen	WES	X*	X*	X*	X*	X	X
Woltersklower	WOL	X*	X*	X*	X*	X	X

- Inclusion in data sample related to descriptive statistics is denoted with 'X' in columns

- In addition, inclusion of company in both descriptive analysis and regression analyses for year of interest is denoted by 'X*'

- Inclusion in data sample for additional tests is denoted with 'X' in last two columns

- Royal KPN (KPN) and Pharming Group (PHA) were considered outliers in 2004 and 2007 respectively and are therefore excluded from the data samples for that year (only)

- As of 2005, the companies Vastned Retail and Vastned Offices/ Industrial have split their combined supervisory board into two separate supervisory boards. Given the overlap in the supervisory board characteristics before the year 2005, it was decided to include only one of the two companies (i.e. Vastned Retail) in the analyses before 2005 and included both companies as from 2005.

Appendix D Correlation Matrices and Descriptive Statistics additional tests

Table XIV Correlation Matrix 2004

	LN (comp)	LN (sales)	Internat	Diversif	GrowthOpp	Meetings	Subcom	Boardsize	GenderDiv	NatDiv	AvgCentral
LN(comp)	1,000										
LN(sales)	,555	1,000									
Internat	,420	,261	1,000								
Diversif	,510	,545	,215	1,000							
GrowthOpp	-,003	-,048	-,106	-,115	1,000						
Meetings	-,077	,054	-,168	-,238	,345	1,000					
Subcom	,634	,265	,155	,222	,079	,207	1,000				
Boardsize	,595	,595	,174	,445	,047	-,205	,443	1,000			
GenderDiv	,201	,344	-,009	,124	-,028	,107	-,049	,250	1,000		
Natdiv	,535	,351	,337	,192	,127	-,013	,276	,440	,197	1,000	
AvgCentral	,431	,543	,427	,299	,165	,067	,368	,347	,004	,120	1,000

Table XV Correlation Matrix 2005

	LN (comp)	LN (sales)	Internat	Diversif	GrowthOpp	Meetings	Subcom	Boardsize	GenderDiv	NatDiv	AvgCentral
LN(comp)	1,000										
LN(sales)	,689	1,000									
Internat	,359	,298	1,000								
Diversif	,274	,342	,055	1,000							
GrowthOpp	,133	-,029	,003	-,146	1,000						
Meetings	,264	,174	,024	-,031	,071	1,000					
Subcom	,683	,364	,236	,066	,125	,261	1,000				
Boardsize	,590	,661	,264	,263	-,021	,311	,495	1,000			
GenderDiv	,418	,455	,221	,104	,092	,132	,142	,305	1,000		
Natdiv	,518	,528	,310	,093	,172	-,022	,304	,547	,289	1,000	
AvgCentral	,542	,571	,307	,180	,069	,155	,403	,441	,171	,220	1,000

Table XVI Correlation Matrix 2006

	LN (comp)	Meetings	Subcom	Boardsize	LN (sales)	Internat	Diversif	GrowthOpp	GenderDiv	NatDiv	AvgCentral
LN(comp)	1,000										
Meetings	,003	1,000									
Subcom	,535	,074	1,000								
Boardsize	,618	,107	,535	1,000							
LN(sales)	,656	,099	,383	,629	1,000						
Internat	,384	-,209	,189	,095	,211	1,000					
Diversif	,227	,308	,124	,182	,322	,169	1,000				
GrowthOpp	-,169	,071	-,065	-,171	-,336	-,273	-,192	1,000			
GenderDiv	,458	-,256	,188	,255	,400	,024	-,167	,007	1,000		
Natdiv	,563	-,105	,289	,453	,374	,320	,077	,250	,278	1,000	
AvgCentral	,381	,040	,436	,352	,412	,167	-,029	-,129	,137	,131	1,000

- LN(comp): Natural Logarithm average supervisory board compensation
- LN(sales): Natural Logarithm total sales revenues (firm size)
- Internat: Proportion foreign sales revenues / total sales revenues (firm internationalization)
- Diversif: Number of SIC codes (firm diversification)
- Meetings: Number of board meetings held (time commitment)
- Subcom: Number of established subcommittees (presence subcommittees)
- Boardsize: Number of supervisory board members (board size)
- GenderDiv: Gender Diversity (board diversity)
- Natdiv: Nationality Diversity (board diversity)
- AvgCentral: Average degree centrality (additional board membership)

Table XVII Descriptive Statistics Independent Variables 2004-2006

<i>Independent Variable</i>	<i>Sample</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>
Annual Board Meetings	(n)	(61)	(66)	(65)
	Mean	7.67	7.56	8.80
	Median	7	7	8
	Std. Dev.	2.26	2.84	4.58
	Minimum	5	2	4
	Maximum	19	19	32
Established Subcommittees	(n)	(61)	(66)	(66)
	Mean	2.08	2.02	2.20
	Median	2	2	2
	Std. Dev.	1.22	1.29	1.17
	Minimum	0	0	0
	Maximum	4	4	4
Board Size	(n)	(61)	(66)	(66)
	Mean	5.46	5.58	5.62
	Median	5	5	5
	Std. Dev.	1.83	1.93	1.85
	Minimum	3	3	3
	Maximum	12	11	11
Total Sales (mln €) _{t-1}	(n)	(61)	(66)	(66)
	Mean	6,372.65	5,703.02	6,276.16
	Median	1,542.74	1,109.67	1,424.14
	Std. Dev.	14,087.00	13,327.42	15,776.92
	Minimum	0.43	0.65	0.41
	Maximum	81,946	82,465	108,714
LN (Sales) _{t-1}	(n)	(61)	(66)	(66)
	Mean	7.190	7.039	7.241
	Median	7.341	7.011	7.258
	Std. Dev.	2.103	2.028	1.939
	Minimum	-0.839	-0.426	-0.904
	Maximum	11.314	11.320	11.596
Foreign Sales/ Total Sales _{t-1}	(n)	(60)	(64)	(64)
	Mean	57.51	56.37	54.18
	Median	62.36	65.76	58.11
	Std. Dev.	29.65	31.43	32.10
	Minimum	0.00	0.00	0.00
	Maximum	100.00	96.57	96.70
Market-to-Book Value _{t-1}	(n)	(52)	(59)	(59)
	Mean	2.35	2.28	3.01
	Median	1.81	1.92	2.46
	Std. Dev.	2.06	1.51	2.09
	Minimum	0.38	0.73	0.90
	Maximum	11.85	9.80	11.09
SIC-codes _{t-1}	(n)	(61)	(66)	(66)
	Mean	1.87	1.92	1.86
	Median	2	2	2
	Std. Dev.	1.07	1.09	1.04
	Minimum	1	1	1
	Maximum	5	5	5

Appendix E Telephone Interview Mr J.F.M. Peters

Tuesday 13 January, 2009

Biography

Mr J.F.M. Peters is former Chairman of the Executive Board of AEGON NV. Mr Peters was chairman of the first independent committee investigating and structuring Dutch corporate governance, the committee Peters, which established forty recommendations regarding good corporate governance. In addition, Mr Peters has held several seats on supervisory boards, among which the supervisory boards of the three Dutch companies Randstad Holding, Samas Group and NV Bank Nederlandse Gemeenten (BNG)³⁵, and the board of the American company Pharmacia.

Introduction

In this interview, we discussed the factors that influence the level of supervisory board compensation. In addition, we briefly discussed the pay setting process of supervisory board compensation.

1. Compensation Setting Process

◦ *How does the process of determining the level of supervisory board compensation evolve?*

Initially, the supervisory board was more an autonomous corporate body consisting of notable (former) managers from various companies that provided the management board of advice (compared to the increased involvement of the supervisory board in company management we know today). This role may explain the origins of the relatively low pay level of the supervisory board.

In general, the level of compensation is nowadays determined in a relatively informal way, especially compared to the pay setting process of executives. Usually, the level of compensation is related to the anticipated work load of the supervisory board. This anticipated work load is based on the number of meetings that are held by the supervisory board and its committees and the necessary days of preparation for these meetings.

◦ *Which aspects are taken into consideration when determining the level of compensation?*

Clear standards or measurements for determining the supervisory board compensation do not really exist among supervisory boards. Obviously, work load is taken into consideration when determining the level of compensation. A reasonable compensation for the days spent on the job is determined. In addition,

³⁵ BNG is the Dutch Bank of- and for- local authorities and public sector institutions

when board seats are held internationally, that supervisory board member often receives a travelling allowance.

◦ *Is it common that the level of compensation is related to the industry the company operates in?*³⁶

Mr Peters presumes the compensation levels in the financial industry to be relatively higher than in other industries, resulting from the fact that the compensation of the top management in this sector is, on average, relatively higher as well. On the other hand, it should be noted that most financial services companies are relatively large in terms of revenues.

However, Mr Peters does not believe that industry-specific compensation is really common practice.

◦ *How does the process of evaluating the supervisory board compensation evolve?*

Usually, this evaluation process evolves in the same way as setting the compensation for the supervisory board. Changes in the role of the supervisory board are discussed and time spent on the job is evaluated.

2. Factors influencing the supervisory board compensation

◦ *Which factors do you consider to have an important influence on supervisory board compensation and which factors will most likely gain in influence the coming years?*

Especially work load has had an important influence on the compensation and will most likely remain an important factor. Considering the recent developments in corporate governance, the roles of the supervisory board members have become much more complex and intensified.

The establishment of the subcommittees within the board has increased both the work load and complexity of the tasks. In particular, the members of the audit- and remuneration committee experience much heavier tasks. Regarding the audit committee, the establishment of the Sarbanes-Oxley Act has made its tasks much more difficult. And for the remuneration committee, this increasing complexity mainly results from the current public debates on the level and structure of executive compensation. The remuneration committee has to explain the company's remuneration policy to the shareholders on the AGM. The pressure on their performance, their decisions and policies is incredibly high.

This is probably also one of the reasons why the supervisory board pays much less attention to their own compensation. With all this exposure on executive remuneration, supervisory board members are rather reserved with increasing their own compensation level: Mr Peters assumes that the gain of increasing supervisory board compensation is outweighed by the possible criticism accompanying this higher compensation.

³⁶ The example of Crucell, a firm operating in the biotechnological sector, is given. In Crucell's annual report of 2007, the company explains its supervisory board remuneration policies as follows: "[...]Crucell offers compensation to its supervisory directors in accordance with customary practice in the biotechnology sector. For 2005 and onwards, compensation of all Supervisory Board members consists of a fixed fee in cash and an annual share grant." (Crucell, Annual Report 2007, p.172)

In addition, the liability of supervisory board members has increased over the years. Not only amendments in law increased the supervisory board's liability, but exposure to public scrutiny and public pressure on the functioning of supervisory board members increased the liability as well. Due to these increased liability risks and pressure, it has become, and is still becoming, less attractive for noted managers to hold a seat in a supervisory board after their prestigious careers: the risks of loss of face and damaging one's reputation have increased. And whereas the tasks and responsibilities have increased noticeably over the last years, the developments of supervisory board compensation fall behind.