# DETERMINANTS OF EXECUTIVE BOARD REMUNERATION NEW INSIGHTS FROM GERMANY

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**Abstract**

Board remuneration in German listed companies becomes more and more subject of public and political discussion, concerning the presumed lack of transparency and too short-term orientation. Besides the increasing regulatory activity, the arrangement of board compensation constitutes a focal economic issue of current empirical corporate governance research. The purpose of our analysis is to identify factors determining the amount and the structure of board compensation in Germany. Our study of 128 German listed companies for the business year 2011 investigates the impact of company-, performance and corporate governance-related factors on board remuneration by means of a multivariate-regression analysis. The analysis indicates that company size has a positive impact and leverage a negative on management board compensation. Furthermore, ROE and return on total capital, as indicators for performance-related variables, both have a positive impact on the average level of management remuneration. However, the corporate governance-related characteristics as ownership concentration and size of the supervisory board have no significant impact on management board remuneration.

**Keywords:** Corporate Governance, Executive Board Remuneration, Firm Performance, Agency Theory, Financial Incentives, Ownership Concentration, Supervisory Board

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## Introduction

Board remuneration in listed companies in the (non) financial sector becomes more and more subject of public and political discussion. In this context it is controversially discussed if board compensation stands in an appropriate relation to the tasks of the executive board members as well as the financial situation of a company. A direct comparison of the absolute amount of the remuneration and the personnel costs per employee, for example in the German Volkswagen AG for the business year 2008, indicates that the annual revenue of the chairman (12.7 million EUR) is 298 times higher than the average costs of an employee. The German legislature has, as a response to the criticism according the lack of transparency and too short-term orientation of the remuneration systems, introduced the Executive Board Remuneration Disclosure Act and the Act on the Appropriateness of Management Board Remuneration.

Besides the increasing regulatory activity, the arrangement of board compensation constitutes a focal economic issue of current empirical corporate governance research. The main purpose of our analysis is to identify factors influencing the amount or the structure of board compensation. While for the Anglo-American system empirical capital market surveys, focusing on management compensation, constitutes a main research area, in Germany only few reliable surveys exist. Therefore our research question is: "Which factors influence the board remuneration in Germany?"

To answer this question, our study investigates possible influencing factors explaining the amount of management board compensation based on a sample of 128 firms in the German Prime Standard (DAX, TecDAX, MDAX or SDAX) for the financial year 2011. Based on the evaluation of previous international research findings and an agency-theoretical foundation of the investigation subject, performance- and corporate governance-related indicators are examined in order to deduce appropriate hypotheses. The considered variables encompass company size, measured by balance sheet totals, turnover and number of employees,

debt to equity ratio, firm performance, indicated by return on equity (ROE) and return on total capital, ownership concentration, including free float and size of the supervisory board.

The present study is structured as follows: chapter 1 describes the normative conditions for the setting of board remuneration of German listed companies, which are characterized by a two tier system. Subsequently in chapter 2 the results of former empirical corporate governance surveys will be assessed into detail. In chapter 3, thus, the empirical results of the investigation of German DAX, MDAX, TecDAX and SDAX-listed companies for the fiscal year 2011 are presented. Besides the formulation of hypotheses (3.1) and the study design (3.2), also the variables used in our analysis (3.3) are described and evaluated by using descriptive statistics (3.4) as well as a multivariate regression model (3.5). Finally the results are summarized in chapter 4.

## 1. Requirements for the Determination of Management Remuneration in Germany

In accordance to the German Stock Corporation law, the supervisory board (§ 87 paragraph 1 of the German Stock Corporation Act ("AktG")) is responsible for the determination of the total revenue for each board member as well as the underlying remuneration system (Eulerich and Velte, 2013, 73). Pursuant to § 87(1) sentence 1 of the AktG, the supervisory board must ensure that the total remuneration of each individual management board member is in reasonable proportion to the duties and performance of the management board member and the company's situation and may not exceed the normal level of remuneration unless there are special reasons. In publicly traded corporations, thus, in accordance to § 87 (1) sentence 2 of the AktG, the executive board remuneration has to be oriented towards sustainable corporate performance. Furthermore in § 87 (1) sentence 3 of the AktG the aspect of sustainability is specified, so that the variable compensation component has to include a long-term assessment base and the supervisory board should also define a limitation option for extraordinary developments. The determination of executive board remuneration through the supervisory board is in accordance to § 107 (3) sentence 3 of the AktG legally protected by the reservation right of the plenum. So for example an implemented remuneration committee may act only in a preparatory capacity to the supervisory board.

With regard to the management board remuneration structure usually a distinction is made between fixed (non-performance-related) and variable (performance-related) components as well as additional services. The respective components can be calculated on different assessment bases (Eulerich and Velte, 2013, 74). Regarding the time horizon the influencing factors can be divided into short-, medium- and long-term components. For an appropriate measurement furthermore a differentiation into qualitative and quantitative criteria is conceivable. The statutory provisions of the Stock Corporation Law provide for a hybrid between fixed and variable components of the total board revenue.

A reasonable financial reward system plays, with respect to the principal agent-theory, an important role in order to influence the behavior of the management board. Therefore the incentives for opportunistic behavior of the management (agent) at the disadvantage of the general meeting (principal), usually due to conflicts of interests and information asymmetry, should be reduced (Jensen and Meckling, 1976). Conflicts of interest also can arise between executive - and supervisory board, as both constitute agents of the general meeting (Tirole, 1986; Velte and Weber, 2011a). Correspondingly, on an theoretical basis the supervisory board ought strive for the sustainable maximization of the shareholder value, while the executive board pursuits a short-term perspective due to the realization of individual interests (e.g. maximization of his salary and minimization of his assignment). Concerning the design of the management board remuneration system, the growing proportion of fixed salary reduces the performance of the executive board due to the fact that he accordingly lowers his work assignment in order to maximize his individual benefit. In order to meet this conflict of interests the supervisory board would reduce the fixed proportion of the remuneration and rather put performance-related (variable) components into consideration. This should serve as a measure to balance the interests of both the management board (agent) and the supervisory board (principal). Contradictory objectives of both administrative bodies, thus, should be harmonized by a common focus on value-oriented performance measures.

The regulation in § 120 paragraph 4 of the AktG contains the construct of say on pay, thus, the general meeting may approve the management board remuneration system in listed stock corporations (Eulerich *et al,*. 2012; Velte, 2013). However, say on pay until now has been arranged as option of choice without any rights or duties concerning the general meeting (§ 120 (4) sentence 2 of the AktG). In 2013, the old German government tried to upgrade this corporate governance instrument by an annual mandatory remuneration vote by the general meeting, but the federal council of Germany withheld approval (Velte and Baehr, 2013).

Besides the law it should also be referred to the German Corporate Governance Code (GCGC) in clause 4.2.2 – 4.2.5. The total executive board compensation should be determined on a performance assessment base. As criteria for the appropriateness of the salary are mentioned the following:

- tasks of each board member,
- personal performance,
- situation of the company,
- success and the future prospects of the company as well as
- remuneration level in a comparable environment and the common internal remuneration structure.

These guidelines for the determination of the management board remuneration are accompanied by regulations according the external reporting of the management board remuneration, which has been already introduced before the financial crisis 2008/09. In addition to the reporting of the total management board compensation in the notes to the consolidated financial statements (§§ 285 No. 9a sentence 1 - 3, 314 (1) No. 6a sentence 1 - 3 of the German commercial code ("HGB")), listed stock corporations are obliged to disclose the board remuneration on an individual basis in the notes to the consolidated financial statements (§§ 285 No. 9 sentence 5 - 8, 314 (1) No. 6a sentence 5- 8 HGB). This includes a separation by performance-related and non-performance-related components as well as by components with long-term incentive effect. The general meeting is with a three-quarter majority vote authorized (opting out) to exempt the company from the obligation for individualized disclosure for a maximum of five years (§§ 286 (5) and 314 (2) sentence 2 HGB). In addition to the disclosure requirements of listed stock corporations they have to expose the basic elements of the company's remuneration system for the total executive's board remuneration in the group management report (§§ 289 (2) No. 5 and 315 (2) No. 4 HGB). Thus, the chair of the supervisory board shall inform the general meeting uniquely about the basic elements of the company's remuneration system and additionally in case of changes (clause 4.2.3 of the GCGC).

## 2. Results of the International Management Remuneration Research

Empirical studies on management remuneration have been conducted in the USA first by Roberts (1956), Baumol (1959) and Lewellen and Huntsman (1970). In the majority of the previously studies the relationship between management compensation, company size as well as company's profit have been examined (pay for performance), which indicates a high heterogeneity referring their results (Murphy, 1999, 2485).

The dominant research on the US capital market (Conyon and Schwalbach, 2000, 104) is founded on an outsider-oriented corporate governance system, which is characterized by a comparatively high attractiveness of the equity market and the foundation of the shareholder value policy (Velte and Weber, 2011b, 473). Otherwise the compensation of US management has now moved to the focus of the corporate governance research due to their increasing amount and the implementation of share options respectively stock options (Hüttenbrink, 2012, 68). The first empirical study on management remuneration for European companies has been conducted in Great Britain by Cosh (1975). As a result, further studies were conducted for European and Non-European countries, for example Japan (Kaplan, 1997), Canada (Zhou, 2000), Spain (Angel and Fumás, 1997), Italy (Brunello *et al.*, 2001), France (Alcouffe and Alcouffe, 1997), Denmark (Eriksson, 1999), China (Groves *et al.*, 1995) and Bulgaria (Jones and Kato, 1996). A growing research activity arises from empirical studies which concentrate on the link between firm performance and management compensation. Table 1 gives a summary of main study designs and their results.

A reverse link between management compensation on firm performance has also been tested in several empirical corporate governance studies, mainly at the US capital market. A summary of these studies is presented in table 2.

**Table 1.** Empirical corporate governance research with regard to the influence of performance on pay

| Year of publication | Author(s) | State sample business year | Performance variables | Pay Variables | Main results |
|---|---|---|---|---|---|
| 2013 | Sun/Wei/Huang | 2000-2006<br>322 firm-year observations of insurance companies<br>USA | Sales growth rate<br>Business concentration index<br>Annual stock return<br>Firm sales<br>ROA | Total compensation<br>Cash compensation<br>Stock compensation<br>Options<br>Total incentive compensation | Firm efficiency is positively associated with total CEO compensation |
| 2012 | Michiels et al. | 529 privately held family firms<br>2003<br>USA | ROA | Total CEO cash compensation | CEO compensation in private family firms is more responsive to firm performance in firms with low ownership dispersion and in the controlling-owner stage |
| 2011 | Ozkan | 390 non-financial firms<br>1999-2005<br>UK | Salary<br>Bonus<br>Stock options<br>Long-term incentive plans | Shareholder return | Institutional ownership has a positive significant influence on CEO PPS of option grants |
| 2010 | Shaw/Zhang | 14,632 CEO-firm-year observations<br>1993-2005<br>USA | ROA<br>Annual stock returns | Change in CEO annual cash compensation (total salary and bonus) | No asymmetry in CEO cash compensation for firms with low stock returns |
| 2006 | Leone/Wu/Zimmerman | 2,751 CEOs<br>1992-2003<br>USA | Compounded monthly returns and change in ROA<br>Bad news indicator | Changes in cash pay<br>Changes in equity based pay (option and restricted stock grants) | Positive link between change in cash pay and returns and change in ROA<br>relationship twice as strong for negative stock returns as for positive ones |
| 2003 | Aggarwal/Samwick | 13,109 executives<br>1993-97<br>USA | Returns to shareholders | Short term pay<br>long term pay<br>total pay<br>change in the value of shares and stock options held | Position in the top management team and level of responsibility predict incentive pay<br>Median CEO pps: $ 13.78 ($41.22) per $ 1,000 change in shareholder wealth |
| 2003 | Boschen et al. | CEOs of 30 firms<br>1959-1995<br>USA | Return on assets (ROA)<br>Annual rate of shareholder return<br>Unexpected performance based on residuals of regression | Cash compensation<br>total pay (cash, stock grants, stock options grants and other noncash compensation) | Unexpectedly positive accounting performance provides a net benefit to CEO pay of 0 over 10 years<br>Unexpectedly positive stock price performance produces positive net benefits in the short and long run |
| 2003 | Hartzell/Starks | Executives of 1,914 firms<br>1992-97<br>USA | Change in shareholder wealth<br>Tobin's Q | Performance sensitivity of options granted, salary<br>change in cash pay<br>change in total pay (level and change) | Change in shareholder wealth predicts change in total pay<br>Institutional ownership is positively related to PPS and negatively to total pay |

| Year of publication | Author(s) | State sample business year | Performance variables | Pay Variables | Main results |
|---|---|---|---|---|---|
| 2001 | Joyce | 687 CEOs of financial institutions<br>1993-94<br>USA | Stockholders Equity<br>ROA | Total cash compensation (salary and bonus) | Small but positive relationship between ROA and CEO salary and bonus compensation (weak support for agency theory) |
| 2000 | Attaway | 42 firms<br>1992-96<br>USA | ROE | Salary and bonus | Small but positive relationship between firm performance and CEO compensation |
| 2000 | Tosi et al. | 137 articles<br>Metaanalysis<br>- | Absolute financial performance levels<br>Changes in finanial performance<br>Change in ROE-short term<br>Change in ROA | Pay measure used in the source study | 40% of the variance in pay is explained by firm size, less than 5% is explained by performance<br>Correlation between pay and performance is 0.212 |
| 1999 | Ke/Petroni/Safieddine | 63 CEOs in the property liability insurance industry<br>1994-96<br>USA | ROA<br>change in ROA | Cash pay (level of change) | No significant link between ROA and pay for private insurers<br>Positive link for public insurers |
| 1999a | Aggarwal/Samwick | > 1,000 CEOs and > 3,900 other executives<br>1993-96<br>USA | Percentage and dollar returns to shareholders | Total pay (level and change)<br>total play<br>change in the market value of equity and stock option holdings | Increasing variation in performance leads to decreasing pay-performance sensitivity (PPS)<br>PPS was $ 14.52 ($ 69.41) per $ 1,000 change in shareholder wealth |
| 1999b | Aggarwal/Samwick | 1,519 CEOs and 6,305 other executives<br>1992-93<br>USA | Dollar returns to shareholders at beginning of period | Short term pay<br>long term pay<br>total pay | Returns predict total pay<br>Ratio of own PPS to rival PPS is lower in industries with more competition<br>Evidence of relative performance evaluation in short term pay |
| 1998 | Baber/Kang/Kumar | CEOs of 713 firms<br>1992-93<br>USA | Raw stock returns (proxy for unexpected returns)<br>unexpected earnings per share | Percentage changes in cash, salary and bonus<br>cash bonus alone<br>stock-based pay<br>total pay | Both performance measures predict changes in cash and total pay<br>Earnings persistence positively moderates the earnings relationship and negatively moderates the returns relationship |
| 1998 | Conyon/Peck | Highest paid director of 94 of the top 100 publicly traded firms<br>1991-94, UK | Total shareholder return | Cash pay | Performance predicts pay, but larger coefficient by more nonexecutives in the remuneration committee and board |
| 1998 | Hall/Liebman | CEO of 478 large corporations<br>1980-94<br>USA | Firm returns | Total pay<br>changes in market value of stock and stock options<br>change in wealth | CEO pay and wealth are related to firm performance<br>Stronger relationship than previously found<br>CEO PPS has been increasing over time due to larger options grants |

**Table 2.** Empirical corporate governance research with regard to the influence of pay on performance

| Year of publication | Author(s) | State sample business year | Pay Variables | Performance variables | Main results |
|---|---|---|---|---|---|
| 2013 | Banker et al. | 2,498 firms with 15,512 CEO-year observations<br>1993-2006<br>USA | Salary<br>Bonus<br>Cash Pay<br>Equity Pay | ROE<br>Stock Returns (RET) | Salary (bonus) is positively (negatively) associated with past performance for both continuing and newly hired CEOs |
| 2011 | Matolesy/Wright | 3,503 observations<br>1999-2005<br>Australia | Accounting and market-based performance measures (equity versus cash compensation group membership) | ROA<br>ROE<br>Change in market value of equity, adjusted for dividends<br>Change in market value of equity, adjusted for dividends and risk | Firms whose CEOs receive compensation inconsistent with their firm characteristics have a lower performance compared to those firms whose compensation is consistent with their firm characteristics |
| 2009 | Jeppson/ Smith/Stone | 200 large public companies<br>2007<br>USA | Base salary<br>Cash bonuses<br>Perks<br>Stock awards<br>Option awards | Company revenue<br>Year-to-year change in net income<br>Year-to-year change in total shareholder return | No significance between pay and performance |
| 2008 | Cheng/Farber | 289 restatement firms<br>1997-2001<br>USA | Annual option grants/total compensation<br>Annual option grants (in shares)/total shares outstanding | Book to market ratio | Reduced proportion of CEOs' total compensation that is option-based after the restatement; improved operating performance following this reduction |
| 2008 | Graffin et al. | 264 S&P 500 firms<br>1992-96<br>USA | Total direct compensation | Total shareholder return<br>ROE | TMT pay levels and dispersion are affected by CEO status |
| 2006 | Balachandran | 147 residual income adopting firms with matched pairs<br>1986-1998<br>USA | Plan adoption indicator | Change in delivered residual income | Residual income increases once it is included in the pay criteria |
| 2005 | Hogan/Lewis | 108 firms that adopted economic profit plans (EPP) and matched nonadopters<br>1983-96<br>USA | Plan adoption indicator | Economic profit<br>Operating income before depreciation<br>Profit margin<br>ROA<br>Market to book ratio<br>Measures of turnover<br>Investment decisions | Firms that possess characteristics that make it likely they would adopt EPP and which then do adopt EPP outperform nonadopters who were expected to adopt |
| 2005 | Kato et al. | 344 firms that adopted stock option plans<br>1997-2001, Japan | Plan adoption indicator<br>Fraction of shares outstanding | Cumulative abnormal returns (CAR)<br>ROA | Adoption of option-based pay is associated with positive CAR (5 day-window), increased ROA and higher levels of managerial ownership |

| Year of publication | Author(s) | State sample business year | Pay Variables | Performance variables | Main results |
|---|---|---|---|---|---|
| 2005 | Siegel/Hambrick | Top management groups in 67 firms<br>1991-92<br>USA | Short and long term pay<br>Vertical, horizontal and overall pay disparity | 2-year average market to book and total shareholder returns adjusted for industry performance | Pay disparity is negatively related to performance in high tech firms |
| 2004 | Carpenter/Sanders | Executives of 224 multinational corporations from the S&P 500<br>1992-93<br>USA | Total pay<br>Long term pay level<br>Structure (long term/total)<br>CEO/top management team (TMT) pay gap | Market to book value (controlled for prior value to capture the change) | CEO pay does not predict MNC performance but TMT total and long term pay do<br>CEO TMT pay gap is negatively related to MNC performance<br>Degree of internationalization is a moderator of all relationships |
| 2003 | Certo et al. | CEOs of 193 initial public offering (IPO) firms<br>1996-97<br>USA | Indicator of options granted<br>Value of options granted<br>Percentage equity | Percentage price premium | CEO option pay is positively related to IPO valuation<br>CEO equity ownership positively moderated the link |
| 2003 | Hanlon/Rajgopal/Shevlin | Executives of 1,069 firms<br>1992-2000USA | Value of stock options granted | Ratio of annual operating income to sales | 1 $ of option grant value is connected with $ 3.71 of future operating income (concave link) |
| 2002 | Shaw/Gupta/Delery | 379 trucking firms and 141 concrete pipe firms<br>1994-95<br>USA | Measures of pay dispersion<br>Measure of individual incentives for drivers | Trucking accidents<br>Out of service<br>Driver performance<br>Concrete pipe labor hours<br>Lost time accidents<br>Employee performance | Pay dispersion predicts higher levels of performance in the presence of individual incentives and independent work and lower levels of performance when work is more interdependent and there are no individual incentives |
| 2002 | Carpenter/Sanders | Executives of 199 Standard & Poor's 500 firms<br>USA<br>1993-1995 | Total pay<br>ratio of long-term pay to total | Average ROA | Alignment of TMT pay is positively linked with performance<br>CEO pay structure is related to firm performance through TMT pay structure |
| 2002 | Core/Larcker | 195 firms that adopted mandatory stock ownership programs<br>1991-97, USA | Plan adoption indicator<br>Increase in ownership (regression residuals) | ROA (2 years)<br>Buy-and-hold excess returns (immediate and 6, 12 and 24 months) compared to matched control firms | Target ownership programs lead to higher firm performance (ROA and returns at 6 months) and greater managerial ownership |
| 2001 | Conyon/Peck/Sadler | 532 executive directors of 100 of the largest public companies<br>1997-98, UK | Cash, incentive and total pay | ROA<br>Annual total shareholder returns | Pay dispersion does not predict firm performance<br>Gap between levels increases as the level increases and cash pay is higher when there are more "contestants" |

| Year of publication | Author(s) | State sample business year | Pay Variables | Performance variables | Main results |
|---|---|---|---|---|---|
| 2001 | Morgan/Poulson | S&P 500 firms that proposed a pay-for-performance plan<br>1992-1997<br>USA | Plan recommendation indicator | CAR<br>Buy and hold return<br>Earnings/Assets<br>Sales/Assets<br>Asset growth<br>Sales growth | Firms that adopt pay for performance plans demonstrate better pre- and ost-announcement performance |
| 2001 | Sigler/Porterfield | 31 bank CEOs<br>1988-97<br>USA | Total compensation<br>Salary & bonus | ROA<br>Changes in bank revenues | Change in total pay for CEO bankers increases or decreases $ 93,870 per year with a slight 0.1% increase or decrease in ROA |
| 1999 | Bloom | 1,644 major league baseball players on 29 teams<br>1985-1993<br>USA | Player salaries used to create multiple measures of dispersion and pay rank | Three stats per player (individual level)<br>Winning percentage<br>Gate receipts<br>Financial performance (team level) | Pay dispersion produces lower organizational and individual performance<br>Individual performance relationship is moderated by individual's pay rank |
| 1998 | Wallace | 40 firms that adopted residual income plans with matched pairs<br>1988-1997<br>USA | Plan adoption indicators | Residual income and shareholder wealth | Residual income based plans affect investment decisions and predict increases in residual income but not shareholder wealth |
| 1996 | Bushman et al. | 396 firms and 1,476 firm-year observations<br>1990-1995<br>USA | Individual performance /bonus<br>Individual performance /salary<br>Long-term plans/salary<br>Individual performance /long-term plans | Market to book value | Positive link between market to book value and individual performance evaluation |

In Germany the empirical corporate governance research on management board compensation can be traced to Schmid (1997). These studies reveal that the return on total assets, the shareholder structure as well as the company size have a significant impact on the amount of the Management board Compensation (Schmid, 1997, 67-83). Schwalbach and Graßhoff (1997) show that earnings per share (EPS) and return on sales (ROS) as well as company size have a significant impact on the amount of management board compensation. Additionally a positive relationship between company size and remuneration has been identified. Schwalbach (1999) illustrated in his inquiry a significantly stronger influence of company size, measured by the number of employees, on management board compensation. In contrast, the company performance, measured by ROS, has no impact on remuneration. While Elston and Goldberg (2003) also indicated a positive impact of the revenue and ROE on management board compensation, in accordance to Schmidt and Schwalbach (2007) there is evidence for a positive influence of company size, indicated by market capitalization, but no evidence for the impact of EPS on management board salary. Rapp and Wolff (2008) show that the debt equity ratio has a significant negative and the future investment options as well as the company size have a positive impact on management board remuneration. Although ROE and total shareholder return (TSR) indicate a significant positive impact, the other used key performance indicators are insignificant. In the follow-up study by Rapp and Wolff (2010), however, EPS have been significant positive related to the amount of the management board remuneration, while the operative performance exerted a strong negative influence. Andreas et al. (2012) show in the latest follow-up study a significant positive impact of all key performance characteristics, expect of the total shareholder returns. Table 3 summarizes the research results.

**Table 3.** German corporate governance research on management board remuneration and firm performance

| Nr. | Author | Year of publication | Year of investigation | Sample size | Companay characteristics | | Performance characteristics | | Corporate Governance characteristics | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Schmid | 1997 | 1991 | 110 | Company size | (+) | Return on Total Capital | (+) | Ownership concentration | (-) |
| | | | | | | | | | Bank Share concentration | (+) |
| 2 | Schwalbach/Großhoff | 1997 | 1988-1992 | 220 | Number of employees | (+) | Return on Sales | (+) | | |
| | | | | | Turnover | (+) | | | | |
| | | | | | Industry | (+) | | | | |
| | | | 1968-1990 | 83 | Revenues | (0) | Return on Equity | (0) | | |
| | | | | | | | Return on Total Capital | (0) | | |
| | | | | | | | Earnings per Share | (+) | | |
| | | | | | | | Market value to Book value | (+) | | |
| 3 | Schwalbach | 1999 | 1987-1996 | 196 | Number of employees | (+) | Return on Sales | (0) | | |
| | | | | | Industry | (+) | | | | |
| 4 | Elston/Goldberg | 2003 | 1970-1986 | 91 | Revenues | (+) | Return on Equity | (0) | Ownership concentration | (-) |
| | | | | | | | | | Bank Share concentration | (-) |
| 5 | Schmid/Schwalbach | 2007 | 2005 | 80 | Market capitalization | (+) | Earnings per Share | (0) | | |
| 6 | Rapp/Wolff | 2008 | 2005-2006 | 125 | Company size | (+) | Return on Equity | (0) | Ownership concentration | (+) |
| | | | | | Investment opportunities | (+) | Return on Invested Capital | (0) | Management Share | (-) |
| | | | | | Diversification | (0) | Cash Flow over Assets | (0) | Size of the Executive Board | (-) |
| | | | | | Measure of risk | (+) | Total Shareholder Return | (+) | Structure of the Supervisory Board | (-) |
| | | | | | Leverage | (-) | | | US-listing | (+) |
| 7 | Rapp/Wolff | 2010 | 2005-2007 | 334 | Company size | (+) | Earnings per Share | (+) | Ownership concentration | (-) |
| | | | | | Diversification | (0) | Operative Performance | (-) | Management Share | (-) |
| | | | | | Measure of risk | (-) | Market value to Book value | (+) | Size of the Executive Board | (+) |
| | | | | | Leverage | 0 | | | Size of the Supervisory Board | (+) |
| | | | | | | | | | US-listing | (-) |
| 8 | Adreas/Rapp/Wolff | 2012 | 2005-2008 | 232 | Company size | (+) | Return on Equity | (+) | Ownership concentration | (-) |
| | | | | | Investment opportunities | (0) | Return on Invested Capital | (+) | Management Share | (-) |
| | | | | | Measure of risk | (0) | Total Shareholder Return | (0) | External Investors | (-) |
| | | | | | Leverage | (-) | Dividend yield | (-) | Institutional Investors | (0) |
| | | | | | Free Cash Flow | (+) | | | Size of the Supervisory Board | (-) |
| | | | | | Market competition | (0) | | | Number of Executive Board meetings | (+) |
| | | | | | | | | | Independence of the Managing Director | (0) |

## 3. Empirical study for the German Prime Standard

### *3.1. Hypotheses*

As mentioned in chapter 2, the principal agent theory describes an incentive based remuneration system as an economic approach to reduce conflicts of interests between management and stakeholders in listed corporations. Although, the specific conditions of the respective firms determine the principal agent problems and the resulting agency costs (Tebben, 2011, 58). The empirical study includes different determinants which may have an impact on the amount of the management board remuneration. The determinants presented below are divided into company-related, performance-related and corporate governance-related characteristics (analogous to e.g. Ertugrul and Hegde, 2008; Rapp and Wolff, 2010).

According to the principal agent theory the degree of information asymmetry between management board and shareholders, in terms of moral hazard, affects substantially the agency costs.

Thus, moral hazard has a stronger effect in large corporations because it is more difficult to control the work assignment of board members. With rising company size also the complexity of the company increases. The higher complexity in turn has a strong increasing impact on the executive board's information advantage over the shareholder. Thus, for the owner it might be favorable to offer an incentive based remuneration to reduce agency costs in major enterprises (Tebben, 2011, 59). In this context the following hypothesis can be derived:

*H1: Company size has a positive impact on the amount of management board remuneration.*

Leverage indicates the relation between debt and equity. Thus, the leverage allows to analyse the influence of external creditors on the corporation. The impact of leverage on management remuneration can be interpreted both positive and negative. Thus, the agency costs, which derive from the separation between ownership and control, can be reduced by an increase of outside capital. Consequently, the incentive based remuneration decreases with a higher level of debt. This would indicate a negative relation between leverage and management remuneration. On the other hand a high debt to equity ratio increases the risk for corporate insolvency. In this context the following hypothesis can be derived:

*H2: Debt to equity ratio has a negative impact on the amount of management board remuneration.*

Besides the company characteristics also performance-related attributes are included. With regard to the impact of firm performance the incentive based remuneration of management should increase for the cases that the management acts in terms of the shareholder and strives to maximize his benefit. The salary should develop parallel to firm performance (Barkema and Gomez-Mejia, 1998, 138). This should reveal a positive correlation between performance-related characteristics and the amount of management board remuneration (Diamond and Verrecchia, 1982, 278 f). In this context the following hypothesis can be derived:

*H3: Firm performance has a positive impact on the amount of management remuneration.*

Besides company- and performance-related characteristics also the design of the corporate governance system plays a key role. The empirical research in the Anglo-American area, which supports the one tier system, is in contrast to the German two tier system which is characterized by a separation between management board and supervisory board (Velte and Weber, 2011b, 473). Thus, ownership concentration and supervisory board size are included to analyse their relationship. The owner has an interest to maximize the shareholder value. Therefore investors must supervise the activity of the management (Sapp, 2006, 14). Ownership concentration is considerated an important determinant of management remuneration. Thus, the control function of the respective external owner rises with his company share, so that major shareholders have a stronger impact on the corporate management as small ones (Shleifer and Vishny, 1997, 737). Therefore a high level of ownership concentration is accompanied by a high corporate control. In return, the distribution of the ownership causes that the owner have minor monitoring possibilities to supervise the management board and thus to affect leadership activities (Elston and Goldberg, 2003, 1396). In the case of a higher control activity the amount of the incentive based remuneration can be reduced by a concentrated ownership structure (Tebben, 2011, 59; Wolff and Rapp, 2008, 8; Sapp, 2006, 14). Thus, the following hypothesis can be derived:

*H4: Ownership concentration has a negative imact on the amount of management remuneration.*

In the German two tier system, the supervisory board influences the activity of the management board due to its control activity. Here, the supervisory board has to ensure that the management board acts in terms of the shareholder. If the supervisory board works efficiently, the monetary incentive components of the remuneration system of the management can be reduced. For this purpose it is suggested that the presence and the efficiency of supervisory boards negatively affect the amount of management compensation (Tebben, 2011, 60). The efficiency of the supervisory board can be measured by the number of its members. In this context the efficiency of the supervisory board decreases with increasing membership. This can be justified by the fact that in large supervisory boards might arise difficulties in respect to voting-, coordination- and decision making processes (Sapp, 2006, 13). This leads to the following hypothesis:

*H5: The size of the supervisory board has a positive impact on the amount of management remuneration.*

### *3.2. Study design*

The empirical study concentrates on the business year 2011 and includes the DAX, MDAX, SDAX and TecDAX as part of the German Prime Standard. The firms were listed on the Frankfurt Stock Exchange on 1 January 2013. Thus, the database contains a total of 168 shares. The database has been adjusted in four steps due to a better illustration of the influencing factors (Table 4).

**Table 4.** Sample description

| Spalte1 | **sample** | **DAX** | **MDAX** | **SDAX** | **TecDAX** |
|---|---|---|---|---|---|
| Total shares | 168 | 33 | 53 | 51 | 31 |
| Double notations | 8 | 3 | 3 | 1 | 1 |
| Foreign ISIN | 9 | - | 2 | 4 | 3 |
| Financial service providers | 23 (21) | 5 | 9 (7) | 9 | - |
| New access | 2 | - | 1 | - | 1 |
| **final sample** | **128** | **25** | **40** | **37** | **26** |

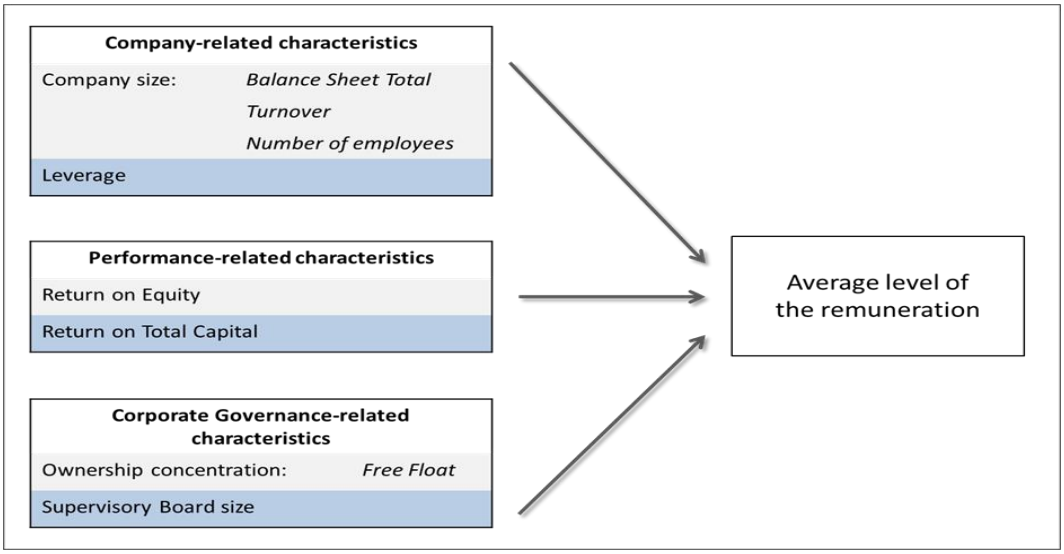
In the first step the double notations, e.g. preferred shares, are excluded. Further the corporations with foreign ISIN code are excluded from the sample because these companies partly provide a different corporate governance system than German stock corporations and, thus, would constrain the actual comparison. In the third step all financial service providers are excluded due to the fact that these corporations are subject to other financial reporting and regulatory requirements, so that a direct comparison would not be advisable. In the last step two further corporations are excluded from the sample because they accessed to the stock exchange first in the project year 2011 respectively the year after. The final sample consists of 128 corporations.

The data for the empirical analysis has been collected from different sources. In the first line the data has been extracted from the Bloomberg database. But in particular the information on management boards remuneration, size of the executive board and supervisory board has been incomplete. Furthermore, the information about the respective variables has not been available for all companies. For the case that required data could not be extracted from Bloomberg, additional information has been reported manually from the annual reports of the company.

### *3.3. Variables*

The average amount of the compensation for each member of the management board during 2011 represents the dependent variable. The total amount is reported without pension provisions and includes short-term and long-term performance-related remuneration components as well as additional services. The independent variables are the determinants as the company-, the performance and the corporate governance-related characteristics (Figure 1).

**Figure 1.** Determinants of the average management board remuneration



### *3.4. Results of the descriptive statistics*

Table 5 illustrates the results of the descriptive analysis and first the company-related characteristics like company size and debt to equity ratio. The first three determinants, which are used as indicator for the company size, show a similar development. The overall analysis indicates an average balance sheet total of 13,379.59 million EUR, an average turnover of 10,430,096.80 thousand EUR and the average number of employees of 35,258.66 individuals. The analysis of the median of the three determinants describing the company size exposes the following tendency: the median value in all three cases is smaller than the associated mean value. So, the determinants of the DAX-companies indicate a level which exceeds significantly the level of the remaining indices. From this information it can be inferred a left-sided distribution. The large standard deviation of the company size can also be explained with this phenomenon.

A further company-related characteristic constitutes the debt to equity ratio. The mean of the debt to equity ratio in the total sample reveals 181.65 %. The comparison between mean and median value of about 142.33 % shows a slight left-sided distribution. The standard deviation of 146.98 % indicates that all four indices have a relative similar mean value in respect to the debt to equity ratio. This amounts in DAX- companies 195.13 %, in MDAX-companies 211.47 %, in SDAX-companies 184.22 % and in TecDAX-companies 119.13 %.

**Table 5.** Overview over the results of the descriptive statistics

| Determinants | Measure | DAX | MDAX | SDAX | TecDAX | Total Sample |
|---|---|---|---|---|---|---|
| Balance Sheet Total (in Mio. EUR) | Mean Value | 58.029,86 | 5.169,25 | 993,99 | 703,61 | 13.379,59 |
| | Median Value | 28.915,00 | 2.987,55 | 682,76 | 500,17 | 1.588,06 |
| | Minimun | 5.275,00 | 283,19 | 62,41 | 89,56 | 62,41 |
| | Maximum | 253.626,00 | 33.987,00 | 3.705,28 | 2.528,43 | 253.626,00 |
| | Std. deviation | 61.551,88 | 6.265,84 | 874,16 | 638,88 | 34.922,55 |
| Turnover (in thousand EUR) | Mean Value | 40.272.990,40 | 6.797.057,95 | 978.937,05 | 774.024,65 | 10.430.096,80 |
| | Median Value | 16.522.000,00 | 2.692.674,00 | 577.080,00 | 531.403,50 | 1.633.496,00 |
| | Minimun | 3.997.000,00 | 391.688,00 | 66.345,00 | 65.103,00 | 65.103,00 |
| | Maximum | 159.337.000,00 | 66.702.000,00 | 3.804.452,00 | 3.217.901,00 | 159.337.000,00 |
| | Std. deviation | 40.625.355,34 | 11.353.483,97 | 912.720,17 | 813.369,68 | 24.008.842,27 |
| Number of employees | Mean Value | 132.740,68 | 24.306,35 | 4.139,68 | 2.660,38 | 35.258,66 |
| | Median Value | 79.159,00 | 11.192,50 | 1.869,00 | 1.776,00 | 6.343,50 |
| | Minimun | 14.338,00 | 1.224,00 | 116,00 | 327,00 | 116,00 |
| | Maximum | 501.956,00 | 249.953,00 | 20.000,00 | 11.924,00 | 501.956,00 |
| | Std. deviation | 131.110,06 | 41.571,14 | 4.586,01 | 2.631,69 | 78.705,62 |
| Leverage (in %) | Mean Value | 195,13 | 211,47 | 184,22 | 119,13 | 181,65 |
| | Median Value | 173,81 | 178,97 | 162,07 | 91,43 | 142,33 |
| | Minimun | 74,90 | -2,23 | 5,93 | 15,86 | -2,23 |
| | Maximum | 442,42 | 1.154,40 | 637,07 | 667,04 | 1.154,40 |
| | Std. deviation | 97,17 | 185,63 | 134,36 | 123,49 | 146,98 |
| Return on Equity (in %) | Mean Value | 12,36 | 6,24 | 6,40 | 15,29 | 9,32 |
| | Median Value | 12,82 | 13,38 | 12,36 | 12,56 | 12,74 |
| | Minimun | -12,43 | -311,73 | -199,47 | -12,87 | -311,73 |
| | Maximum | 33,35 | 54,37 | 47,73 | 104,89 | 104,89 |
| | Std. deviation | 10,50 | 52,94 | 37,19 | 20,16 | 36,99 |
| Return on Total Capital (in %) | Mean Value | 6,67 | 7,24 | 5,88 | 7,60 | 6,81 |
| | Median Value | 6,29 | 5,89 | 5,80 | 7,82 | 6,59 |
| | Minimun | -0,94 | -19,93 | -33,63 | -4,64 | -33,63 |
| | Maximum | 20,13 | 28,19 | 23,69 | 15,80 | 28,19 |
| | Std. deviation | 5,02 | 7,20 | 9,29 | 4,49 | 7,04 |
| Free Float (in %) | Mean Value | 76,51 | 60,80 | 58,50 | 68,73 | 64,81 |
| | Median Value | 74,84 | 59,30 | 51,81 | 72,48 | 67,93 |
| | Minimun | 17,18 | 10,51 | 14,53 | 3,20 | 3,20 |
| | Maximum | 100,00 | 96,22 | 100,00 | 100,00 | 100,00 |
| | Std. deviation | 22,83 | 25,04 | 24,77 | 23,91 | 24,98 |
| Size of the Supervisory Board | Mean Value | 16,28 | 12,58 | 8,00 | 7,19 | 10,88 |
| | Median Value | 17,00 | 12,00 | 6,00 | 6,00 | 12,00 |
| | Minimun | 6,00 | 3,00 | 3,00 | 3,00 | 3,00 |
| | Maximum | 20,00 | 21,00 | 20,00 | 14,00 | 21,00 |
| | Std. deviation | 4,18 | 4,31 | 4,65 | 3,53 | 5,43 |

With regard to the performance-related characteristics the referred values are ROE and return on total capital. The mean value for ROE for the total sample is 9.32 %. Due to the fact that the median value shows an amount of 12.24 % and thus exceeds the associated mean value, the sample indicates a right-sided distribution. The standard deviation of 36.99 % results predominantly from the large variation in the sub-sample for MDAX-companies (52.94 %) and SDAX-companies (37.19 %). Whereas the values for the return on total capital with a mean of 6.81 %, a median value of 6.59 % and a standard deviation of 7.04 % present a normal distribution.

As last characteristic type the corporate governance-related items are described, which include the free float and the size of the supervisory board. The free float reveals for the total sample a mean of 64.81 % and is only a few smaller than the median value of 67.93 %, so that a normal distribution can be stated. The standard deviation of the total sample of 24.98 % indicates a high similarity of all four indices.

Finally the size of the supervisory board is analyzed, which for the total sample indicates an average of 10.88 members. This value is rated as plausible as the supervisory board of the examined companies consists of a minimum of 3 members and a maximum of 21 members. Furthermore the median for the total sample comprises 12 members. This complies, in comparison to the mean value, a normal distribution. A further tendency shows the decreasing mean values of the size of the supervisory board. They begin in DAX-listed companies with an average of 16.28 and fall up to 7.19 members in TecDAX-listed companies.

After the description of the values of the determinants in the next step the descriptive statistics for the average management board remuneration will be presented. *Table 6* indicates the average amount of the management board remuneration both index-specific and also for the total sample.

**Table 6.** Overview over the descriptive statistics for the average level of remuneration

| | Measure | DAX | MDAX | SDAX | TecDAX | Total Sample |
|---|---|---|---|---|---|---|
| Average level of the remuneration | Mean Value | 2.767.299,09 | 1.447.620,35 | 770.391,83 | 870.890,93 | 1.392.460,57 |
| | Median Value | 2.550.500,00 | 1.259.766,67 | 683.333,33 | 754.553,97 | 1.020.500,00 |
| | Minimun | 803.142,86 | 218.219,50 | 249.500,00 | 298.850,00 | 218.219,50 |
| | Maximum | 8.823.311,38 | 3.400.000,00 | 2.953.333,33 | 2.541.251,33 | 8.823.311,38 |
| | Std. deviation | 1.524.795,74 | 665.016,54 | 482.199,92 | 593.483,34 | 1.118.881,81 |

An overall consideration of the sample with respect to the average amount of the management board remuneration exhibits a mean value of 1,392,460.57 EUR. The level of remuneration spreads around this mean value with a standard deviation of 1,118,881.81 EUR. The reason for the large spread of the average amount of the management board remuneration becomes clear when the mean values of each index is examined more in detail. Hence, the mean of the average level of remuneration in DAX-listed companies amounts 2,767,299.09 EUR. The value, thus, is 1.9 times higher than the mean value for MDAX-companies, which amounts 1,447,620.35 EUR. Also the mean value in SDAX-listed companies with an amount of 770,391.83 EUR and TecDAX-listed companies with an amount of 870.890,93 EUR is 3.6 times respectively 3.2 times smaller than the mean value in DAX-companies. Moreover there are also differences between the mean values in MDAX- and SDAX-listed corporations. They differ by the factor 1.92 and the factor between MDAX- and TecDAX-companies is 1.7.

### *3.5. Multivariate regression analysis*

The average level of remuneration is transformed by using a root function. The return on total capital, the free float and the size of the supervisory board are not transformed because they already indicate a normal distribution. The balance sheet total, the number of employees and the leverage are approximated via a logarithmic transformation. The turnover and the return on equity are transformed by using a root function.

The regression model is designed as follows:

*Average level of remuneration = f (company-related characteristics, performance-related characteristics, corporate governance-related characteristics)*

The results of the regression analysis presented below are based on the above described model, using the transformed data. The calculation was carried out by means of the statistics-program "Stata". The results of the regression analysis are summarized in table 7.

**Table 7.** Results of the regression analysis

| Source | SS | df | MS |
|---|---|---|---|
| Model | 12116409.9 | 8 | 1514551.24 |
| Residual | 9153368.25 | 119 | 76919.0609 |
| Total | 21269778.2 | 127 | 167478.568 |

| | | |
|---|---|---|
| Number of obs | = | 128 |
| F (8, 119) | = | 19.69 |
| Prob > F | = | 0.0000 |
| R-squared | = | 0.5697 |
| Adj R-squared | = | 0.5407 |
| Root MSE | = | 277.34 |

| Average level of the remuneration | Coef. | Std. Err. | t | P > \| t \| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| Balance Sheet Total | 112.1103 | 38.58943 | 2.91 | 0.004 | 35.69942 | 188.5213 |
| Turnover | .0467609 | .0213161 | 2.19 | 0.030 | .0045529 | .0889688 |
| Number of employees | 38.06559 | 35.46473 | 1.07 | 0.285 | -32.15812 | 108.2893 |
| Leverage | -63.04869 | 33.89882 | -1.86 | 0.065 | -130.1717 | 4.074356 |
| Return on Equity | 23.73442 | 12.47556 | 1.90 | 0.060 | -.9684284 | 48.43727 |
| Return on Total Capital | 7.3678 | 3.807991 | 1.93 | 0.055 | -.1724033 | 14.908 |
| Free Float | 1.236257 | 1.00162 | 1.24 | 0.219 | -.7441638 | 3.216679 |
| Supervisory Board size | -12.14465 | 7.688528 | -1.58 | 0.117 | -27.3687 | 3.079404 |
| _cons | 27.6943 | 257.2255 | 0.11 | 0.914 | -481.6378 | 537.0264 |

This results in the following regression function

$$Y = 27{,}6943 + 112{,}1103X_1 + 0{,}4676X_2 + 38{,}0656X_3 - 63{,}0487X_4 + 23{,}7344X_5 + 7{,}3678X_6 + 1{,}2363X_7 - 12{,}1447X_8$$

with

$Y$ – average level of the remuneration
$X_1$ – balance sheet total
$X_2$ – turnover
$X_3$ – number of employees
$X_4$ – leverage
$X_5$ – ROE
$X_6$ – return on total capital
$X_7$ – free float
$X_8$ – supervisory board size.

The regression coefficient for each determinant of the company characteristics describes their expected influence on the average level of remuneration. The balance sheet total, the turnover and the number of employees, which are used as indicators for the company size, reveal a regression coefficient of +112.1103; +0.4676 and +38.0656. Thus, they indicate an expected positive impact on the level of remuneration (H1). Even in the case of the leverage, which indicates a regression coefficient of -63.0487, the expected negative impact on the average level of remuneration can be confirmed (H2).

With regard to the performance-related characteristics ROE and the return on total capital indicate a regression coefficient of +23.7344 and +7.3678. Hence, the expected positive impact on the average level of remuneration can be supported (H3). As regards to the corporate governance-related characteristics the identified effect is in opposite to the expected relation. The impact of the free float on the average level of remuneration proves with a coefficient of +1.2363 to be positive, whereas a negative impact has been expected (H4). The size of the supervisory board shows with a coefficient of -12.1447 a negative influence on the average level of remuneration, which contradicts with the expected positive impact (H5).

In order to answer the question if the regression model is significant for the population, additionally the F-test is applied (Backhaus *et al*,. 2011, 78). The probability that none of the coefficients has a significant influence on the dependent variable indicates 0.0000%, so for the population a high significance of the estimated model can be inferred.

### *3.6. Model assumptions*

The regression analysis is based on specific model assumptions. For the implementation of the regression analysis the assumptions are presumed to be fulfilled (Urban, 1982, 150). One of these assumptions implies that the residuals should not be correlated for the population. This appropriates the condition that autocorrelation should be precluded (Cleff, 2008, 171). In general, autocorrelation usually arises in time series. Due to the fact that the present date is not a time series, the condition of an absent autocorrelation is not considered more in detail.

A further assumption of the regression analysis assumes that there is no multicollinearity between the independent variables. Multicollinearity between two independent variables which are examined on one and the same regression model can be observed if one independent variable can be modeled as linear function of another independent variable. Thus, multicollinearity can be captured as degree to which the independent variables used in one

regression model are mutual linearly dependent (Backhaus et al., 2011, 93). One possible method to detect multicollinearity is the correlation matrix (Table 8).

**Table 8.** Correlation matrix

| | Balance Sheet Total | Turnover | Number of employees | Leverage | Return on Equity | Return on Total Capital | Free Float | Supervisory Board size |
|---|---|---|---|---|---|---|---|---|
| Balance Sheet Total | 1,0000 | | | | | | | |
| Turnover | 0,9491 | 1,0000 | | | | | | |
| Number of employees | 0,8886 | 0,9097 | 1,0000 | | | | | |
| Leverage | 0,4661 | 0,4596 | 0,4053 | 1,0000 | | | | |
| Return on Equity | -0,2341 | -0,1652 | -0,1952 | -0,0348 | 1,0000 | | | |
| Return on Total Capital | -0,3895 | -0,2880 | -0,3215 | -0,4192 | 0,7925 | 1,0000 | | |
| Free Float | 0,0099 | 0,0140 | 0,0337 | 0,0637 | -0,0913 | -0,1214 | 1,0000 | |
| Supervisory Board size | 0,7220 | 0,7232 | 0,7818 | 0,2981 | -0,2267 | -0,3155 | -0,0296 | 1,0000 |

The table illustrates that some of the correlation coefficients indicate above-average values. For improved clarity the three highest correlation values in the table are marked with red. Thus, the relation between the balance sheet total and the turnover (0.9491) and between the balance sheet total and the number of employees (0.8886) are characterized by a high correlation. Furthermore the turnover and the number of employees correlate with a high coefficient (0.9097). The emphasized correlation coefficients can be interpreted as a form of multicollinearity. Consequently the both determinants (balance sheet total and turnover) would indicate low additional information for the prediction of the average level of remuneration. Otherwise these determinants form the company-related characteristic company-size, so that it seems as self-explanatory that the strong relationship between these determinants implies a high correlation.

## 4. Conclusions

The present empirical study of 128 companies in the German Prime Standard for the business year 2011 has examined factors which may have an impact on the amount of management board remuneration. Based on an evaluation of previous research findings and an agency-theoretical foundation, several company-, performance- and corporate governance-related variables and respective hypotheses have been derived (company-size (balance sheet total, turnover, number of employees), leverage, company-performance (ROE and return on total capital), ownership concentration (free float) and size of the supervisory board).

The regression analysis points out the expected impact of the company-related characteristics (H1, H2). With regard to the company-size (H1) both the balance sheet total and the turnover have a significant positive impact. In contrast, the number of employees reveals a positive but insignificant character. In view to the leverage (H2) the expected negative relationship and its significance can be confirmed. On the other hand the performance-related characteristics (H3), which include ROE and return on total capital, indicate a significant positive impact on the average level of remuneration and confirm the expected effect. However the corporate governance-related characteristics (H4, H5) have no significant impact on management board compensation.

In summary the balance sheet total and the turnover indicate, in accordance to former German studies, a strong positive impact on the level of remuneration. The management board in large companies is confronted with higher requirements and a higher corporate complexity. This leads to a higher responsibility as well as performance pressure and thus is compensated with an increased management salary. Negative effect of leverage on the amount of management remuneration (H2) can be explained by the fact that investors reduce the agency costs by additional monitoring activities. Contrary to the majority of the perceptions of performance-related characteristics, which indicate no impact on the level of remuneration, a significant positive relationship has been identified. Thus, the assumption that the amount of the management board compensation develops parallel to the company performance can be confirmed and the incentive based remuneration proves to be effective.

The corporate governance-related characteristics (ownership concentration and size of the supervisory board), however, indicate no impact on management remuneration. The majority of the empirical studies describe a negative impact of the ownership concentration on the level of remuneration, whereas the size of the supervisory board offers a heterogeneous picture. Due to the fact that previous investigations focus on company-related characteristics, corporate governance-related characteristics remain in the background. This further development is essential because the

country specific corporate governance indicates a considerable impact on the amount and the structure of the management board salary and insofar empirical founded comparative law studies with the present database are only possible with reservation. For future research it would be interesting, to analyze both, the executive board and the supervisory board and compare the results with studies from countries with a monistic governance system.

## References:


1. Aggarwal, R.K. and Samwick, A.A. (1999a), "Executive compensation, strategic competition and relative performance evaluation. Theory and evidence", *Journal of Finance*, Vol. 54, pp. 1999-2043.
2. Aggarwal, R.K. and Samwick, A.A. (1999b), "The other side of the trade-off: The impact of risk on executive compensation", *Journal of Political Economy* , Vol. 107, pp. 65-105.
3. Aggarwal, R.K. and Samwick, A.A. (2003), "Performance incentives with firms: The effect of managerial responsibilities", *Journal of Finance*, Vol. 58, pp. 1613-1649.
4. Alcouffe, A. and Alcouffe, C. (1997), "Control and Executive Compensation in Large French Companies", *Journal of Law and Society*, Vol. 24, pp. 85-103.
5. Andreas, J. M., Rapp, M.-S. and Wolff, M. (2012), "Determinants of Director Compensation in Two-Tier Systems: Evidence from German Panel Data", *Review of Managerial Science*, Vol. 6, pp. 33-79.
6. Angel, P. and Fumás, V. S. (1997), "The Compensation of Spanish Executives: A Test of a Managerial Talent Allocation Model", *International Journal of Industrial Organization*, Vol. 15, pp. 511-531.
7. Attaway, M.C. (2000), "A Study of the Relationship Between Company Performance and CEO Compensation", *American Business Review*, Vol. 18, pp. 77-85.
8. Baber, W.R., Kang, S.H. and Kumar, K.R. (1998), "Accounting earnings and executive compensation. The role of earnings persistence", *Journal of Accounting & Economics*, Vol. 25, pp. 169-193.
9. Backhaus, K., Erichson, B., Plinke, W. and Weiber, R. (2011), *Multivariate Analysemethoden: Eine anwendungsorientierte Einführung, 13. Auflage*, Springer Verlag, Berlin, Heidelberg, pp. 80-91,
10. Balachandran, S.V. (2006), "How does residual income affect investment? The role of prior performance measures", *Management Science*, Vol. 52, pp. 383-394.
11. Banker, R.D., Darrough, M.N. and Plehn-Dujowich, J.M. (2013), "The Relation between CEO compensation and Past Performance", *The Accounting Review*, Vol. 88, pp. 1-30.
12. Barkema H. G. and Gomez-Mejia, L. R. (1998), "Managerial compensation and firm performance: A general research framework", *Academy of Management Journal*, Vol. 41, pp. 135-145.
13. Baumol, W. J. (1959), *Business Behavior, Value and Growth*, Macmillan, New York.
14. Bloom, M. (1999), "The performance effects of pay dispersion on individuals and organizations", *Academy of Management Journal*, Vol. 42, pp. 25-40.
15. Boschen, J.F., Duru, A., Gordon, L.A. and Smith, K.J. (2003), "Accounting and stock price performance in dynamic CEO compensation arrangements", *Accounting Review*, Vol. 78, pp. 143-168.
16. Brunello, G., Graziano, C. and Parigi, B. (2001), "Executive Compensation and Firm Performance in Italy", *International Journal of Industrial Organization*, Vol. 19, pp.133-161.
17. Bushman, R.M., Indjejikian, R.J. and Smith, A. (1996), "CEO compensation. The role of individual performance evaluation", *Journal of Accounting and Economics*, Vol. 21, pp. 161-193.
18. Carpenter, M.A. and Sanders, W.G. (2002), "Top management team compensation. The missing link between CEO pay and firm performance?" *Strategic Management Journal*, Vol. 23, pp. 367-375.
19. Carpenter, M.A. and Sanders, W.G. (2004), "The effects of top management team pay and firm internationalization on MNC performance", *Journal of Management*, Vol. 30, pp. 509-528.
20. Certo, S.T., Daily, C.M., Cannella, A.A. and Dalton, D.R. (2003), "Giving money to get money. How CEO stock options and CEO equity enhance IPO valuations", *Academy of Management Journal*, Vol. 46, pp. 643-653.
21. Cheng, Q. and Farber, D.B. (2008), "Earnings Restatements, Changes in CEO Compensation, and Firm Performance", *The Accounting Review*, Vol. 83, pp. 1217-1250.
22. Cleff, T. (2008), *Deskriptive Statistik und moderne Datenanalyse*, Gabler, Wiesbaden.
23. Conyon, M. and Schwalbach, J. (2000), "European Differences in Executive Pay and Corporate Governance", *Zeitschrift für Betriebswirtschaft, Ergänzungsheft, 2000,* pp. 97-114.
24. Conyon, M.J. and Peck, S.I. (1998), "Board control, remuneration committees and top management compensation", *Academy of Management Journal*, Vol. 41, pp. 146-157.
25. Conyon, M.J., Peck, S.I. and Sadler, G.V. (2001), "Corporate tournaments and executive compensation. Evidence from the UK", *Strategic Management Journal*, Vol. 22, pp. 805-815.
26. Core, J.E. and Larcker, D.F. (2002), "Performance consequences of mandatory increases in executive stock ownership", *Journal of Financial Economics*, Vol. 64, pp. 317-340.
27. Cosh, A. (1975), "The Remuneration of Chief Executives in the United Kingdom", *Economic Journal*, Vol. 85, pp. 75-94.
28. Diamond, D.W. and Verrecchia, R.E. (1982), "Optimal managerial contracts and equilibrium security prices", *Journal of Finance*, Vol. 37, pp. 275-287.
29. Elston, J.A. and Goldberg, L. G. (2003), "Executive compensation and agency costs in Germany", *Journal of Banking & Finance*, Vol. 27, pp. 1391-1410.
30. Eriksson, T. (1999), "Executive compensation and Tournament Theory: Empirical Tests on Danish Data", *Journal of Labor Economics*, Vol. 17, pp. 262-280.

31. Ertugrul, M. and Hegde, S. P. (2008), "Board compensation practices and agency cost of debt", *Journal of Corporate Finance*, Vol. 14, pp. 512-531.
32. Eulerich, M. and Velte, P. (2013), "Nachhaltigkeit und Transparenz der Vorstandsvergütung. Eine empirische Untersuchung im DAX30 unter besonderer Berücksichtigung der Bemessungsgrundlagen der variablen Vergütungsanteile", *Zeitschrift für Internationale Rechnungslegung*, Vol. 8, pp. 73-79.
33. Eulerich, M., Rapp, M. S. and Wolff, M. (2012), „Ausgewählte Aspekte der Vorstandsvergütung: „Say-on-Pay"-Abstimmungen während der Hauptversammlung. Zur Praxis des Abstimmungsverhaltens in der HV-Saison 2010", *Zeitschrift für Corporate Governance,* Vol. 7, pp. 69-73.
34. Graffin, S., Wade, J., Porac, J. and McNamee, R. (2008), "The impact of CEO status diffusion on the economic outcomes of other senior managers", *Organization Science*, Vol. 19, pp. 457-474.
35. Groves, T. Y., Hong, Y., McMillan, J. and Naughton, *B.* (1995), "China's Evolving Managerial Labor Market.", *Journal of Political Economy*, Vol. 103, pp. 873-892.
36. Hall, B.J. and Liebman, J.B. (1998), "Are CEOs really paid like bureaucrats?" *Quarterly Journal of Economics*, Vol. *1*13, pp. 653-691.
37. Hanlon, M., Rajgopal, S. and Shevlin, T. (2003), "Are executive stock options associated with future earnings?" *Journal of Accounting & Economics*, Vol. 36, pp. 3-43.
38. Hartzell, J.C. and Starks, L.T. (2003), "Institutional investors and executive compensation", *Journal of Finance*, Vol. 58, pp. 2351-2374.
39. Henderson, A.D and Fredrickson, J.W. (2001), "Top management team coordination needs and the CEO pay gap. A competitive test of economic and behavioral views", *Academy of Management Journal*, Vol. 44, pp. 96-117.
40. Hogan, C.E. and Lewis, C.M. (2005), "Long-run investment decisions, operating performance and shareholder value creation of firms adopting compensation plans based on economic profits", *Journal of Financial and Quantitative Analysis*, Vol. 40, pp. 721-745.
41. Huettenbrink, A. B. (2012), *The Role of the Institutional Environment in Executive Compensation*, Universitätsbibliothek der TUM, Munich.
42. Jensen, M. C. and Meckling, W. H. (1976), "Theory of the firm: Managerial Behavior, Agency Costs and Ownership Structure", *Journal of Financial Economics*, Vol. 3, pp. 305-360.
43. Jeppson, C.T., Smith, W.W. and Stone, R.S. (2009), "CEO Compensation And Firm Performance: Is There Any Relationship?" *Journal of Business & Economic Research*, Vol. 7, pp. 81-94.
44. Jones, D. C. and Kato, T. (1996), "The determinants of chief executive compensation in transitional economies: Evidence from Bulgaria", *Labor Economics*, Vol. 3, pp. 319-336.
45. Joyce, W.B. (2001): "Return and Reward. Bank Performance and CEO Compensation", *American Business Review*, Vol. 19, pp. 93-114.
46. Kaplan, S. N. (1997), "Top Executive Incentives in Germany, Japan, and the US: A Comparison", in Carpenter, J. and Yermack, D. (Eds.), *Executive Compensation and Shareholder Value – Theory and Evidence*, Kluwer Academic Publishers, Dordrecht, Boston, London, pp. 3-13.
47. Kato, H.K., Lemmon, M., Luo, M. and Schallheim, J. (2005), "An empirical examination of the costs and benefits of executive stock options. Evidence from Japan", Journal of Financial Economics, Vol. 78, pp. 435-461,
48. Ke, B., Petroni, K. and Safieddine, A. (1999), "Ownership concentration and sensitivity of executive pay to accounting performance measures. Evidence from publicly and privately-held insurance companies", *Journal of Accounting & Economics*, Vol. 28, pp. 185-209.
49. Leone, A.J., Wu, J.S. and Zimmerman, J.L. (2006), "Asymmetric sensitivity of CEO cash compensation to stock returns", *Journal of Accounting & Economics*, Vol. 42, pp. 167-192.
50. Lewellen, W. G. and Huntsman, B. (1970), "Managerial Pay and Corporate Performance", *American Economic Review*, Vol. 60, pp. 710-720.
51. Matolesy, Z. and Wright, A. (2011), "CEO compensation structure and firm performance", *Accounting and Finance*, Vol. 51, pp. 745-763.
52. Michiels, A., Voordeckers, W., Lybaert, N. and Steijvers, T. (2013), "CEO compensation in Private Firms. Pay-for-Performance and the Moderating Role of Ownership and Management", *Family Business Review*, Vol. 26, pp. 140-160.
53. Morgan, A.G. and Poulsen, A.B. (2001), "Linking pay to performance. Compensation proposals in the S&P 500", *Journal of Financial Economics*, Vol. 62, pp. 489-523.
54. Murphy, K. J. (1999), "Executive Compensation", in Ashenfelter, O. and Card, D. (Eds.), *Handbook of Labor Economics*, Elsevier, North Holland, pp. 2485-2563.
55. Ozkan, N. (2011), "CEO compensation and Firm Performance. An empirical investigation of UK panel data", *European Financial Management*, Vol. 17, pp. 260-285.
56. Rapp, M.-S. and Wolff, M. (2008), "Studienergebnisse zur Vergütung von Vorstandsorganen", *Der Aufsichtsrat*, Vol. 5, pp. 109-110.
57. Rapp, M.-S. and Wolff, M. (2010), „Determinanten der Vorstandsvergütung – Eine empirische Untersuchung der deutschen Prime-Standard-Unternehmen", *Zeitschrift für Betriebswirtschaft*, Vol. 80, pp. 1075-1112.
58. Roberts, D. R. (1956), "A General Theory of Executive Compensation Based on Statistically Tested Propositions", *Quarterly Journal of Economics*, Vol. 70, pp. 270-294.
59. Sapp, S. G. (2006), "The Impact of Corporate Governance on Executive Compensation", Working Paper, Richard Ivey Business School, European Financial Management Symposium 2007.
60. Schmid, F. A. (1997), „Vorstandsbezüge, Aufsichtsratvergütung und Aktionärsstruktur", *Zeitschrift für Betriebswirtschaft*, Vol. 67, pp. 67-83.
61. Schmidt, R. and Schwalbach, J. (2007), „Zur Höhe und Dynamik der Vorstandsvergütung in Deutschland", *Zeitschrift für Betriebswirtschaft*, Special Issue I, pp. 111-122.

62. Schwalbach, J. (1999), "Agency-Theorie, Informationskosten und Managementvergütung", *Zeitschrift für betriebswirtschaftliche Forschung*, Vol. 51, pp. 437-453.
63. Schwalbach, J. and Graßhoff, U. (1997), „Managervergütung und Unternehmenserfolg“, *Zeitschrift für Betriebswirtschaft*, Vol. 67, pp. 203-217.
64. Shaw, J.D., Gupta, N. and Delery, J.E. (2002), “Pay dispersion and workforce performance. Moderating effects of incentives and interdependence”, *Strategic Management Journal*, Vol. 23, pp. 491-512.
65. Shaw, K.W. and Zhang, M.H. (2010), “Is CEO Cash Compensation Punished for Poor Firm Performance?” *Accounting Review*, Vol. 85, pp. 1065-1093.
66. Shleifer, A. and Vishny, R. W. (1997), “A survey of corporate governance”, *Journal of Finance*, Vol. 52, pp. 737-783.
67. Siegel, P.A. and Hambrick, D.C. (2005), “Pay disparities within top management groups. Evidence from harmful effects on performance of high-technology firms”, *Organization Science*, Vol. 16, pp. 259-274.
68. Sun, F., Wei, X. and Huang, X. (2013), “CEO compensation and firm performance. Evidence from the US property and liability insurance industry”, *Review of Accounting and Finance*, Vol. 12, pp. 252-267.
69. Tebben, T. (2011), *Vergütungsanreize und opportunistische Bilanzpolitik*, Gabler, Wiesbaden.
70. Tirole, J. (1986), "Hierarchies and Bureaucracies: On the Role of Cullusion in Organizations", *Journal of Law, Economics and Organization*, Vol. 2, pp. 181-214.
71. Tosi, H.L., Werner, S., Katz, J.P. and Gomez-Mejia, L.R. (2000), “The determinants of CEO compensation. A meta-analysis of firm size and performance”, *Journal of Management*, Vol. 26, pp. 301-339.
72. Urban, D. (1982), *Regressionstheorie und Regressionstechnik*, Teubner, Stuttgart.
73. Velte, P. (2013), "Say on Pay als wirkungsvolles europäisches Regulierungsinstrument?", *Europäische Zeitschrift für Wirtschaftsrecht*, Vol. 24, pp. 893-898.
74. Velte, P. and Baehr, F. (2013), „Erweitertes Say on Pay nach dem VorstKoG. Vergütungsvotum durch die Hauptversammlung“, *Unternehmensteuern und Bilanzen*, Vol. 15, pp. 660-663.
75. Velte, P. and Weber, S.C. (2011a), "Agency-theoretische Betrachtungen zur Gehilfen- und Gatekeeper-Funktion des Abschlußprüfers sowie potentielle Zielkonflikte", *Betriebswirtschaftliche Forschung und Praxis*, Vol. 63, pp. 223-239.
76. Velte, P. and Weber, S.C. (2011b), "Outsider- und Insider-Systeme der Corporate Governance", *Journal of Management Control*, Vol. 21, pp. 473-482.
77. Wallace, J.S. (1997): Adopting residual income-based compensation plans. Do you get what you pay for? Journal of Accounting & Economics 24 (3), 275-300.
78. Wolff, M. and Rapp, M.-S. (2008), „Unternehmensmerkmale, Performance und Corporate Governance-Mechanismen als Determinanten der Vorstandsvergütung in deutschen Aktiengesellschaften – Eine empirische Untersuchung für DAX, MDAX, SDAX und TecDAX-Unternehmen“, *German Working paper in Law and Economics from Berkeley Electronic Press*, No. 2008-1-1216.
79. Zhou, X. (2000), “CEO Pay, Firm Size, and Corporate Performance: Evidence from Canada”, *Canadian Journal of Economics*, Vol. 33, pp. 213-251.

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