

The Economic Consequences of Executive Compensation Disclosure: Evidence from Germany

Finance
Master's thesis
Hendrik Lofruthe
2011

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OF EXECUTIVE COMPENSATION DISCLOSURE:
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Summer 2011

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Produced and assessed for the Master of Science in Business Administration (Finance) examination in course of the Double Degree Program of the Aalto University School of Economics and the University of Cologne.

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PURPOSE OF THE STUDY

Executive compensation frequently makes headlines in both academic journals and the yellow press. From the academic point of view, executive compensation has its grounds in agency theory. Effective compensation schemes align the interests of managers and owners and motivate managers to maximize shareholder value. Disclosure of compensation schemes enables shareholders to evaluate the remuneration contracts' adequacy.

In 2005, the German legislator created a natural experiment to study the economic consequences of executive compensation disclosure. From 2006 on, firms were obliged to disclose individual compensation details for their executive board members. Prior to that, disclosure of individual figures was recommended but voluntary, disclosure was mandatory only for the board as a whole. The setting allows examining whether voluntary individual disclosure reveals information about the underlying firms, whether the capital markets appreciated the increased disclosure requirements and how firms reacted to the amendment.

DATA AND METHODOLOGY

The sample is collected from a repeated cross-section of the constituents of the German stock indexes DAX, MDAX, SDAX and TecDAX for the years 2005-2007. After exclusion of missing data, 428 out of 480 firm years (160 firms for three years) remain which represents a considerable portion of the total German market capitalization. Compensation data is hand collected from annual reports, other financial data is taken from the Thomson One Banker database. Hypotheses are tested by comparisons of means, random effects regressions, difference-in-differences analysis and an event study that uses constant mean return and mean adjusted return models.

RESULTS

The results show structural differences between voluntary disclosing and non-disclosing firms. Disclosing firms use performance-based compensation to a greater extent but pay comparatively more than their non-disclosing peers. Event study results indicate positive capital market reactions around the dates the amendment was introduced. The findings support the governance improvement hypothesis which predicts improvements of compensation schemes when disclosure is more detailed. Examination of the real firm reactions shows increases in absolute pay levels and the performance-based portions. Especially, firms increase compensation when they switch to individual disclosure. Possible reasons are higher competition for labor or compensation for the higher risk of variable payments.

KEYWORDS

Compensation, disclosure, agency conflicts, corporate governance, market reactions

Content

List of tables	IV
List of figures	V
List of appendices.....	V
1 Introduction.....	1
1.1 Motivation	1
1.2 Research setting.....	2
1.3 Contribution.....	3
1.4 Data, results and limitations	3
1.5 Structure	5
2 Executive compensation in academic research.....	6
2.1 Agency conflicts in stock companies	6
2.2 Factors to influence executive compensation in practice	8
2.2.1 External influences: public and political pressure and social effects	8
2.2.2 Ownership and governance structure as determinants of executive pay	9
2.2.3 The pay-performance relation and its measurement.....	10
2.2.4 The difficulty of evaluating equity-based compensation.....	13
3 Related disclosure research.....	15
3.1 Systematization of the voluntary disclosure literature	15
3.2 The economic consequences of compensation disclosure	16
4 The German case of executive compensation.....	19
4.1 Compensation and disclosure practice in corporate Germany	19
4.1.1 The development of capital markets in Germany	19
4.1.2 Prevalence of market based compensation schemes.....	21
4.1.3 Disclosure of executive compensation in German companies	22
4.2 The German two-tier system of corporate control	23

III

4.3	The research context: a legislative change in response to the failure of self-regulation.....	25
4.3.1	The German Corporate Governance Code as a means of self-regulation....	25
4.3.2	Legislative response to the failure of self-regulation.....	28
5	The data set	31
5.1	The data selection process: repeated cross-section vs. panel data	31
5.2	Descriptive sample statistics	35
6	The research questions.....	40
6.1	Does voluntary disclosure indicate better compensation schemes?.....	40
6.2	How do the capital markets react to the additional disclosure rules?	42
6.3	Do additional disclosure rules alter the underlying compensation practices?.....	45
7	Methodology and results.....	47
7.1	Voluntary disclosure indicates agency conflicts in structural, but not in absolute terms	47
7.2	The capital market welcomes the disclosure amendment	55
7.3	How firms responded to the disclosure amendment	61
7.3.1	Statistical considerations: unobserved effects and autocorrelation	62
7.3.2	Higher transparency induces increases in variable and absolute pay	64
7.3.3	Transparency supports compensation benchmarking – but only in transparent firms	67
8	Conclusion	74
	Appendix	79
	References	85
	Plagiarism statement and curriculum vitae	92

List of tables

Table 1: Differences between repeated cross-sectional and panel data	32
Table 2: Descriptive sample firm characteristics	35
Table 3: Descriptive sample compensation characteristics.....	38
Table 4: Structural compensation differences between disclosing and non-disclosing companies in 2005	48
Table 5: Size-paired t-test of fix compensation	50
Table 6: Cross-sectional OLS regression estimation of total pay across disclosing and non- disclosing companies in 2005	52
Table 7: Market reactions on the disclosure amendments	58
Table 8: Market reactions for pay-ranked sample (event 2, only non-disclosing firms)	60
Table 9: Compensation before and after the amendment (random effects, cluster robust)	65
Table 10: Compensation in disclosing and switching firms before and after the amendment (random effects, cluster robust).....	71

List of figures

Figure 1: The German two-tier system of corporate control for stock companies	24
Figure 2: The introduction of the Executive Compensation Disclosure Act (VorStOG)	29
Figure 3: Compensation components according to the disclosure amendment	30
Figure 4: Compensation distribution across time.....	39

List of appendices

Appendix 1: Differences in ownership.....	79
Appendix 2: Structural compensation differences between disclosing and non-disclosing companies in 2005	80
Appendix 3: Alternative performance proxies and split regressions	81
Appendix 4: Market reactions on the disclosure amendments (mean adjusted return model)	82
Appendix 5: Market reactions on the disclosure amendments (raw returns).....	83
Appendix 6: Compensation in disclosing and non-disclosing firms before and after the amendment (random effects, cluster robust).....	84

1 Introduction

1.1 Motivation

Since the publication of Michael Jensen and William Meckling's (1976) groundbreaking article on the theory of the firm, agency conflicts have attracted academics' interest in numerous fields such as psychology, social sciences and economics. In the domain of finance, executive compensation in particular has been and still is a field that leads to controversial discussions about agency conflicts and frequently makes headlines in both academic journals and the yellow press (Healy and Palepu, 2001). Gordon (2005) supposes that it is to a lesser extent the structure of pay packages than their absolute size that causes concerns about who makes the most. In his eyes executive salaries that top the average worker's compensation by a multiple can impose considerable social demoralization costs on a company. Especially for the United States the compensation growth statistics are impressive in relative and absolute terms with six fold CEO pay increases between 1980 and 2003 (Gabaix and Landier, 2008), respectively a rise from 850 thousand USD in 1970 to more than 14 million USD in 2000 (Jensen, Murphy, and Wruck, 2004). On the other hand it is not the absolute amount but the structure of CEO compensation that fuels the discussion about its appropriateness and sensibility. Even managers are frequently indignant about both the structure and the absolute size of their peers' earnings which is exemplified, for instance, by Landon's (2003) reports on the outrage of Wall Street professionals about the compensation of NYSE head Richard Grasso.

Numerous research papers (see e.g. Jensen and Murphy, 1990; Jensen, Murphy, and Wruck, 2004; Leone, Wu, and Zimmerman, 2006) emphasize the role of executive compensation as one of the most important factors for organizational success and try to come up with advice on how to structure compensation schemes to align shareholders' and managers' interests most effectively. Key messages are the alignment of interests through managerial ownership as well as a strong link between pay and performance. Academics such as Pirjetä, Ikäheimo, and Puttonen (2010) advocate the use of stock options despite the difficulty to assess their true economic value while others such as Arnold and Gillenkirch (2007) regard compensation with stock itself as more effective. However, the outcome may not always be as desired which is expressed by a recent survey of the Manager Magazin

(2011) in which German executives acknowledged that the link between pay and performance creates too high salaries in practice.

An integral part of agency theory is the question which information shareholders need to assess the meaning and consequences of compensation contracts. From the efficient markets point of view it is desirable to disseminate all value-relevant information immediately to allow for a quick pricing of the consequences by the markets. Park, Nelson, and Huson (2001) point out that detailed knowledge about executive compensation contracts enables investors to control company executives and prohibit exploiting the company at the cost of the shareholders. On the other hand, Jensen and Murphy (1990) stress that full disclosure may in practice be detrimental to shareholder value if it arouses political and public interest which is likely to result in suboptimal, because populistically restricted, remuneration systems. The economic consequences of executive compensation disclosure are yet not fully clear and a range of questions have to be answered.

1.2 Research setting

The German legislator created an interesting opportunity to study the economic consequences of executive compensation disclosure in a natural experiment. Until the end of the year 2005 German stock companies were legally bound to disclose only compensation figures for the management board as a whole. On the other hand initiatives such as the German Corporate Governance Code promoted a more comprehensive and detailed disclosure practice and demanded the publication of individual remuneration figures for each member of the executive board. But only few firms voluntarily adapted the code's recommendation of individual disclosure¹ which led the legislator to issue the Executive Compensation Disclosure Act (Gesetz über die Offenlegung der Vorstandsvergütung, VorStOG) in August 2005.

From January 01, 2006 on, stock companies were legally required to disclose the compensation of their executive board members on an individual basis, split up by fixed, variable and long-term incentive components. The setting of the regulatory change allows contrasting firms who already published individual executive compensation before the

¹Andres and Theissen (2007) say that only 15% of the largest firms voluntarily disclosed compensation schemes in a detailed manner in 2003.

disclosure became mandatory against those firms who had waited for it to become a legal requirement.

1.3 Contribution

This thesis contributes to the existing research in different ways. First, it assesses the economic consequences of pure changes of disclosure duties for which findings are less numerous than for changes in accounting regulations (Lo, 2003). Second, it enhances the knowledge about executive compensation for the German context which has so far only partially been studied as criticized by academics such as Ernst, Rapp, and Wolff (2009). The findings are of particular interest as German capital markets show a comparatively late adoption of market based compensation instruments and German companies relied heavily on bank financing before they discovered market funding in the late 1990s (Allen, 2005). In this context the third field of contribution is the increased understanding of how important executive compensation is in practice for shareholders as a means of overcoming agency conflicts.

1.4 Data, results and limitations

Basis for the analysis is a cross-sectional sample of the 160 constituent firms of the most important German stock indexes DAX, MDAX, SDAX and TecDAX. For each firm, compensation data is hand-collected for the years 2005-2007. The results show that firms who do not disclose compensation details on an individual level tend to use performance-based compensation to a lesser extent than the firms who publish the individual details. Instead, the non-disclosing companies rely more heavily on fix payments which supports the hypothesis that agency conflicts are stronger in firms whose executives try to camouflage their salaries. In absolute terms, however, disclosing companies offer higher payments to their executives. Possible explanations are compensation for the higher variability, i.e. risk, of performance-based payments or an increasing competition for labor.

The capital markets appreciated the disclosure amendment and show positive abnormal returns around the day when the draft of the new act was released. The positive market reactions support the governance improvement hypothesis which postulates that higher transparency reduces agency problems and in turn increases shareholder value. Although not significantly different, abnormal returns seem to be higher for the non-

disclosing companies which leads to the conclusion that the potential for improvement is higher in less transparent firms.

Actual company reactions to the legislative change partially back up the governance improvement anticipated by the markets. Absolute pay levels increase after the disclosure amendment became effective, but the performance-based proportion increased at the same time. Especially when firms switch from non-disclosure of individual figures to disclosure, they increase compensation levels. Possible interpretations are benchmarking effects, increasing competition for labor or compensation of executives for the higher risk of variable payments. If the structure of compensation is more important than the absolute level, the increased disclosure rules may have benefitted shareholders. Necessary requirement is that the increases in performance-based payments are powerful enough to motivate managers to increase shareholder value more than the salaries increase.

Advantages of this thesis' setting are the quick introduction of the legislative change (it took less than half a year from the initial announcement of the initiative until the enactment of the law) as well as the time horizon. The quick introduction suggests that the disclosed compensation schemes represent the formerly existing patterns because pay structures are at least partially rigid and cannot be changed from one month to the next (Andjelkovic, Boyle, and McNoe, 2000). Focusing on the years 2005-2007 tries to exclude extraordinary effects from the recent financial crisis which may distort what can be considered usual compensation practice, such as governmentally imposed caps for bailed-out companies. The underlying data set at this juncture is broader than most existing research on German listed firms. Furthermore the lack of confounding accounting effects excludes accounting incentivized behavior which would distort the findings (Gordon, 2005). Finally, the fact that some firms had voluntarily followed the extended regulations already before they were legally required, creates a setting that is different from most comparable studies which examine consequences of legislative changes that affected all companies in the same way at the same time (such as Lo, 2003; Park, Nelson, and Huson, 2001; Grinstein, Weinbaum, and Yehuda, 2010; Andjelkovic, Boyle, and McNoe, 2000).

Limitations of the study arise from the lack of backward disclosure requirements that would have provided an even deeper insight. Furthermore, the format of disclosure is not standardized and company specific assumptions for the valuation of non-cash remuneration items such as stock options can distort objective values. However, as existing research such as Firicon (2007) finds misevaluations, but does not reveal systematic distortions between

specific companies the results are understood to be fairly reliable. Non-standardized reporting of pension benefits and conditional compensation items such as change of control benefits or so called “golden parachutes” also pushes these items beyond the scope of this thesis.

1.5 Structure

The thesis is structured as follows: To establish the academic background of executive compensation disclosure, a split literature review introduces relevant findings about executive compensation and disclosure. First, Chapter 2 introduces the area of agency conflicts in stock companies and provides an overview about the contemporary research on executive compensation. Then, Chapter 3 familiarizes with the topic of disclosure and illustrates how executive compensation and disclosure are interconnected. Chapter 4 specifies the context and features of executive compensation and corporate control in Germany and sets the scene for the research case, a change in disclosure legislation. The sample selection process and descriptive statistics are shown in Chapter 5. Chapter 6 develops the explicit research hypotheses which will be tested in Chapter 7. Finally, Chapter 8 concludes and identifies areas for future research.

2 Executive compensation in academic research

The public interest for who makes the most money frequently results in the publication of various rankings, e.g. by the Wall Street Journal (2011) in the United States or the Manager Magazin (2011) in Germany. “Compensation” in line of this thesis shall be defined according to §285 Nr. 9 of the German Law of Commerce (Handelsgesetzbuch, HGB). Compensation in a specific year hence includes all benefits that have been received for occupation in that respective year. Explicitly included are salaries, profit participations, stock options, all other share based compensation, fringe benefits, insurance reimbursements, all other perquisite payments and all benefits that have not been paid out but transformed into claims of other kind. Terms such as executive pay or remuneration will be used interchangeably as equivalents of compensation in this thesis.

From an academic perspective, the interest into executive compensation has its grounds in the identification and assessment of agency conflicts. Despite the undeniable importance of different stakeholder groups, the focus of most research (see Jensen, Murphy, and Wruck, 2004; Lo, 2003; Grinstein, Weinbaum, and Yehuda, 2010; Park, Nelson, and Huson, 2001) as well as of this thesis is on the shareholders as agents. Hence, shareholder value generation is assumed to be the most important goal of every listed firm. This chapter will provide a brief introduction to the topic of agency conflicts and then introduce the most important research areas in the context of agency conflicts and executive compensation.

2.1 *Agency conflicts in stock companies*

Numerous articles dealing with agency conflicts quote Jensen and Meckling’s (1976) essay on the theory of the firm as the origin of the principal-agent theory. A closer look into the original article, however, reveals that it was already in 1776 when Adam Smith examined the problems which arise from the separation of ownership and control. Agency conflicts, although still not fully understood, are hence not a phenomenon of modern capital markets but have a long standing history that goes hand in hand with the establishment and development of joint stock companies.

Jensen and Meckling define an “agency relationship as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent.” In a later article, Jensen, Murphy, and Wruck (2004) clearly distinguish between agency conflicts

at two different levels of the corporate control system of joint stock companies. The first cause of friction can be found between shareholders and the firms' supervisory institution, i.e. under a unitary structure the executive directors or under a two-tier structure the supervisory board. Shareholders delegate the task to monitor and supervise the executive management in their best interest to these supervisory instances. The authors see an inherent difference in actions between shareholders who actually invested their money into the firm and the supervisors who are just acting on their behalf, even though the supervising individuals might have the best intention to fulfill their duty. The second agency pitfall can be found between the company and its executive managers. Executives are engaged to lead the operative business in a way that generates shareholder value, but they do not experience the same consequences of their actions as the shareholders. Jensen and Meckling (1976) illustrate that some actions such as layoffs might be personally costly for the executive but beneficial for the firm. On the other hand many actions abet the manager more than the owner such as the compensation a manager receives.

Agency conflicts arise if the interests of principal and agent deviate which will naturally be the case if both actors rationally maximize their utility (Jensen and Meckling, 1976). Once investors have made the decision into which company to place their money, they have to seek effective means to prevent their exploitation. Jensen, Murphy, and Wruck (2004) identify corporate governance systems as a means to ease the conflicts between shareholders and outside directors, respectively the supervisory board. Pay policies can in their eyes serve as a means to mitigate strains between shareholders and executives. Nevertheless managers might outsmart even the most comprehensive remuneration system on back of the information advantage they possess. The authors say that compensation and governance systems are highly interrelated and attribute many of the cases of obvious excess compensation to poor governance structures. The importance of compensation in agency theory is emphasized by their view that compensation itself can not only mitigate but also create agency conflicts. For the further line of argument this thesis will focus on agency conflicts between shareholders and managers and the role of compensation to resolve them.

Compensation contracts can be an effective means to align the interests of managers and owners, i.e. making both parties pursue the same goal. Gillenkirch (2008) distinguishes between motivation and unanimity as two components of interest alignment. Motivation is necessary to incentivize the agent to maximize his or her effort as such and work as hard as possible. Performance-based compensation, i.e. rewarding good performance with high

compensation and punishing poor performance with low compensation can be a motivating tool (Jensen and Murphy, 1990). Unanimity as second component in Gillenkirch's framework is needed to synchronize the interests of principal and agent. A capable instrument can be stock ownership, i.e. making the manager him- or herself a shareholder (Jensen and Murphy, 1990). Beside stock ownership and variable compensation, Jensen and Murphy advise to actively make use of the opportunity to fire an executive in case of unsatisfactory performance to overcome the no-caring mentality once the contract of employment is signed. In the following, several factors that challenge or hinder the implementation of theory will be presented.

2.2 Factors to influence executive compensation in practice

In addition to the theoretical considerations about executive compensation, academic research engaged in the examination of factors that influence remuneration contracts in practice. Among the most frequent topics are external influences, ownership and governance, performance measurement and the true value of equity-based pay components. Relevant literature on each of these topics is presented in the following sections.

2.2.1 External influences: public and political pressure and social effects

One frequently quoted obstacle for the implementation of effective compensation schemes is political pressure. Jensen and Murphy (1990) point out how public and political pressure can result in constrained compensation schemes. Although shareholder activists frequently advocate a stronger relation between pay and performance, Jensen and Murphy say these activists are likely to not accept the high payments that would result from a true connection of salary and firm performance. They point out a bias that can often be observed in populist claims. On the one hand, shareholder activists frequently criticize companies for paying too high compensation and demand a cap for the top salaries. On the other hand, shareholder activists will most likely not criticize a company for underpaying their executives. The potential bias prohibits the successful implementation of compensation schemes that are truly to a large degree dependent on performance. Inherent in the public outrage about extraordinarily high salaries is the seduction to zero in on the absolute amount but neglect the pay structure. Jensen and Murphy infer that the pay-performance relation is going to vanish in the long-term. Jensen, Murphy, and Wruck (2004) quote a range of United States regulations that impose politically motivated restrictions on compensation schemes.

Examples are the disallowance of deductions for compensation exceeding 25 times the lowest-paid worker and the Corporate Pay Responsibility Act which gives shareholders more rights to design compensation schemes as examples for politically imposed restrictions.

Typically, managerial literature puts more weight on the social implications of corporate governance structures and executive compensation than does the finance literature. Some ideas are, however, also included in financial research. Yermack (2006) for instance assumes that high executive compensation can have positive influences on lower-ranked employees who are inspired and motivated by their corporate exemplars and maximize effort in an attempt to get closer to them. Gordon (2005) on the other hand draws a somewhat more pessimistic picture of the social consequences and illustrates what he calls “one-upmanship”, i.e. executives’ attempt to maximize their remuneration for the pure sake of beating their competitors in the earnings rankings. Executive salaries that beat those at the bottom of organizational hierarchy several fold do more harm than good if the average worker perceives that increased effort benefits the managers at the top but not his or her own wallet. The possibility of social demoralization contradicts Yermack’s assumption of positive effects on employees. Donahue (2008) presents social implications from the perspective of the executives. He says that besides shareholders’ formal opportunity to influence pay through voting on directors or compensation committee members, social accountability is a powerful instrument that keeps executives from exploiting the firm in practice. Excessive pay can for instance induce shareholders’ and public outrage and hamper the respective executive’s reputation, future career prospects and lead to disapproval by social and professional groups.

2.2.2 Ownership and governance structure as determinants of executive pay

Beside social and political influences the ownership and governance structure of a firm are other determinants of its executives’ compensation. Academics frequently examine whether what they consider bad corporate governance leads to substandard compensation schemes. Brick, Palmon, and Wald (2006), for instance, find evidence for “cronyism” between outside and inside directors. They infer that excess compensation is related to underperformance, especially when a strong positive correlation between CEO and director compensation exists. Their view is supported by Janakiraman, Radhakrishnan, and Tsang (2010) who describe the managerial power theory. This theory says that managers have more power over the board and hence can more easily exploit the firm when managerial ownership

is high. Making managers into owners, as Jensen and Murphy (1990) suggested, is therefore not necessarily in the shareholders' best interest.

Regarding common shareholder ownership, Elston and Goldberg (2003) observe a 1961-1986 sample of large German firms and find that more dispersed ownership is likely to induce higher compensation. They conclude that executives of firms with a large share of free float can more easily force up their salaries. The reason is that peers in firms with concentrated ownership are easier to monitor and control. Park, Nelson, and Huson (2001) use shareholder stakes above 20% as a simple proxy of concentrated ownership and also find concentrated ownership to be significantly negative correlated with pay levels. Fahlenbrach (2009) develops this line of argument further in his study on the links between pay and performance and board structures for a 1993-2004 sample of large companies in the United States. He finds evidence for what he calls the "substitution hypothesis" which predicts that compensation contracts and governance structures are acting as substitutes. This means that in cases where the board has only limited power over the CEO, compensation contracts are used as a means to align the interests of shareholders and management. Vice versa, executive compensation contracts display lower pay to performance sensitivities if the board is powerful enough to control CEO actions. On the other hand, researchers like Sommer, Judith, and Lachmann (2010) prove concentrated ownership to be of only insignificant influence.

2.2.3 The pay-performance relation and its measurement

Numerous studies such as Jensen and Murphy (1990) and Jensen, Murphy, and Wruck (2004) advocate extensive use of variable compensation that is directly dependent on firm performance. The two cited studies emphasize that a true pay-performance relation should show linear dependency with "very high (or non-existent) caps, and 'bonus banks' that allow bonuses to be negative as well as positive" (Jensen, Murphy, and Wruck, 2004). As described earlier this structure is frequently subject to political restrictions. Furthermore, practitioners and academics have different views about how performance should be measured. The reason is that CEO actions cannot be observed directly which requires proxy measures as shown by Sloan (1993). The debate most generally takes place between advocates of accounting-based performance measures and advocates of measures based on stock returns.

Promoters of scales based on accounting results argue that executive performance measures should not be influenced by factors that are beyond the executive's control, such as market wide stock price fluctuations. Lo (2003) picks up the issue of macroeconomic

influences and suggests accounting-based compensation as a possible alternative for compensation based on performance; evidence shows that many companies include accounting data in their performance assessments and only very few rely solely on share performance. Sloan (1993) already integrated executive compensation into portfolio theory. He exemplified that the risk-averse executive agent prefers pay instruments that are not directly correlated with his existing portfolio, which may already contain considerable amounts of shares and options. Jensen, Murphy, and Wruck (2004) agree that executives prefer long-term incentives based on accounting because of the more predictable payouts they generate. They also point out that accounting based measures can easily be tailored to single units or departments of a company which allows for a closer tie between individual and firm performance. Especially individual employees at lower levels in the organizational hierarchy hardly have any influence on the share price thus share price criteria come into question merely for top executives. Beside the theoretical advantages of accounting based pay, Sloan (1993) also mentions that accounting based measures may in practice be exogenously induced through accounting and taxation provisions. Lost tax benefits for indexed options, for instance, create incentives that favor accounting based measures over stock price related assessments.

Advocates of stock return related performance measures on the other hand warn that accounting based measures create adverse incentives for aggressive accounting to increase compensation. Gordon (2005) cites the Enron scandal as most prominent example of inappropriate compensation schemes as motivation for aggressive accounting. In his eyes stock prices deliver a credible and easy interpretation of a firm's business prospects whereas financial statements are difficult to interpret and easy to manipulate. His reasoning, however, falls short of Jensen, Murphy, and Wruck's (2004) argument that stock returns are highly correlated with accounting profits because analysts and markets heavily rely on accounting figures for their value assessments. Simple stock returns are hence still subject to earnings manipulation, although to a smaller extent. Sloan (1993) counter argues accounting advocates' doctrine that share price based performance assessments inherently include market wide fluctuations by illustrating that simple market index adjustments have the ability to separate market and firm performance. Jensen, Murphy, and Wruck (2004) point to the need for distinction between macroeconomic factors that are truly out of the executive's control and those that can be controlled. Gas prices for example may be out of executives' influence,

but executives should be able to foresee and hedge adverse effects to some extent which lends credibility to stock return measures.

Beside the underlying performance measure, the time horizon of performance assessment is subject to discussion. Both accounting and share price based assessments face difficulties integrating time horizons that are desirable from the firm's perspective. Leone, Wu, and Zimmerman (2006) state that horizon problems exist when optimal investment horizons and executive tenure diverge. Pay based on accounting performance tends to reward past performance while stock performance is more closely tied to anticipated future prospects (Jensen, Murphy, and Wruck, 2004). Both schemes nevertheless incentivize executives to optimize for the short-term, possibly at the expense of long-term value creation. Further difficulties result from the difference between expected and actual performance which becomes evident in Leone, Wu, and Zimmerman's (2006) illustration of the "ex post settling up problem". Pay on the basis of present stock returns at least partially incorporates future cash flows. But if these cash flows never materialize, e.g. because the underlying contract is canceled, then it is hard to reclaim the unjustified compensation. Accounting assessments on the other hand follow the prudence principle, which leads to the exclusion of unrealized gains but inclusion of unrealized losses. In the authors' eyes a possible reconciliation can be the use of stock related compensation for unrealized gains and let unrealized losses result in cash compensation reductions.

Neglecting the discussion about how performance should be measured, empirical evidence often shows that a pay-performance relation does not exist to the extent compensation experts recommend. Particularly countries where stock markets do not play a role as prominent as in the United States lack the relation. Andjelkovic, Boyle, and McNoe (2000) study the introduction of additional compensation disclosure rules in New Zealand in 1997. They do not find any relation between pay and performance and conclude that it takes time for governance mechanisms to work whereas the pay-performance link is stronger in the United States where disclosure is a long-standing practice and the disciplinary role of markets is stronger. Sommer, Judith, and Lachmann (2010) similarly find that pay and performance were not only not positively, but rather significantly negative related in Germany over the course of the financial crisis.

2.2.4 *The difficulty of evaluating equity-based compensation*

Once the performance assessment is decided upon, firms have to choose appropriate compensation instruments. Beside cash payments firms use large proportions of equity-based components with the explicit target to align the interests of executives and owners (Jensen, Murphy, and Wruck, 2004). The trend towards extensive use of equity-based compensation dates back to the mid-1980s in the United States while the low liquidity of the underlying stock deferred similar developments in German firms to the 1990s, especially in small firms (Chizema, 2010). Costs and value of cash payments are straightforward to estimate, while equity-based components create some difficulties. Namely the instrument as such, as well as its true value and costs needs discussing.

One point of discussion in academic literature is whether options or shares are the better compensation vehicle. Just as market wide fluctuations influence performance assessment measures, the same fluctuations influence the value of equity-based compensation instruments, although in different ways. Arnold and Gillenkirch (2007) compare the effectiveness of options versus shares on the basis of utility considerations and contrast the linear payoff structure of shares to the convex payoff structure of options. Following the principal-agent argumentation they consider shares to be the more efficient means of steering, although options may be more useful for the evaluation of investment decisions. Pirjetä, Ikäheimo and Puttonen (2010) argue differently and consider a combination of fixed salary and stock options as optimal assuming log utility functions. Furthermore, Ikäheimo et al. (2004) show for the Finnish market that investors do not exhibit clear preferences regarding the use of options. Option plans are perceived more favorably for initial announcements as well as when the plans target only management rather than all of the employees. Empirical results at least for the United States, though, do not confirm the implications as Jensen, Murphy and Wruck (2004) find the majority of stock options being awarded to employees other than top executives.

A crucial question is the fair valuation of equity-based compensation, particularly of options and similar instruments. One reason is the difficulty of calculating the value as such, the other reason being the deviation between the cost the compensating firm has to bear and the value the receiving executive perceives. The consultancy Firicon (2007) conducts a survey on how the German Entry Standard companies follow the requirements of IFRS 2 and FASB 123 (R), the underlying account standards for the valuation of stock options. They find that most firms do follow the standards but do not estimate the underlying parameters for option

valuation in the right way. Particularly, the Black-Scholes model is often used even in cases where the model is obviously inappropriate because of unsuitable time horizons. Further causes for concern are low and sometimes arbitrarily adjusted volatility estimates as well as insufficient estimates for the expected exercise time.

Academics have frequently addressed the fact that option values expensed by the firm and the value perceived by the individual executive deviate. Ofek and Yermack (2000) illustrate how the reason for the deviation can be traced back to the ground settings of portfolio theory. For executives, the value of granted stock options usually makes up for a considerable portion of their earnings and wealth. This results in a personal portfolio that is undiversified and heavily dependent on the value of one firm. The dependence is amplified by the attachment of executive human capital to the firm. Ofek and Yermack (2000) state that academic research often quotes regulations and company commitment to hinder the easy sale portfolio theory recommends for the diversified investor who is usually assumed by standard valuation models. They say that the argument is only partially valid because managers can and do sell shares when options are exercisable. But they find executive stock ownership to be endogenously dependent on current payment and prior ownership which backs up portfolio theory implications.

Ikäheimo, Kuosa, and Puttonen (2006) and Pirjetä, Ikäheimo, and Puttonen (2010) examine how individually attributed values and company expenses deviate in reality. A Finnish particularity allows evaluating options from a different, more realistic point of view. In Finland, executive stock options can be listed at the public exchange and traded just like ordinary options. Hence, the gap between the theoretical value (expensed in the annual report) and the subjective value for the individual manager becomes evident. In the earlier study the authors estimate the gap between the frequently used Black-Scholes model and the actual trading values to be more than 25%, a considerable spread. Pirjetä, Ikäheimo, and Puttonen's 2010 work incorporates personal risk preferences and portfolio constraints by applying the Black-Scholes-Ingersoll model. The findings are individual risk premiums between 3.4% and 5.1% p.a.; alternative use of the Generalized Black-Scholes model confirms the findings.

Even this brief discussion illustrates the difficulty of setting up and assessing effective compensation contracts. While there is no consensus on the use of cash- versus share-related instruments or on the distinction between stock and options, some agreement can be seen in the opinion that effective contracts contain variable components that are to a large degree dependent on performance (Jensen, Murphy, and Wruck, 2004).

3 Related disclosure research

This thesis examines the economic consequences of a change in compensation disclosure. Understanding the implications of disclosure as such is therefore crucial for the further analysis. This chapter systemizes relevant research within the accounting and disclosure literature in Section 3.1 and presents some important studies which explicitly link the topics of compensation and disclosure in Section 3.2.

3.1 *Systematization of the voluntary disclosure literature*

With regards to regulatory changes, Lo (2003) as well as Healy and Palepu (2001) divide the accounting and disclosure literature into two areas: the *positive accounting theory* literature and the *voluntary disclosure* literature. Most literature belongs to the former and focuses on the consequences of changes in accounting standards, methods and choices of managers. The voluntary disclosure literature on the other hand examines stock market related effects of disclosure and incentives for voluntary publication. For the purpose of this thesis the voluntary disclosure literature is of greater interest as the regulatory change does not concern accounting standards in any way but concerns only questions of publication.

Of particular interest for this thesis is the question of when companies are actually willing to disclose additional information even though they are not legally obliged to. Lo (2003) concentrates on beneficiary disclosure outcomes and says that the academic literature understandably expects voluntary disclosure only in cases where additional information increases shareholder value. Hence, companies would never disclose bad news, value decreasing information or for instance poor compensation schemes if they have a choice. Beyer et al. (2010) argue in a similar way and assume voluntary disclosure only if it is sufficiently favorable for the company. Disclosing more information than legally required can be a means to distinguish the own firm from competitors. Publishing detailed compensation reports proves a firm's confidence and trust in its compensation contracts. Healy and Palepu (2001) state that the credibility of disclosed items is increased if disclosure is regulated and standardized.

Healy and Palepu (2001) go more into detail and separate the principal-agent conflict into the information and the agency problem. The former addresses the firms' interest to convince investors to place money in their company. The latter deals with issues that arise from ineffective contracts with management such as the need for information to directly

monitor executive behavior. Disclosure of executive compensation thus covers both aspects of this separation. On the one hand, compensation disclosure can serve as a means to overcome the information problem by publishing details about the remuneration system which would otherwise not be known by the shareholders. The content of the disclosed information can then illustrate how the agency problem is addressed by the firm's compensation system. Only an effective combination of information and governance mechanisms can result in the maximization of shareholder value.

But even in cases where disclosure is at first glance advantageous to overcome agency conflicts, the results may backfire in the long run. The argument goes back to Jensen and Murphy (1990) who argue that disclosure of executive compensation may not be in the shareholders' best interest. Reasons are politically imposed compensation schemes which are less effective in reconciling agency conflicts and hence impose significant disclosure costs. Gordon (2005) introduces another perspective and notes the risk of what he calls one-upmanship. In his eyes, increased transparency can tempt executives to ask for higher pay just to beat their peers. For the context of compensation disclosure, Healy and Palepu (2001) cite six forces as motives for voluntary disclosure. Their "stock compensation hypothesis" is of interest in the context of compensation disclosure. It suggests that executives have incentives to voluntarily disclose information for their personal sake. Beside the requirement to meet insider regulations, a possible motivator is increased stock liquidity as a result of comprehensive disclosure. This in turn reduces the financial risk executives bear regarding their stock options. Increased analyst coverage and cost of capital reduction are potential catalysts to strengthen the effect.

3.2 The economic consequences of compensation disclosure

After introducing the topic of executive compensation and literature on disclosure as such, it is of interest to look at how these topics are linked to one another. Most studies examine compensation characteristics under a single disclosure regime, i.e. without any change in disclosure requirements. Leuz and Wysocki (2008) consequently criticize the scarce research on the real effects of disclosure regulation. However, there are a few studies that target exactly the question what economic consequences changes in disclosure duties have on executive compensation.

Grinstein, Weinbaum, and Yehuda (2010) examine the economic consequences of stricter and more comprehensive perquisite (i.e. the use of company cars or jets, insurance

contributions or the reimbursement of club membership fees) disclosure requirements in the United States in 2006. The amendment substantially lowered disclosure thresholds and clarified the definition of perks to prohibit misspecifications. As a result of the enhanced disclosure requirements Grinstein, Weinbaum, and Yehuda find a 190% increase in perquisite levels in the first year after the regulation came into effect. The increase is attributable to the firms who disclosed perquisites for the first time, i.e. those who did not surpass the prior disclosure thresholds. Firms who had already been disclosing under the old regime did not show any significant increase. The authors further try to examine both market and real reactions to the amendment. Real reactions in this context describe the actual changes in perquisite spending, i.e. the tangible reaction of firms. Market reactions on the other hand grasp the anticipation of company reactions by the capital markets, i.e. look for abnormal returns. Controlling for confounding effects, the authors do not observe any abnormal returns for the early disclosers but find that first disclosers experience negative abnormal returns around the dates of disclosure. These negative reactions are subsequently addressed by the respective firms through a reduction of perquisite levels. The decrease is larger the more negative the capital market reaction is which supports the disciplinary role of financial markets. Firms that had already disclosed perquisite levels before the amendment, however, respond by increasing perquisite levels in the following year. Furthermore, firms are more likely to exhibit high perquisite levels if they have substantial free cash flow at their disposal, suffer from low growth opportunities, operate in more concentrated industries or are controlled by powerful managers.

Park, Nelson, and Huson (2001) examine the economic effects of a change in compensation disclosure regulation in Canada in 1993. The setting is comparable to the legislative change in Germany that this thesis is focused on. Prior to 1993 Canadian companies were obliged to publish only the aggregate compensation of all executive directors. A legislative change then required them to disclose both the amounts and components of the individual compensation of the five highest-paid executives. The obligation to also disclose the same compensation details retroactively for 1991 and 1992 in the first detailed filings allows the authors to compare the open to the non-disclosure period. Contrasting the two regimes they find an increase in the overall compensation amounts which leads them to conclude an increased competition for labor. The share of incentive based compensation – especially the market based incentives – also rises which the authors explain by public pressure towards higher performance sensitivity. Finally, Park, Nelson, and Huson

show that closely held firms pay lower salaries but raise the amounts after the regime change. Regarding use of specific compensation instruments, they note that closely held firms use market-based incentives to a lesser degree, probably as a result of their better monitoring opportunities.

Lo (2003) studies the SEC's 1992 revision of the disclosure duties for listed United States firms. The goal of the regulatory change was to increase the transparency of compensation disclosure. While United States listed companies had for a long time been obliged to disclose information about executive compensation, investors and politicians increasingly criticized the existing disclosure practices for being not transparent enough and also hampering an easy assessment of the compensation instruments' values. The SEC responded by demanding standardized tables explaining the details of compensation and a written explanation from the compensation committee. Proposed regulatory changes are open for discussion over a certain period in the United States and the official comment letters are publicly available. Exploiting this opportunity, Lo studies the degree of lobbyism against the change. Coding the extent of lobbyism he studies capital market reactions as well as operative effects. He finds that firms lobbying against the change showed improvements in return on equity and return on assets after the introduction of the new rules. He attributes the change to the better monitoring possibilities of management by shareholders. He further finds positive abnormal returns over the introductory process; the stronger the firms lobbied, the higher are the returns. Hence, the increased disclosure requirements can be understood as valuable means to reduce agency conflicts.

In contrast to prior studies such as the previously cited, the setting of this thesis allows to examine differences between voluntarily disclosing and non-disclosing companies over two different disclosure schemes. Analysis can therefore be conducted not only for regimes but also for firms. Furthermore shareholder value considerations and corporate governance schemes are framed differently than in most existing research.

4 The German case of executive compensation

Academics like Rapp and Wolff (2010) regard executive compensation as a topic that is widely discussed in Germany and frequently fuels the discussion about managerial greed and the exploitation of shareholders (such as the shareholder activists' association DSW (2004, 2005, 2006)). The academic research findings for the German case are fairly scarce, though. Gillenkirch (2008) and Rapp, Schaller, and Wolff (2009) refer to the late adoption of market-based remuneration components as explanation for the lack of research. Ernst, Rapp, and Wolff (2009) furthermore point out that disclosure practices are relatively poor compared to other countries, which prohibits in-depth analysis. Section 4.1 summarizes the development of capital markets in Germany which is necessary to understand the national compensation practice. An overview of existing research on executive compensation in Germany and its disclosure presents some specific findings. Section 4.2 introduces the German two-tier system of corporate control. Finally, the explanation of the background and introduction of the Executive Compensation Disclosure Act (VorStOG) concludes the chapter in Section 4.3 illustrating the research case.

4.1 Compensation and disclosure practice in corporate Germany

Researching executive compensation is particularly interesting for the German case, because the German corporate landscape is characterized by a lower integration of stock companies into the capital markets. This resulted in relatively late adoption of compensation schemes integrating shareholder value considerations. Structural differences to the Anglo-Saxon systems and corresponding disclosure practice will be outlined in the following.

4.1.1 The development of capital markets in Germany

Evaluating executive compensation from a national perspective requires understanding national market particularities in the international context. In a working paper for the World Bank Demircug-Kunt and Levine (2004) conduct a comparison of what are often considered the two different types of financial systems: the bank-based and the market-based system. Research usually quotes Germany and Japan as representatives of the bank-based system and the United Kingdom and the United States as examples of the market-based financial system. In the former, the provision and channeling of capital and related risk management vehicles is to a large extent done by banks exercising their intermediary function of connecting capital

supply and demand. In the latter, capital markets are the main means of capital allocation. Oehler, Walker, and Wendt (2009) cite numerical evidence for the comparatively low market orientation, especially equity market orientation of the German financial system².

While researches still argue whether the bank- or the market-based system is preferable, not least with regards to the recent financial crisis, the historical reasons why capital markets play a smaller role in Germany are somewhat clearer. Allen (2001) dates the roots of the German bank-orientation back to the 1870s when legislation started to permit the foundation of joint stock companies. At the time, other countries such as the United Kingdom could already look back on more than 250 years of experience with joint stock corporations such as the East India Company which had been established in 1612. Protectionist efforts further hindered the free movement of capital in Germany. As a result the need to finance large and capital intense industries was mainly satisfied by banks. The close association between industry and banks often resulted in banks being major shareholders of large corporations which led to web-like cross investments also known as the “Deutschland AG”³ and prevailed long after the Second World War.

As Allen (2005) illustrates, the economic restrictions after the war did not favor laissez-faire markets as in the United States but preferred what he calls *finance capitalism*, a system that created the German model of the universal bank conducting both investment and corporate banking. The integration of companies into capital markets took place at a slower pace than in countries used to this means of capital allocation. According to Vitols (2005) the exemption of equity holdings from capital gains tax in the year 2000 was the final trigger for banks to reduce their industrial shareholdings (see also Wójcik, 2001). Finally, the process of privatizing formerly state-owned East-German businesses after the German reunification in 1990 displays that laissez-faire is still not the most common practice of German financial markets. Czinkota, Ronkainen, and Moffett (2005) highlight that instead of simply selling those businesses to the highest bidder, the federal government established an institution to manage the sales on a case-by-case basis in order to protect as many jobs as possible.

² For the years 1997 to 2002, the debt-to-equity ratio in the Euro area was 0.61 compared to 0.41 in the United States. Particularly in Germany, a 0.54 debt-to-equity ratio is still considerably lower than the respective American figure. Besides the higher reliance on debt in the Euro area, its sources also vary which is exemplified by the 7.3 bank-to-bond financing ratio for the Euro area in the period 1997 to 2003 in contrast to a corresponding United States ratio of 0.74 (see Oehler, Walker, and Wendt, 2009).

³ Which loosely translates as “Germany Inc.”.

It took until the second half of the 1990s for German capital markets to attract considerable international attention. Chizema (2010) attributes the change to increasing competition in product markets, the augmented adoption of international accounting rules such as IAS and reforms of securities law which led to the liberalization of capital markets. Being less constricted, international institutional investors amplified their activities in the German capital markets and thus improved prior liquidity constraints. As a consequence firms gained access to financing means other than bank loans.

4.1.2 Prevalence of market based compensation schemes

Whether the increased access to capital markets actually resulted in compensation schemes that followed market expectations and requirements such as the use of stock options or an increasing relationship between pay and performance has attracted some researchers' interest. Rapp, Schaller, and Wolff (2009) show that German companies use market based compensation only to a limited degree. For a 2006 sample of German Prime Standard companies they identify only 37% as using stock or stock based compensation for their executives, which translates into 23% of the executives' total compensation.

In absolute terms Chizema (2010) points out that executive compensation in Germany in the 2000s is considerably lower than in United States. He also analyzes the use of employee stock options (ESOs) by German companies. For a 1992-2006 sample of the 100 largest listed companies he examines whether or not companies reward their employees with stock options, which he regards as a key component of stock market capitalism. His focus is on the discretionary use of option schemes for employees in general, not only executives. He finds that firms are more likely to adopt ESOs if they registered American Depositary Receipts (ADR), a substitute for shares in the United States market. Family dominated businesses and old companies on the other hand are less likely to introduce ESOs. Despite their power through representation in the supervisory board, employees are of minor importance for the initiation of ESO plans. Chizema interprets the results as exhibiting a corporate culture of high collectivism accompanied by strong individual preferences for uncertainty avoidance. Schmidt and Schwalbach (2007) put the German compensation characteristics into an international context and provide evidence not only for the below-average use of market-based compensation, but also for the below-average use of long-term compensation in general.

4.1.3 Disclosure of executive compensation in German companies

As of 2011, the most comprehensive study on the determinants of executive compensation in Germany has been conducted by Rapp and Wolff (2010). The authors conduct an extensive study for the years 2005-2007, categorized in three major areas: characteristics of the company, performance and corporate governance. Due to the limited time horizon their focus is on the cross-sectional determinants. Using panel regressions they find performance to have a minor influence. Like other authors such as Sommer, Judith, and Lachmann (2010) they identify company size as most important determinant of compensation while there is no obvious pattern of industry effects. Another influencing factor is ownership, as companies with large free float tend to be more generous. The composition and size of the supervisory board again indicates agency conflicts as remuneration is higher in cases where the supervisory power and independence has to be considered limited. Haid and Yurtoglu (2006) confirm the influence of ownership on disclosure. They find stronger ownership concentration to limit executives' ability to extract rents from the firm. Compensation is lower in companies that are controlled by fewer and larger shareholders compared to companies with a large number of smaller shareholders.

Andres and Theissen (2007) examine the effectiveness of the German Corporate Governance Code introduced in 2002 on disclosure practice in the fiscal year 2003. They find that only about 15% of the largest listed German companies voluntarily disclosed their executives' compensation on an individual base. Companies are more likely to publish information if they are included in one of the major German stock indexes, DAX or MDAX, or if they have a secondary listing on the NYSE where disclosure is more common and expected by investors. Furthermore, the willingness to disclose is higher in companies whose ownership is neither extremely concentrated nor fragmented. Large, R&D intensive firms and companies that are influenced by large external shareholders are more likely to use stock options. The more complex a company is structured, the higher the likelihood of share based compensation schemes, which leads the authors to conclude that information asymmetry is a major influence in the German compensation landscape.

The approach to study the determinants of voluntary disclosure is extended by Chizema (2008). He derives his results from simple regressions of the dummy variable disclosure/non-disclosure on the explanatory variables for a sample of 126 companies from the German DAX, MDAX and SDAX indexes. Over the 2003-2005 time period companies were more likely to disclose executive compensation individually if the state is a major

shareholder. Further positive dependencies are shown to exist between disclosure and the use of international accounting standards, firm size and a strong return on assets. On the other hand, firms are less likely to disclose the older they are and the more seats the supervisory board has.

The link between pay and performance is examined in context of the late-2000s financial crisis by Sommer, Judith, and Lachmann (2010). For the year 2008 they find evidence for a very poor connection between pay and performance; in fact, even after controlling for size the worst performing companies displayed the highest executive compensation and a significantly negative relation between pay and performance. Gillenkirch (2008) picks up the discussion about performance measurement and shows that the criticism of simple stock option compensation schemes has led to the development of various alternative systems in Germany. These alternatives base variable pay on “back to profit” schemes that focus on accounting data. Other schemes compensate with shares instead of options or use “stock option tuning” which refers to more elaborate stock option programs containing higher or additional exercise levels, caps and other characteristics.

Overall, the literature indicates that German companies adopted compensation schemes that are specifically designed to avoid agency conflicts according to Jensen and Murphy’s (1990) recommendations comparatively late and only to a limited extent. Authors such as Ernst, Rapp, and Wolff (2009) understand this pattern as prevalence of agency conflicts. From the viewpoint of disclosure the academic literature supports shareholder activists’ claim for more comprehensive and standardized disclosure requirements. Hence, research so far only partially supports Hansmann and Kraakman’s (2001) prediction of the convergence of governance systems towards an American system of stock market capitalism. Although the German governance system is in some areas evolving towards United States practices there are still considerable differences between the national settings. The German two-tier system of corporate control as the most structural difference in governance is illustrated in the following section

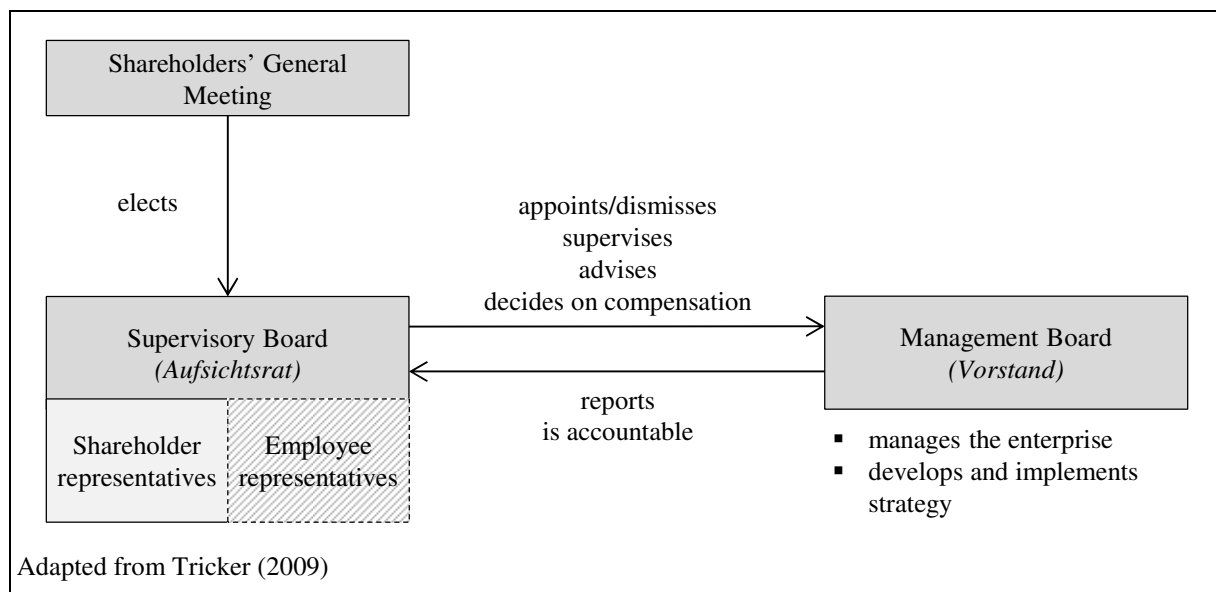
4.2 The German two-tier system of corporate control

The corporate control literature distinguishes two general types of corporate control systems: the one-tier, also called unitary system, and the two-tier system. Under the unitary system a stock company is usually managed by one or more executive (sometimes called inside) directors who lead the company’s operations in the ordinary course of business. The

executive directors are in turn supervised by non-executive (sometimes called outside) directors whose task is not operating the everyday business but making sure that the executive directors act in the shareholders' best interest and not in a selfish or unacceptable manner. Both executive and non-executive directors together form the board of directors. Possible exceptions of the executive control mechanism may be very small, family controlled or start-up companies. As Tricker (2009) points out, the unitary system is most prevalent in Anglo-Saxon legislations such as the United States or the United Kingdom.

In contrast, the German system of corporate control is characterized by a two-tier structure as illustrated in Figure 1 and has to be applied by all stock companies, irrespective of whether they are listed or not. Based on the German Stock Companies Act (Aktiengesetz, AktG), shareholders select the supervisory board (Aufsichtsrat) at their annual general meeting. Compared to the unitary system, the members of the supervisory board exemplify the non-executive directors and represent the shareholders⁴.

Figure 1: The German two-tier system of corporate control for stock companies



If the company size surpasses certain size thresholds in terms of the number of employees (>500), the supervisory board members have to be elected from both shareholder and employee representatives in equal proportions. Tricker (2009) interprets the involvement

⁴ In Germany, listed companies can choose between two legal forms. A joint stock company (Aktiengesellschaft, AG) is a limited liability company whose liability is capped by its equity while a partnership limited by shares (Kommanditgesellschaft auf Aktien, KGaA) has at least one personally liable partner in addition to the liable equity. As the prior dominates the landscape of listed companies and the legal differences do not influence the research design both legal forms will be treated in the same way in the following.

of employees, also called co-determination, as an informal partnership between labor and capital. A possible inference is that the supervisory board will not act exclusively in the shareholders' interest because worker interests are represented as well.

The supervisory board exercises the delegated monitoring task on behalf of the shareholders. It appoints the management or executive board (Vorstand), whose members can be seen as equivalents of the executive directors. The supervisory board's decisions concern the basic arrangements of the firm structure, such as the compensation of the members of the management board. Commonly, some members of the supervisory board deliberate about extent and design of the executive compensation schemes formally in a remuneration committee and vote on the proposal with the whole supervisory board.

The management board as the executive instance is responsible for the day-to-day operations and reports to the supervisory board and the shareholders' general meeting. Size, composition and tasks of the board and its members are determined by individual company statutes within the legal boundaries set forth in the Stock Companies Act. For stock companies with book equity of more than three million Euros, the management board has to be composed of at least two members; otherwise the legislation provides a broad freedom of choice. In contrast to the unitary scheme, members of the management board are not allowed to be part of the supervisory board. Unless explicitly stated otherwise, the term "executive compensation" only refers to the compensation of the members of the management board in this thesis.

4.3 The research context: a legislative change in response to the failure of self-regulation

In 2005, the German legislator increased the legally enforceable minimum disclosure requirements and thus created the set up for a natural experiment on the economic consequences of executive compensation disclosure. This chapter outlines the history and context of the Executive Compensation Disclosure Act (Gesetz über die Offenlegung der Vorstandsvergütung, VorStOG) which had to be followed by listed firms starting January 01, 2006.

4.3.1 The German Corporate Governance Code as a means of self-regulation

In contrast to other countries such as the United States which introduced comprehensive and binding executive compensation disclosure regulations already in the

1990s, the German regulator was hoping for market forces to self-establish a comparable system. Hope was put on the German Governance Code which originated from the work of a directed government commission and was published for the first time on August 08, 2002. Nietsch (2005) points out the two objectives the German Corporate Governance Code (“the code”), which was created and is continuously revised by a commission of practitioners and academics, tries to reach. On the one hand the code gives explanations of the existing system of corporate governance in Germany. Furthermore, and more important in context of this thesis, the code outlines what should be understood as good corporate governance and best practice for the management and supervision of German stock companies. Its goal is to increase transparency of and investors’ and stakeholders’ trust in the steering mechanisms of firms. Without neglecting other parties’ interests the code puts a stronger emphasis on shareholder value creation.

Regarding the determination and appropriateness of the extent of compensation for each management board member the code recommends taking into account the following criteria:

- scope and demand of the tasks of the individual management board member,
- personal performance of the individual executive,
- situation of the economy in general,
- performance and outlook of the enterprise,
- common compensation level in both own and peer companies.

The code further lists what has to be considered part of an executive’s compensation package:

- all monetary compensation elements,
- pension awards,
- perquisites, e.g. contributions to insurances or social security, company cars,
- other awards, e.g. in case of premature cancellation of the employment contract,
- third party benefits due to board work, e.g. from industry associations.

All these elements shall be disclosed on an individual base for each board member. Specifically the code set the following guidelines for compensation schemes:

- compensation schemes should incentivize the sustainable growth of the firm,

- suitable patterns comprise both fixed and variable pay elements,
- to promote long-term interests the variable components should generally rely on a multi-year assessment,
- both positive and negative developments shall be considered,
- all elements have to be appropriate by themselves as well as in total,
- inappropriate risk taking must not be encouraged,
- any retrospective change of the compensation assessment rules shall not be implemented,
- a compensation cap for any extraordinary development shall be implemented.

While the above recommendations are explicitly targeted at the management board, the recommendations for supervisory compensation are less extensive but structured in a similar way and hence are not outlined further.

It has to be highlighted that the code, although sometimes described as “soft law”, never was and still is not legally binding. Except for links to binding law the code is a mere collection of best practice guidelines in the form of “shall”, “should” and “can” recommendations. Consequently, unless a recommendation is codified within a formal legal act, the respective recommendation does not have to be considered. According to the principle “comply or explain” stock companies are only obliged to disclose in their annual reports which “shall” recommendations were not followed in the respective year and explain the motives for the deviation. Gerhard Cromme (2001), head of the code establishing commission expressed his trust in the self-regulatory forces by saying that “those who dare not comply with the code shall be punished by the capital market”. Nowak, Rott, and Mahr (2006) point out that code compliance is neither a listing requirement, nor is code compliance supervised by the Federal Financial Supervisory Authority (BaFin). Furthermore, auditors do not have to investigate the annual report for the matching between claimed and actual compliance with the code; they merely have to check the availability of the statement of compliance.

Nowak, Rott, and Mahr (2006) examine the stock market reactions towards the initial code compliance declarations of companies. After the release of the code on 08 August 2002 companies had time until 31 December 2002 to initially state if they are going to follow the code, without actually disclosing any concrete figures or measures. The authors find that the initial declaration of general conformity (which except for two firms all members of the Prime

Standard delivered) does not induce any abnormal returns. For closer examination they establish a coding system to measure the degree of code compliance in terms of absolute deviations from the code's 60 "shall" recommendations. The analysis also shows no abnormal returns for firms with very high or very low degrees of compliance, nor does it show any unusual value increases for increasing degrees of code compliance over the time period until 2003 or over companies. Their conclusion delivers a pessimistic outlook on the credibility of the code as an effective means of governance control and considers the self-regulatory approach to have failed. As a consequence, they suggest codification of the recommendations into law. While the results are interesting, shortfalls result from the missing discriminatory power of the applied coding system which does not distinguish between different categories of compliance deviations.

4.3.2 Legislative response to the failure of self-regulation

While the code recommended comprehensive disclosure of executive compensation schemes and amounts as explained above, legislation only required the disclosure of remuneration for the management board as a whole. To the disappointment of its initiators, a large portion of affected companies did not adopt or adopted only partially the recommendations regarding the remuneration disclosure. As a consequence, the legislator decided to write stricter rules into law.

According to Andres and Theissen (2007) only approximately 15% of the German Prime Standard companies voluntarily followed the enhanced disclosure recommendations until 2003. The share of disclosing companies increased over time; for a sample focusing on index constituents Chizema (2008) reports 47% and 75% respectively of companies to disclose detailed information in 2004 and 2005. Still the figures did not meet the regulators' expectations. Pushed by the ongoing pressure from shareholder activists' organizations such as the Deutsche Schutzvereinigung für Wertpapierbesitz DSW (2004, 2005) but against the opinion of capital market oriented firms (cf. DAI, 2005 and von Rosen, 2005) the legislator decided to address the issue of executive compensation disclosure (e.g. Rapp and Wolff, 2010) in 2005.

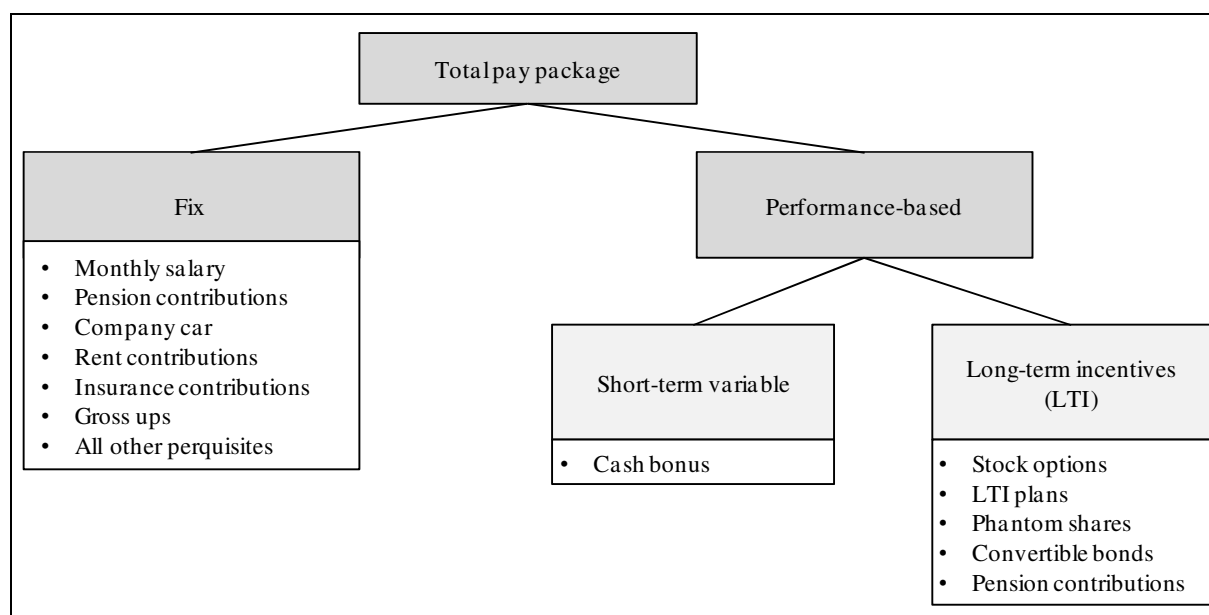
Figure 2: The introduction of the Executive Compensation Disclosure Act (VorStOG)

11 March 2005	Announcement of initiative to increase disclosure requirements
31 March 2005	Publication of the first draft
01 July 2005	Parliamentary agreement on draft, formulation of Act
03 August 2005	Enactment
10 August 2005	Promulgation of the Act, Act becomes effective
↓ 01 January 2006	Application deadline for all subsequently ending financial years

Adapted from CELOS (2011)

Figure 2 highlights the key dates of the legislative change. On March 11, 2005 the Ministry of Justice announced an initiative to tighten disclosure requirements. That day was also the first day for which press comments such as Fockenbrock (2005) can be found. The first draft was published on March 31, 2005 and on July 01, 2005 the German parliament agreed upon the Executive Compensation Disclosure Act (Gesetz über die Offenlegung der Vorstandsvergütung, VorStOG) which accepted all material facts from the proposal. The formal enactment took place on August 03, 2005 before the law came into effect through the official promulgation on August 10, 2005. The most important change the law imposed was the adaption of §285 Nr. 9 of the Law of Commerce (Handelsgesetzbuch, HGB). Starting in fiscal year 2006 stock companies had to disclose compensation for each management and supervisory board member on an individual basis, broken down into fixed, short-term variable and long-term incentive components. Figure 3 on the next page illustrates the systematization to highlight how the different components are classified.

The only possibility to circumvent the disclosure duty for up to five years is a 75% majority vote at the general assembly. This vote is usually called “opting out” and can be renewed after its expiration. The opting out clause can be seen as a concession to the companies who were heavily lobbying against the new law as infringing on their privacy. Former Porsche CEO Wendelin Wiedeking was at the forefront of this lobbying effort and insisted on the option to circumvent disclosure through shareholder agreement, so that the opting out clause is anecdotally known as “Lex Wiedeking” (DSW, 2006).

Figure 3: Compensation components according to the disclosure amendment

At the focus of this thesis are the economic consequences of the introduction of Executive Compensation Disclosure Act (VorStOG). For the sake of completeness, however, the Adequacy of Executive Compensation Act (Gesetz zur Angemessenheit der Vorstandsvergütung, VorStAG) has to be mentioned. It was signed into law on 04 August 2009 and continued the legislative effort regarding executive compensation. Without setting any quantitative levels, the VorStAG emphasizes the supervisory board's duty to establish adequate compensation schemes that reward sustainable economic development of the company. It imposes only some concrete restrictions such as minimum stock option holding periods and a considerable own risk proportion in directors and officers insurance policies.

5 The data set

The previous chapters provided an overview about executive compensation and disclosure in academic literature. The introduction of the German corporate governance system frames the research setting of examining the economic consequences of a change in executive compensation disclosure. To permit a better understanding of the hypotheses building process the underlying data set is introduced first. Motivation for this order is the fact that the hypotheses development occasionally refers to data particularities and any links would be hard to understand if the reader is not familiar to the data. Section 5.1 describes the data selection and evaluation process, followed by descriptive statistics of the sample firms and compensation schemes in Section 5.2. All quantitative and statistical analyses are conducted with Stata IC 11.

5.1 *The data selection process: repeated cross-section vs. panel data*

The initial data set includes data for all members of the German stock indexes DAX, MDAX, SDAX (the largest 30, following 50, and following 50 stocks, ranked by market capitalization and trading volume) and TecDAX (30 technology stocks). Taking indexes as a starting point has the advantage of automatically excluding double-countings (Volkswagen for instance is fragmented into common and preferred shares) and illiquid stocks (as trading volume is one of the inclusion criteria) for which common shareholder value theories are not directly transferable. Details on the index inclusion criteria and composition can be found on the webpage of the German Stock Exchange (www.deutsche-boerse.com). Companies are included in the sample regardless of whether they went out of business after the initial inclusion. Although data availability tends to be better for surviving companies this approach overcomes a systematic survivorship bias. In total the initial sample represents 160 of the about 360 German Prime Standard stocks which translates into a market capitalization share of about 90%. For each index, constituents are evaluated for the financial years 2005, 2006 and 2007 which results in 480 company years.

In general, the thesis thus applies a *repeated cross-sectional* approach, not a *longitudinal (also known as panel)* approach. The disadvantage of repeated cross-sections in comparison to panel analyses is the tendency of lower statistical power due to higher standard errors in the sample (Yee and Niemeier, 1996). On the other hand, a panel approach would increase potential survivorship biases because of the exclusion of firms who were not part of

an index throughout the observation period. Repeated cross-sections furthermore circumvent exclusions or adaption necessities resulting from mergers and acquisitions. Wooldridge (2009) points out and exemplifies the differences and statistical implications between both sampling approaches. Table 1 shows his distinctions in tabulated form.

Table 1: Differences between repeated cross-sectional and panel data

Repeated cross-sectional data	Panel data
<ul style="list-style-type: none"> - Observations are sampled randomly from a large population at different points in time - Observations are independently sampled - No correlation in error terms across different observations 	<ul style="list-style-type: none"> - Data have both a cross-sectional and a time series dimension - The same individuals are followed across time - Observations cannot be assumed to be independently distributed across time

While the sampling approach is a repeated cross-section, the outcome has to be treated with care. The reason is that index membership is used as sampling criterion. Although membership in preceding years is not a criterion, a broad range of firms will occur in more than one sample year because index composition does not change substantially from one year to the next, especially not for the large firms. On the other hand, some firms, especially smaller firms, are part of the sample in only one year. The high observation overlap between the years obviously rules out independent sample selection assumptions. The outcome of the repeated cross-section therefore has to be treated as *unbalanced panel* with missing years for at least some cross-sectional units in the sample. If statistical analyses do not contain a time component, the difference does not have any influence, but if observation over time is of interest, then any analysis has to be corrected for influences that result from the repeated observation of some firms. The consequences will be illustrated according to Wooldridge (2009) when they come into play in the methodology part in Chapter 7. Despite the biased outcome the sample will be referred to as repeated cross-section in this thesis, in line with the underlying sampling approach.

The year 2005 is taken as starting point because the new regulation was introduced in that year. The starting point assumes that the annual reports for the year 2005, the last year of discretion about disclosure, are representative for the pre-mandatory period. Some companies might have changed their disclosure behavior already in their 2005 reports, though, after the law was still not applicable but already announced. Various firms (e.g. BASF, BMW or Daimler) who did not disclose individual figures in 2005 stated that they will disclose all details when legally required but not earlier. These statements support the assumption that

2005 fairly exemplifies the situation before the disclosure regime change. With a multi-year coverage and the inclusion of large as well as small firms this thesis studies a data set that is more comprehensive than existing research which mainly focuses on large companies such as Andres and Theissen (2007) and Ernst, Rapp, and Wolff (2009) or constrained time horizons such as Rapp, Schaller and Wolff (2007) or takes only the disclosing companies into account (e.g. Rapp and Wolff, 2010) which results in biased outcomes.

Market and financial statement data for further analysis such as stock prices or equity book values are taken from the Thomson One Banker database. As the German regulator does not require compensation disclosure to follow a standardized scheme, compensation data cannot be found in any common research database and has to be hand collected from the annual reports, company presentations or websites⁵. For each entry in the repeated cross-section, the following compensation data are gathered:

- compensation data is collected in the three categories required by the Corporate Governance Code (and from 2006 on also by law): fixed (including perquisites), variable (short-term) and long-term incentive (including all stock and option components) compensation
- stock options and similar instruments are valued at the time of the grant as reported by the company
- pension benefits and conditional benefits such as termination benefits in case of a change of control are excluded from the analysis as the non-standardized reporting hinders their fair evaluation

To make the data comparable, the following adaptations are then conducted:

- short-term variable components and long-term incentives are subsumed under the category performance-based compensation
- whenever the end of the financial year deviates from the calendar year, the data is treated as if the financial year accords to the respective calendar year, i.e. when the financial year ends on 31 October, the data entry is treated as if the financial year ended 31 December

⁵ The Bundesanzeiger (2011) offers a so called compensation register but the actual entries are only excerpts from companies' annual reports that concern compensation.

- in case of premature leave (i.e. the respective board member did not stay until the end of the financial year), the partial compensation is annualized; any extraordinary termination benefits are excluded from the database and the firm-level compensation is adjusted for the true number of executives to avoid auto-increases from the annualization
- based on these data entries the average annual compensation per board member is calculated for each company and compensation category

Entries are excluded from the sample if the required data is not available to the full extent. Examples are missing disclosure of option values at the time of the grant (print machine producer Heidelberger Druckmaschinen for instance only publishes the related annual expenses) or the non-distinction between fixed and variable pay components (one example is reinsurer Hannover Re). Subsuming short-term variable and LTI components as performance-based compensation (see Figure 3) overcomes potential disturbances from misspecifications. This subsuming seems all the more sensible because the legislator did not clearly define the difference between short term variable and LTI components nor required standardized reporting. Consequently the firms' understanding and disclosure details of LTI differ considerably. Holding company Arques, for instance, considers its two year stock option program as LTI, while the pharma and cosmetics company Beiersdorf bases its LTI compensation on five years of performance and equipment manufacturer Krones even demands ten years of staff membership for granting LTI. The pharma company Celesio on the other hand does only state the amount of granted LTI but not any detail about its design. The examples illustrate that a clear distinction between the two performance-based components or an independent self-valuation is hence not feasible. Despite the imperfect comparability, the hope is to obtain a database that is highly representative for a typical business year in corporate Germany excluding any extraordinary effects. In contrast to existing research data is collected not only for those companies who disclose compensation data on an individual base but also for those companies who try to avoid the detailed disclosure. Distinguishing the disclosing from the non-disclosing companies allows for a comparison of the respective remuneration schemes which is the focus of this thesis.

5.2 Descriptive sample statistics

Table 2 provides an overview of the sample firm characteristics after exclusion of missing data.

Table 2: Descriptive sample firm characteristics

The table shows descriptive statistics for the sample firms which have been selected from a repeated cross-section of the German stock indexes DAX, MDAX, SDAX and TecDAX at the year end. Firms have been excluded from the sample if desired data was not available. The distinction between disclosing and non-disclosing firms is made upon the criterion of individual compensation disclosure for each management board member. All values are taken from the Thomson One Banker database.

Cross-section A: Summary of Sample Company Characteristics

		Disclosing (Non-Disclosing)		
		2005	2006	2007
Number of firms		68 (69)	116 (28)	118 (29)
Net Income (EUR million)	Mean	577.3 (263.4)	565.3 (246.6)	637.8 (152.3)
	Median	51.6 (45.7)	69.1 (96.6)	89.4 (49.4)
	St. Dev.	1,192.0 (655.0)	1,237.0 (373.2)	1,433.5 (428.2)
Market Cap. (EUR million)	Mean	8,883.0 (3,505.1)	8,235.4 (3,250.1)	9,141.2 (4,204.9)
	Median	1,470.9 (562.1)	1,506.7 (1,218.7)	1,722.6 (1,155.4)
	St. Dev.	16,202.5 (7,820.9)	15,599.2 (6,206.3)	18,399.9 (12,087.9)

Cross-section B: Sample Company Distribution by Industries

GICS Sector	Industries	Number of companies FY 2005	
		Disclosing	Non-Disclosing
15	Materials	6	9
20	Industrials	13	19
25	Consumer Discretionary	11	16
30	Consumer Staples	1	4
35	Health Care	7	5
40	Financials	16	5
45	Information Technology	8	10
50	Telecommunication Services	2	1
55	Utilities	4	0
Total		68	69

Cross-section A reveals that the number of disclosing and non-disclosing companies is evenly distributed in 2005, the last year where companies had the choice to disclose

voluntarily, with 68 companies disclosing their management board members' compensation individually and 69 companies disclosing the figures only for the management board as a whole. The disclosing companies appear to be larger in terms of net income and market capitalization and a considerable skewness of the distribution becomes evident in the difference between mean and median. The impression coincides with prior research from Andres and Theissen (2007) who find that companies listed in the large cap indexes are more likely to disclose payments individually. Nevertheless, even some of the largest firms with an undeniable conjunction to capital markets such as BASF, BMW or Daimler do not disclose individual figures. The most common argument for not disclosing individual figures is that the value of the additional information is outweighed by the infringement of executives' privacy. If companies (e.g. Infineon and MAN) disclose individual figures only for the CEO, they are treated as non-disclosers.

Cross-section B outlines disclosure behavior for the financial year 2005 from an industry point of view. Standard & Poor's global industry classification codes reveal no clear pattern. While some industries such as materials, healthcare or IT do not show a clear preference for disclosure it is mainly the financial sector who voluntarily publishes more information than legally necessary. Possible explanations are the already high regulations and disclosure requirements in the financial sector as well as a stronger focus on shareholders in the respective companies.

In 2006, the first year of mandatory individual disclosure, the proportion of disclosing to non-disclosing companies shifted towards a ratio of 116 to 28. The overall firm number increase is due to better data availability, the shift in the ratio is due to the legislative change. Subjective impression indicates that the willingness to comply with the code varies even among the disclosing companies. Semiconductor producer Singulus, for instance, publishes all desired information but hides the value of granted stock options, which make up for more than 50% of compensation, in running text instead of publishing it in the tables that contain all other compensation information. Solar company Conergy on the other hand states to have revised its compensation structure in order to comply with all recommendations of the code. A considerable number of 28 companies acquired the before mentioned opting out permission from their shareholders' general meeting⁶. The opting out vote needs a 75% approval and may entitle a firm to circumvent individual disclosure for up to 5 years. Thereafter, the opting out

⁶ Thereof two companies did not vote on the opting out choice but explicitly referred to their legal status as KGaA (see footnote 4 on page 13) which in their eyes exempts them from the duty of disclosure.

permission has to be agreed upon again or compensation data has to be disclosed individually. A simple two-sample t-test (see Appendix 1) reveals that especially those firms with a high proportion of closely held shares are more likely to opt out. One explanation is that especially in small firms the executives themselves often own large portions of shares. Other possible explanations can be derived from the substitution hypothesis which has been explained in Subsection 2.2.2 and postulates that direct control through owners and effective compensation contracts substitute each other.

After the introduction of the legislative change the disclosure rate does not substantially alter with 118 firms disclosing and 29 firms not doing so in the year 2007. The constant rate of disclosing firms suggests that those companies who still do not disclose are “non-disclosure hardliners” and cannot be expected to change their disclosure behavior in subsequent years. Some comments however indicate an increasing insight that capital markets demand detailed information; for instance copper refiner Aurubis and media company Pro Sieben Sat 1 Media disclose individual figures in 2007 although they have the opting out permission from their shareholders.

Table 2 gave an overview about the underlying firms in the sample. How much compensation these firms pay their executives can be seen in Table 3.

Table 3: Descriptive sample compensation characteristics

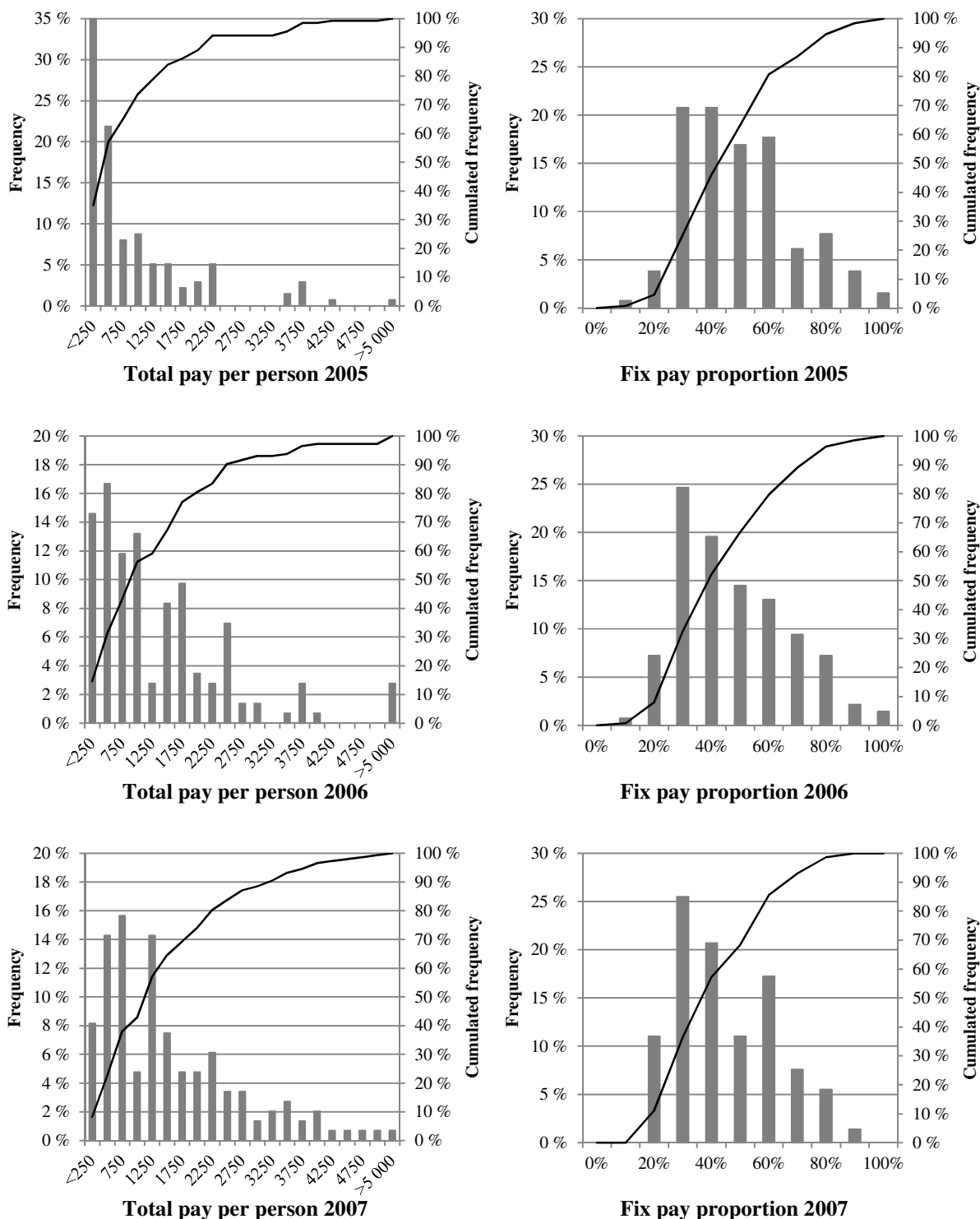
The table shows the mean absolute compensation amounts for the sample. Values are annualized if board members were not part of the board for the full financial year, extraordinary leave-benefits are excluded. Deferred components (stock options, phantom shares, etc.) are valued at the time of the grant as reported in the annual report.

Cross-section A: Mean (SD) annualized compensation per management board member (EUR 000s)			
	2005	2006	2007
Total	1,227.18 (1,079.17)	1,462.20 (1,574.80)	1,720.22 (1,608.89)
Fix	449.81 (285.74)	538.26 (659.05)	608.95 (796.74)
Performance-based	777.38 (903.84)	923.95 (1,161.14)	1,111.27 (1,037.88)
Variable (short-term)	544.98 (599.68)	656.18 (809.64)	801.31 (800.86)
LTI	232.40 (499.72)	267.77 (518.55)	309.96 (496.87)
Cross-section B: Mean (SD) annualized compensation per management board as a whole (EUR 000s)			
	2005	2006	2007
Total	4.327,72 (6.952,99)	6.753,71 (8.456,14)	8.108,90 (9.636,76)
Fix	1.422,31 (1.866,96)	2.249,54 (2.474,77)	2.728,90 (3.687,54)
Performance-based	2.905,41 (5.353,09)	4.504,17 (6.536,35)	5.380,00 (7.000,71)
Variable (short-term)	1.887,42 (3.174,50)	3.076,74 (4.399,83)	3.683,34 (4.552,52)
LTI	1.017,99 (2.897,12)	1.427,43 (3.121,42)	1.696,65 (3.372,93)

Both cross-sections in Table 3 show increases for all components over the sample horizon from 2005-2007, on single member base as well as on company base. In absolute terms compensation increased in all components, i.e. fix, variable and long-term incentives. Figure 4 displays the distribution of total payments and the proportion of fix payments for each year. The graphs confirm not only the increase of absolute payments but also indicate the decrease of the fix pay proportion over time. What the development over years and companies means with regards to the economic consequences of executive compensation disclosure will be analyzed in the following.

Figure 4: Compensation distribution across time

The figure shows the distribution of executive compensation for the years 2005-2007 for the repeated cross-section sample. Left hand side charts show total compensation per person (in 000s EUR), calculated as mean total compensation per company. Right hand side charts show the corresponding proportions of fix payments.



6 The research questions

After the detailed explanations of the German corporate governance system and the illustration of the disclosure amendment the central questions of this thesis arise. The economic consequences of the additional executive compensation disclosure rules shall be examined in line with the following questions:

- Does voluntary disclosure indicate better compensation schemes?
- How do the capital markets react to the disclosure amendment?
- And how do the companies react to the enhanced regulations?

To provide a deeper understanding the following chapter will develop explicit research questions in three categories: revelation of agency conflicts, market reactions and real effects. The circumstance that some companies followed the additional disclosure rules already before they became mandatory while other companies did not allows for contrasting both groups and establishing a unique setting which has not been studied up to date.

6.1 *Does voluntary disclosure indicate better compensation schemes?*

The main objective of the separation of management and supervisory board (tantamount the distinction between inside and outside directors in the unitary board) is to assure that managers act in the shareholders' best interest. From the perspective of company law, the management board members should have no opportunity to exploit the company because executives are controlled by the supervisory board. But Andjelkovic, Boyle, and McNoe (2000) say that when personal welfare is closer related to firm insiders, i.e. in the research context the supervisory board, than to shareholders, then disclosure requirements become interesting. Disclosure can be a tool that allows shareholders for the direct monitoring of management and shortcutting the delegated monitoring loop way via the supervisory board. The authors emphasize that when there is no disclosure, the pressure on the supervisory board to design compensation schemes in the shareholders' best interest is diminished. The omission of voluntary disclosure can hence be an indicator for substandard compensation schemes.

Section 3.1 provided an introduction to the question when companies are willing to disclose information although they are not legally bound to. For the context of compensation,

Lo (2003) argues in a similar way as Andjelkovic, Boyle, and McNoe (2000). He illustrates that if managers can extract economic rents from their principal, they have no incentive to change the current status of compensation and disclosure and hence do not disclose any information that is not legally required. He interprets investors' call for more comprehensive compensation disclosure as proof of the belief that poor compensation disclosure promotes poor corporate governance. Thus one has to assume that companies who are not disclosing compensation details are more prone to agency conflicts and display suboptimal compensation schemes. Beyer et al. (2010) back up this view in an extensive review of the financial reporting literature. They find that voluntary disclosure can be an instrument to distinguish the own company from competitors. Therefore only those companies who think to have better than average compensation systems should be expected to disclose their executives' compensation voluntarily.

Specifically for the agency context, Healy and Palepu (2001) emphasize the role of disclosure to solve the information problem, i.e. convince investors that it is worthwhile to invest in a stock. Managers have to distinguish their companies from the "lemons" in the market by the means of disclosure which is supported by Beyer et al. (2010). Another motive for voluntary disclosure is to create a progressive image (Chizema, 2008). The more effective and efficient a compensation contract is, the higher should be the motivation to disclose the details.

Following the line of argument it is expected that especially those companies whose compensation schemes are less efficient in settling the principal-agent conflict do not disclose detailed remuneration reports unless they are legally required to. The corresponding hypothesis is

H1: Voluntary disclosure indicates different degrees of agency conflicts.
Non-disclosing companies have less effective compensation schemes.

As argued before, there is no final agreement yet on the ideal compensation structure (Jensen, Murphy, and Wruck, 2004). To overcome the problem, I split the research question and use two simplifications as proxies for "good" and "bad" compensation schemes. The first proxy picks up academics' and practitioners' (such as Jensen and Murphy, 1990 or Park, Nelson, and Huson, 2001) consensus that high variable pay proportions are more effective in reconciling agency conflicts than high fix pay proportions that are not dependent on performance. The second proxy targets absolute pay levels. Especially shareholder

associations (DSW, 2004; DSW, 2005 and DSW, 2006) frequently criticize that absolute pay levels are too high and “excessive”. Jensen, Murphy, and Wruck (2004) link absolute figures and governance and argue that many of the recent excesses in pay had their root in poor corporate governance. The second simplification therefore assumes that comparatively high compensation levels are characteristics of less effective compensation schemes.

The two proxies for better and worse compensation schemes lead to the following two hypotheses that can directly and separately be tested:

H1a: Non-disclosing companies pay higher fix proportions.

H1b: Non-disclosing companies pay more in absolute terms.

6.2 *How do the capital markets react to the additional disclosure rules?*

Academics are engaged into the research of agency conflicts since many years as exemplified earlier. One point of interest is how legislative changes that alter the prevalence of agency conflicts in any way affect the involved parties. The capital market context allows studying the reactions of the principal, i.e. the shareholders as one of the involved parties. Grinstein, Weinbaum, and Yehuda (2010) point out that -although the absolute amount of executive compensation might in relation to company earnings be small- compensation practices may send a more fundamental signal about agency conflicts to the markets. Jensen and Murphy (1990) argue similarly that knowledge about compensation enables shareholders to infer what kinds of characters a company attracts. This view is supported by Yermack (2006) who finds that negative market reactions to the disclosure of corporate jet use far outweigh the actual expenses.

For the context of this thesis, responses of the capital markets towards the disclosure amendments are of particular interest because of three reasons. First, market reactions are of interest because the German corporate landscape displays a comparatively late orientation towards capital markets as has been outlined in Subsection 4.1.1. Therefore it is of interest whether findings deviate from prior examinations of higher market oriented contexts, particularly the United States. Second, studying market reactions seems a worthwhile goal because the underlying corporate governance structure is characterized by the described two-tier system of corporate control. Deviating findings to existing research could allow for inferences about the effectiveness of each system. Finally, the amendment attracted a great

deal of public attention which becomes evident in numerous comments from the press, e.g. by Fockenbrock (2005) or SPIEGEL online (2005), the ongoing call for individual disclosure from shareholder activists, e.g. by the DSW (2004, 2005) as well as objections from the corporate side such as the DAI (2005) or von Rosen (2005). The high level of public awareness leads to the expectation of extraordinary market reactions on the key dates of the law establishing process. Explicitly, I expect

H2: The disclosure amendment sends new, value relevant signals to the capital markets.

It is not directly clear whether the capital market reactions can be expected to be positive or negative. Lo (2003) illustrates arguments for both directions in his study of the 1992 revision of executive compensation disclosure rules in the United States, a fairly comparable research setting. His study examines two contradicting theories: the *governance improvement hypothesis* versus the *increased disclosure cost hypothesis*.

Following the *governance improvement hypothesis*, detailed compensation disclosure requirements should result in more effective compensation patterns and hence increase shareholder value. Lo explains four arguments for increasing shareholder value. First, the additional disclosure requirements allow shortcutting if not even circumventing the delegated monitoring relationship between shareholders, the outside directors and the executive directors because the executives can to a greater extent directly be monitored by the firm owners. In the research context shareholders could evaluate the more detailed remuneration data themselves and do not have to rely on the supervisory board members as their representatives. Second, the additional disclosure requirements force the compensation committee which is (in the United States as well as in Germany) the supervisors' institution in charge of executive compensation contracts to take a closer look at the contracts. If the committee knows that compensation will be published it has a stronger incentive to focus on the effective structure of the contracts because they have to be justified to investors and the public. Hence, the information asymmetry between shareholders and supervisory board should be reduced through the publication of formerly private information which should in turn crowd out less efficient compensation contracts. A third reason for added value is the revelation of potential interlocking relationships between board members and the compensation committee. For the German case this argument is less important because under the two-tier structure described in Section 4.1, members of the executive board may not be

part of the compensation committee thus any interlocking is prevented already by the legal structure of the corporate governance system. Fourth, the easy access to detailed and comprehensive data reduces the monitoring costs for individual shareholders who might react and complain about inappropriate compensation earlier.

Andjelkovic, Boyle, and McNoe (2000) expect governance improvements in a similar research context. When shareholders are enabled to closely monitor executive compensation, firms should be kept away from engaging in “excessively lax compensation policies” because negative reactions could result in share price decreases, troubled general meetings and corporate control contests. If shareholders on the other hand do not have this monitoring opportunity, it is much easier for executives to take advantage of the situation. Healy and Palepu (2001) provide empirical support for the governance improvement theory by referring to various studies which show that higher regulated financial reports reveal information that is valuable to investors. However, they find the extent to which information is perceived as new and relevant to be dependent on firm and country characteristics so further research need is evident. To test the governance improvement hypothesis, H2 is further specified:

H2a: Governance improvement - The disclosure amendment resulted in, or was anticipated to lead to, value increasing governance practices.

In contrast to the governance improvement hypothesis additional disclosure could also result in a reduction of firm value which Lo (2003) calls the *disclosure cost hypothesis*. Catalysts for the value reduction can be the release of proprietary information such as details on internal performance metrics or steering mechanisms. Furthermore, politically imposed restrictions on the design of compensation contracts have already been identified by Jensen and Murphy (1990) as meaningful distortions of effective contracting.

Park, Nelson, and Huson (2001) study the disclosure regulation in Canada and deliver another argument in favor of the increased disclosure cost hypothesis. They argue that increased disclosure will not only enable shareholders to monitor the compensation landscape more easily and efficiently, but also the executives themselves. The logical consequence is an increase of the overall compensation levels as a result of the higher competitiveness of the labor market and the search for talented executives. From a shareholder’s perspective a mere increase in compensation without effectively changing executives’ operational performance results only in additional expenses and hence reduces value. Accepting this view favors the

increased disclosure cost hypothesis. Gabaix and Landier (2008) add another perspective, which they call the “skimming view”. According to the skimming view, CEOs pretend to improve pay systems by increasing the performance-based pay proportion. But if the relative increase results from a simple absolute increase of performance-based components, then the smokescreen of improving incentives is clearly not in shareholders’ best interest. That the capital markets favor the disclosure cost hypothesis over the governance improvement hypothesis is predicted by

H2b: Disclosure cost – The disclosure amendment resulted in, or was anticipated to lead to, value decreasing governance practices.

H2a and H2b directly contradict each other. From a theoretical point of view it is hard to outweigh either the governance improvement or the increased disclosure cost hypothesis as both can be backed up with arguments. Hence the only way is to examine how capital markets evaluated the legislative change in practice. If the governance hypothesis was true one should find positive abnormal returns around the dates on which additional disclosure requirements were issued or announced. The value increase should be higher for those companies who did not disclose individual details before, as their reporting structure provides more room for improvement. If otherwise the disclosure cost hypothesis holds one should find negative abnormal returns around the same events.

6.3 *Do additional disclosure rules alter the underlying compensation practices?*

When it comes to the compensation of executives in listed companies, benchmarking effects are frequently reported by academics, for instance by Bizjak, Lemon, and Naveen (2008). Comparable studies such as Grinstein, Weinbaum, and Yehuda (2010), Lo (2003) and Park, Nelson, and Huson (2001) show that disclosure regulation induces real firm reactions. Real reactions, however, require capital markets to be strong enough to influence compensation schemes. Due to the discussed late adoption of capital market orientation in German firms it is not self-evident that firm will alter their compensation schemes in response to shareholder pressure. On the other hand, shareholders’ lobbyism for the amendment can be understood as trust in the market’s influential power. The corresponding hypothesis is

H3: The new disclosure rules lead to changes in real compensation patterns.

The question is in which way firms will adjust their compensation schemes. Academic research examines several cases in which increased disclosure requirements led to higher overall compensation (e.g. Grinstein, Weinbaum, and Yehuda, 2010; Park, Nelson, and Huson, 2001). For the specific context of perquisites, Grinstein, Weinbaum, and Yehuda (2010) find ratcheting up effects in response to more detailed disclosure requirements. This means that firms with below-average perquisite spending are likely to adjust their fringe benefits upwards but firms with above-average expenses do not cut their spending. Gabaix and Landier (2008) set up an equilibrium model of CEO pay to explain the rise in executive compensation over the last decades. One of the influences to increase executive compensation in their eyes is contagion, i.e. the spiral of one firm starting to increase compensation and others following in turn to remain competitive employers. If disclosure is more detailed, they find the threat of contagion to be higher.

On the other hand, shareholder associations explicitly criticized firms for paying too much (e.g. DSW, 2004; DSW, 2005; DSW, 2006). The great degree of shareholders' lobbyism for the amendment supports the idea that shareholders anticipated value-creative responses as Park, Nelson, and Huson (2001) predict for the case of increasing shareholder pressure. This means that compensation patterns should improve towards better agency contracts in response to the amendment. In accordance with the previously introduced proxies for "good" and "bad" compensation schemes from the agency point of view, the corresponding hypotheses are

H3a: Firms reduce the overall compensation amount in response to more detailed compensation disclosure requirements.

H3b: Firms increase the performance-based compensation proportion in response to more detailed compensation disclosure requirements.

7 Methodology and results

Chapter 6 developed the explicit research hypotheses. This chapter will develop appropriate tests to examine the validity of these hypotheses and report the results for the underlying sample.

7.1 *Voluntary disclosure indicates agency conflicts in structural, but not in absolute terms*

H1 targets the question whether any conclusions can be derived from the fact that some firms voluntarily disclose individual compensation figures while others do not. Differences within subjects, i.e. within one group over time as well as differences-in-differences will be analyzed later when it comes to the real effects of the legislative change. The first hypothesis instead focuses on differences between subjects and contrasts the voluntarily disclosing firms from their non-disclosing peers in the year 2005, the last year of voluntary disclosure. The first prediction is

H1a: Non-disclosing companies pay higher fix proportions.

A first test of H1a is conducted on the basis of a comparison of means between the group of companies who disclose compensation data individually (“disclosing”) to those who disclose compensation data only for the entire board but not for the individual executives (“non-disclosing”). As described in Section 5.2, 68 companies disclosed the desired information in the year 2005 while 69 did not. Taking absolute values of fix payments as a starting point would distort the results because of firm size effects. The first comparison therefore takes the relative share of fix and performance-based payments into account.

Taking a look at the distribution of the fix pay proportion, a Shapiro-Wilk test, which analyzes the coefficient of normally distributed and actual variance, rejects the null hypothesis that the fix proportions of compensation are normally distributed (p-value = 0.00006). The non-normality is due to too much mass at the tails of the probability density function. Hence, a simple two-sample t-test can be problematic (Park, 2009) but a non-parametric test easily faces the problem of potentially overstated t-statistics (Park, 2008). The skewness of the distribution and the standard deviations of the two compared groups still allow conducting a Wilcoxon-Mann-Whitney test (also known as U-test or Wilcoxon rank sum test) which

examines whether two independent samples have a significantly different mean⁷. For two samples X and Y the test statistic $U = \sum_{i=1}^m \sum_{j=1}^n S(X_i, Y_j)$ with $S(X, Y) = 1$ if $Y > X$ and 0 else is compared to the critical values from the normal distribution $N(\frac{mn}{2}; \frac{nm(n+m+1)}{12})$.

Table 4: Structural compensation differences between disclosing and non-disclosing companies in 2005

The table shows the mean compensation amounts for the firms who disclosed individual data and those who did not. *Performance-based* pay includes both *variable* and *LTI* payments.

Mean compensation (EUR 000s) in 2005					
Mean (SD)		Disclosing	Non-Disclosing		
Number of firms		68	69		
Total		6,846.44 (7,672.70)	5,367.24 (6,154.03)		
Fix		2,141.53 (1,767.04)	2,070.52 (1,806.70)		
Performance-based		4,704.92 (6,274.60)	3,296.73 (4,661.47)		
Fix proportion		0,4420 (0,2066)	0,5138 (0,2279)		
Performance-based proportion		0,5580 (0,2066)	0,4862 (0,2279)		
Shapiro-Wilk test for normality of fix pay proportion					
Variable	n	W	p-value		
Fix proportion	137	0,9488	0,00006		
Wilcoxon-Mann-Whitney test for difference of fix proportion					
	N	rank sum	expected		
Disclosing	68	4.290	4,692	adjusted variance	53,958.00
Non-Disclosing	69	5.163	4,761	z	-1.731
combined	137	9,453	9,453	p-value	0.0835

Table 4 shows the results of the comparison. For the year 2005, the Wilcoxon-Mann-Whitney test reveals a difference in the compensation structure between individually disclosing and non-disclosing companies. Non-disclosing companies' compensation is to a larger degree fix (51.4% vs. 44.2%) and the difference is significant at the 10% level ($p=0.0835$). A difference of more than seven percentage points can be considered economically significant. Hence, the first test supports the hypothesis that non-disclosing

⁷ Further information on the Wilcoxon-Mann-Whitney test and when its application is problematic can be found in McElduff et al. (2010).

companies' compensation schemes are more prone to agency conflicts and disclosing firms use disclosure as a means to distinguish themselves from their competitors. Voluntary disclosure hence seems to be a simple indicator of more effective compensation schemes.

A closer look at the performance-based proportion in Appendix 2 separately analyzes both short-term variable and long-term components. The results show that the difference between the disclosing and the non-disclosing group results from the long-term incentives (LTI) proportion. The share of only the short-term variable payments is neither economically nor statistically different (40.2% vs. 41.0%; $p=0.7928$). Disclosing companies instead rely on a significantly higher proportion of LTI payments (15.6% vs. 7.6%; $p=0.0021$).

To validate the initial finding that non-disclosing companies display a higher reliance on fix pay components, a paired sample test is constructed by using a matching algorithm to adjust for firm size effects. Various studies examine the determinants of executive compensation and identify firm size as most important determinant of executive compensation, internationally as well as for the German context. Examples are the studies of Grinstein, Weinbaum, and Yehuda (2010), Chizema (2008) and Andjelkovic, Boyle, and McNoe (2000) as well as Gabaix and Landier's (2008) equilibrium model of CEO compensation. Accordingly, disclosing and non-disclosing companies are matched on the criteria of company size by adapting the matching algorithm developed by Lo (2003). Lo studies the consequences of disclosure amendments in the United States and develops a matching algorithm based on industry and size. Unfortunately, an industry matching is not feasible with the underlying data set as the number of companies is too small. Hence, the matching is based solely on size. For the German context this limitation can be expected to be of minor importance as Sommer, Judith, and Lachmann (2010) identify firm size as the most important influence but do not find straightforward support for industry effects. The corresponding size matching algorithm works as follows:

1. Approximate company size by the market value of equity (MV).
2. Exclude entries for which data is not available.
3. Calculate the size distance ($Distance(i, j)$) between each disclosing firm i and non-disclosing firm j . Distance is defined as $|\ln(MV(i)) - \ln(MV(j))|$.
4. Select the j that minimizes $Distance(i, j)$. Denote this as firm j^* .
5. If $Distance(i, j^*) \leq \ln(4)$, then the size-ranked couple is included in the paired sample.
6. If $Distance(i, j^*) > \ln(4)$, then no matching firm is identified.

The algorithm returns 65 pairs; dropping the residual values does not distort the general compensation structure patterns described in chapter 5. The paired sample size is large enough for the Central Limit Theorem to apply thus a paired t-test can be conducted (Park, 2009) regardless of the underlying distribution. The results are shown in Table 5.

Table 5: Size-paired t-test of fix compensation

The table shows the results of a paired t-test of the fix compensation proportion. Pairs have been assigned between disclosing and non-disclosing firms, matched by company size.

*** (**, *) denotes two-tailed significance at 1% (5%, 10%) level

Fix compensation proportion FY 2005		
	Disclosing	Non-Disclosing
Number of firms (n)	65	65
Mean values of fix proportion (SD)	0.4490 (0.2084)	0.5157 (0.2306)
Difference of means (SD)	0.06672 (0.2842)	
t-statistics	1.8924*	

The results confirm the initial findings. Applying a size matching algorithm allows to conduct a paired t-test which shows that non-disclosing companies rely more heavily on fixed payments at a two-tailed significance level of 10% ($p=0.0630$).

Contrasting disclosing and non-disclosing firms in 2005, the last year of voluntary disclosure, has shown structural differences. Those companies who do not disclose individual details rely more heavily on fixed compensation which from the agency theory point of view has to be seen critically and can be interpreted as stronger existence of agency conflicts. Besides structural differences of compensation it is also of interest whether differences could be observed on absolute levels as predicted by

H1b: Non-disclosing companies pay more in absolute terms.

Park, Nelson, and Huson (2001) examine a similar context of changed disclosure requirements in Canada. Contrasting the pre- and post-change disclosure regimes they identify company size, performance and market-to-book ratio as significant influences on compensation. While they focus on changes between two regimes, my first hypothesis concentrates on differences between two groups of companies. H1b thus predicts differences between subjects, not within subjects over time. But as the statistical approach is the same if

only one year of the cross-section is analyzed, their regression approach can easily be adapted by including a dummy indicator for disclosure/non-disclosure. The corresponding regression to test for the prevalence of absolute compensation differences between disclosing and non-disclosing companies in the year 2005 is

$$\text{LogTOT}_i = \beta_0 + \beta_1 D_i + \beta_2 \text{StoRet}_i + \beta_3 \text{LogMV}_i + \beta_4 \text{MV/BV}_i + \beta_5 \text{OWN}_i + \varepsilon_i \quad (1)$$

where the dependent variable LogTOT_i is the logarithmic value of total compensation for company i in 2005, D_i a dummy variable that equals 1 if company i is disclosing individual values and 0 if not, StoRet_i is the respective logarithmic stock return over the previous year, adjusted for dividends and stock splits, LogMV_i is the logarithmic market value of equity at the year end and MV/BV_i the respective market-to-book ratio of equity. OWN_i is the percentage of closely held shares as reported in the Thomson One Banker database.

The control variables are motivated by existing research. Andjelkovic, Boyle, and McNoe (2000) refer to lagged stock returns as the most important measure of executive performance. One year lagged returns are therefore incorporated to capture the influence of firm performance on the absolute compensation levels. As described earlier, firm size is commonly seen as most important determinant of executives' salaries. The market value of equity is taken as size proxy which allows including financial companies who had to be excluded in case of alternative proxies such as sales or total asset value. In this regression the market-to-book ratio serves as a proxy for Tobin's q (the relation of market and replacement value) as a representative for the firms' investment opportunities. The market-to-book ratio has been identified for instance by Park, Nelson, and Huson (2001) and Lo (2003) as important explanatory variables. An alternative interpretation from Andjelkovic, Boyle, and McNoe (2000) understands Tobin's q as a representative of future performance which might also have an influence on executive compensation. Finally, the percentage of closely held shares from the Thomson One Banker database is taken as indicator for ownership influences.

While performance and firm size are without doubt important influences, the inclusion of market-to-book ratio and ownership as explanatory variables is less straightforward. For the former, because it does not appear in many studies, for the latter, because the records in the Thomson One Banker database raise concerns about their validity⁸ and the empirical

⁸ Among other components, Thomson One Banker's definition the number of closely held shares includes shareholdings by officers, directors and their immediate family above 5% of the outstanding shares. One example for obvious distortion is car lessor Sixt, whose CEO Erich Sixt according to the annual report held 56.8% of the outstanding shares in 2005 while the Thomson One Banker entry is 41.4%.

findings do not point to a clear cut conclusion. Some researchers do not find a link between compensation and ownership structure (Andjelkovic, Boyle, and McNoe, 2000), while others such as Haid and Yurtoglu (2006) find ownership to be of significant influence. For a German sample from the years 1987-2003 they conclude that more concentrated ownership reduces agency conflicts and compensation levels. Market-to-book ratio and ownership are therefore not considered in the basic regression but added in secondary models. The potential conflict from the tradeoff between lost degrees of freedom and an omitted variable will briefly be addressed in the results' interpretation. Table 6 reports the regression results.

Table 6: Cross-sectional OLS regression estimation of total pay across disclosing and non-disclosing companies in 2005

The table shows the cross-sectional regression results for the year 2005, last trading day values. $LogTOT_i$ is the logarithmic value of the total compensation for company i in 2005, D_i a dummy variable that equals 1 if company i is disclosing individual values, $StoRet_i$ is the respective logarithmic stock return over the previous year adjusted for dividends and stock splits, $LogMV_i$ is the logarithmic market value of equity, MV/BV_i the respective market-to-book ratio of equity and OWN_i the percentage of closely held shares. Compensation data is hand collected from annual reports, all other values stem from the Thomson One Banker database.

*** (**, *) denotes two-tailed significance at 1% (5%, 10%) level

Regression (1) $LogTOT_i = \beta_0 + \beta_1 D_i + \beta_2 StoRet_i + \beta_3 LogMV_i + \beta_4 MV/BV_i + \beta_5 OWN_i + \varepsilon_i$						
	Intercept	D	StoRet	LogMV	MV/BV	OWN
Model 1						
Coefficient	3.54***	1.31***	-0.05	0.46***		
(t-statistics)	(14.70)	(12.09)	(-0.34)	(14.34)		
	(n=125 / adj. R ² =0.7916 / BIC=236.11)					
Model 2						
Coefficient	3.57***	1.31***	-0.03	0.46***	-0.01	
(t-statistics)	(14.42)	(12.06)	(-0.23)	(14.31)	(-0.52)	
	(n=125 / adj. R ² =0.7904 / BIC=240.66)					
Model 3						
Coefficient	3.54***	1.19***	-0.05	0.49***	0.00	-0.00
(t-statistics)	(11.78)	(9.70)	(-0.33)	(12.49)	(0.06)	(-1.65)
	(n=104 / adj. R ² =0.7603 / BIC=210.79)					

The easiest way to start interpreting the results is to take a look at the firm size proxy, the log market value of equity. The coefficient on the size proxy is positively significant at the 1% level in all three models which confirms the influence of company size as an important

determinant of executive pay. In other words, larger companies pay their executives more than their smaller peers, which is consistent with the empirical findings that led to the inclusion of a size proxy.

The first surprise comes with the coefficient on the firm performance proxy, lagged stock returns. As explanatory factor for the absolute amount of compensation, stock returns seem to be of minor influence because the coefficients are neither big in size nor statistically significant in any model. This is surprising, because performance should be expected to have a significant influence on executive compensation levels. On the other hand, the results are consistent with findings from Haid and Yurtoglu (2006) who find company size to be of higher importance for explaining executive compensation in Germany than stock returns. To validate the findings, Appendix 3 conducts a range of alternative regressions to shed some light on the non-existence of the pay-performance relation. However, neither the substitution of lagged stock returns as performance proxy with non-lagged stock returns, nor with net income changes the result. Also, the exclusion of financial firms who displayed at least a tendency towards individual disclosure does not induce any significant performance dependency. Firm performance hence seems to be of minor influence for absolute executive compensation in Germany, at least for the underlying sample. Sommer, Judith, and Lachmann (2010) point to the natural asymmetry of compensation as a potential mathematical explanation: because fix pay components set a floor, pay levels tend to show higher sensitivity towards performance improvements than towards performance decreases. Appendix 3 therefore also conducts a separate analysis of the performance-based components which shows that performance is indeed of influence – at least for the non-fix components.

Historically, a possible explanation for the poor relation between firm performance and absolute pay levels is the late adoption of market-based compensation in Germany which has been described in Subsection 4.1.2. Alternatively, Andjelkovic, Boyle, and McNoe (2000) suggest the absence of binding disclosure rules as explanation for poor links between compensation and performance. Although the poor link of absolute pay levels and performance disappoints from the agency perspective, it will not be tackled any further in this thesis as the focus is on disclosure and not the determinants of compensation.

Model 2 and 3 show that the market-to-book ratio and the percentage of closely held shares are of minor importance for explaining executive compensation, at least in the year 2005. Their addition does not result in substantially higher explanatory power based on the adjusted R^2 and Bayes' information criterion. Potential conflicts from the tradeoff between

lost degrees of freedom and an omitted variable bias therefore seem to be of minor importance. The initial regression in model 1 furthermore shows a high adjusted R^2 of 79.16% which supports the applicability of the basic model.

Concentrating on the variable of highest interest, the coefficient on the dummy variable for individual disclosure shows significance at the 1% level in all models. If the dummy variable is dropped from the regression, the adjusted R^2 decreases by about 25% which supports inclusion of the dummy as explanatory factor. But in contrast to the expectations, the coefficient has a positive sign. It is not the group of non-disclosing but the group of disclosing companies who show higher absolute compensation levels after correcting for size, performance, growth perspectives and ownership. The hypothesis H1b therefore cannot be supported but has to be denied.

A possible reconciliation is provided by the study of different disclosure regimes by Park, Nelson, and Huson (2001). As stated earlier, they contrast regimes instead of companies and find a significant increase in absolute compensation levels from the non-disclosure to the disclosure period. Their inference is that increased transparency leads to an increase in the competition for talent which in turn results in higher compensation levels. For the German context, the findings in Table 6 can be interpreted in the same way: an increase in compensation transparency leads to higher absolute compensation levels.

An alternative explanation can be found in the CEO equilibrium pay model of Gabaix and Landier (2008) who identify contagion as alternative explanation for salary increases. This means that if one company decides to pay more the other firms have to match the increase in order to stay competitive employers. For the sample, a difference between the more and the less transparent companies remarkably exists at the same time. Although both groups of firms compete for talented executives on the same labor markets, disclosing companies seem to compete with other means such as higher compensation. Remembering that firms lobbied against the change with arguments such as the imbalance of costs of privacy and benefits of additional disclosure can settle the contradiction as follows: a possible interpretation for the difference can be the “cost of lost privacy”. If companies decide to disclose their executives’ compensation individually, the executives have to be compensated for the lost privacy. Vice versa, executives accept lower compensation if they do not have to publish what they earn and gain utility from the higher privacy. While this “cost of lost privacy” inference provides a possible reconciliation of the findings, it is hard to back up with existing literature.

Jensen and Murphy (1990) on the other hand take a reconciling view that does not consider the question of disclosure but takes a straightforward view on the risk-return relation. They state that compensation levels that are more dependent on performance will necessarily be higher than their fix counterparts because performance-based payments are less predictable for the individual executive, i.e. riskier and that executives have to be compensated for the higher risk. The result is that compensation schemes that are more dependent on performance will naturally be higher. Jensen and Murphy say that the pay structure is more important than the absolute level thus higher absolute levels do not need be detrimental to shareholder value.

The first set of hypotheses examined the question to which extent the discretion between disclosure and non-disclosure can serve as indicator of agency conflicts. The results show that individual disclosure accompanies use performance-based compensation more extensively, an indication of more effective compensation schemes. On the other hand, more transparent disclosure goes hand in hand with higher compensation levels, which is not directly desirable from a shareholder's perspective. Remembering Jensen and Murphy's (1990) study that "it's not how much you pay, but how" reconciles the findings which are at first glance contradictory. They say that efficient compensation schemes are truly based on performance which may in turn result in higher absolute pay levels. If the structure of remuneration is indeed more important than the absolute height, then the findings are still compatible with the hypothesis: individually disclosing firms employ more effective compensation schemes.

One way to gain further insight is the investigation of capital market reactions. The way capital markets reacted to the amendment's signals can shed further light on its meaning for the principal-agent setting. How shareholders evaluated the legislative change is therefore examined in the next section.

7.2 The capital market welcomes the disclosure amendment

The second hypothesis predicts that the capital market reacts to the disclosure amendment. To analyze market reactions, the basic methodology follows the approach of Lo (2003) by conducting an event study. The event study focuses on abnormal returns around the key dates of the establishing process of the amendment. If the capital markets considered the amendment as value-influencing, abnormal returns should be observed around these events, be it positive or negative. For questions of practical implementation, MacKinlay's (1997)

guideline for event studies is consulted. The following three incidents have been characterized as key events that are expected to induce abnormal returns:

Event 1: March 11, 2005 – Announcement of the initiative to change legislation

Event 2: March 31, 2005 – Release of the first draft of the new act

Event 3: July 01, 2005 – Adoption of the new act by the German parliament

These dates are believed to be of major importance, because each date sends a strong signal about the likelihood and design of a possible amendment of the executive compensation disclosure duties of listed firms. Alternatively, 03 August 2005, the day of the formal enactment of the VorStOG as well as 10 August 2005, the day of promulgation could be considered as further event days. But as there were no signs that the upper house of the parliament (which has to agree on new acts after these have passed the lower house and before the formal enactment) could block the law, event 3 is assumed to be the final event. Just like in any event study, leakage of the event news or investor anticipation would reduce the explanatory power of the results. Press comments such as Fockenbrock (2005) were issued exactly on the same days, thus concerns about information leakage remain limited. Significant abnormal returns around the event dates shall indicate whether investors' behavior supports either the governance improvement hypothesis or the increased disclosure cost hypothesis in the previously stated forms:

H2a: Governance improvement - The disclosure amendment resulted in, or was anticipated to lead to, value increasing governance practices.

H2b: Disclosure cost – The disclosure amendment resulted in, or was anticipated to lead to, value decreasing governance practices.

MacKinlay (1997) states that the market model is the most common statistical model to calculate abnormal returns in event studies, mainly because it can theoretically explained by the Capital Asset Pricing Model. Due to the sample structure some methodological adjustments are necessary because the standard market model is not applicable. The reason is that the sample firms represent about 90% of the German stock market capitalization thus any calculation of abnormal returns above the market does not obtain meaningful results. Lo (2003) faces the same problem but to a smaller extent which permits him to still apply the market model but infer that the true findings should be even larger. An alternative way to

estimate abnormal returns is the constant mean return model as MacKinlay (1997) illustrates. Just like in other models, the abnormal return of stock i on day t , AR_{it} , is calculated as difference of the respective realized return, R_{it} , and the expected return under conditioning information, $E(R_{it}|X_t)$ where X_t is the conditioning information that is incorporated in the model used to estimate normal returns, i.e. the estimation horizon :

$$AR_{it} = R_{it} - E(R_{it}|X_t) \quad (2)$$

The constant mean return model estimates the expected return of stock i on day t , $E(R_{it}|X_t)$ on basis of the respective mean returns:

$$E(R_{it}|X_t) = \mu_i + \varepsilon_{it} \quad (3)$$

μ_i , is the constant mean return of stock i over a certain time horizon and ε_{it} an error term with $E(\varepsilon_{it}) = 0$ and $Var(\varepsilon_{it}) = \sigma_{\varepsilon_i}^2$. Expressed in words the constant mean return model for daily returns assumes the return for a specific stock on a specific day to simply be its average daily return. MacKinlay (1997) states that the model may seem statistically simple and economically questionable, but he cites evidence that its application delivers results that are similar to the more sophisticated models. The applicability of the constant mean return model is supported by the characteristics of the sample: all observations stem from one national market, the observed event dates are clearly identified and allow for short examination time horizons. The combination of both characteristics furthermore excludes issues about changes in the riskless return because the macroeconomic perspective is comparable for all companies and should remain stable over short time horizons. For the initial examination whether the additional disclosure rules caused market reactions, the mean daily returns daily returns are calculated on base of the 250 trading days (approx. one trading year) preceding one day before event 1. Based on the estimated mean returns, abnormal returns, i.e. the difference to the expected returns, are then calculated for each event. 11 companies had to be excluded from the sample because stock prices were not available thus 126 firms remain in the sample⁹. The results are shown in panel A of Table 7.

⁹ The exclusions include all IPOs that took part in the estimation and observation period, namely Conergy, Lanxess, Sky, MTU and Teleatlas. As IPOs often display extraordinary returns around the first trading days, this exclusion improves the validity of the constant mean return model.

Table 7: Market reactions on the disclosure amendments

The table shows the cumulative abnormal returns around the event days in percent. Returns are calculated as log returns, adjusted for dividends and stock splits. Abnormal returns are for each stock i calculated as difference between the actual return on day t and the prediction of the constant mean return model $R_{it} = \mu_i + \varepsilon_{it}$ with an estimation period of 250 trading days preceding one day before event 1. Cumulative abnormal returns are calculated as sum of the respective abnormal returns.

*** (**, *) denotes two-tailed significance at 1% (5%, 10%) level

Panel A: Cumulative abnormal returns (constant mean return model), full sample in percent

Time horizon	(0)		(0;1)		(-1;1)	
# days	1		2		3	
(n=126)	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Event 1	0.07	0.4113	-0.28	-1.2092	-0.65***	-2.1566
Event 2	0.22	1.4047	0.84***	3.2137	0.96***	3.3524
Event 3	-0.02	-0.0749	0.20	0.6825	0.35	1.1677
All three events (3/6/9 days)	0.27	0.8001	0.75*	1.8157	0.65	1.2433

Panel B: Cumulative abnormal returns (constant mean return model), group specific in percent

	# Days	Disclosing (n=62)		Non-Disclosing (n=64)		Difference (Non-Disc. vs. Disc.)	
		Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Event 1	2	-0.56*	-1.8300	-0.02	-0.0464	0.54	1.1591
Event 2	2	0.77*	1.9554	0.91**	2.6042	0.14	0.2706
Event 3	2	0.13	0.2393	0.27	1.0783	0.14	0.2370
All 3 events	6	0.33	0.4961	1.16**	2.3480	0.83	0.9969

While markets showed only little reactions on event 1 and event 3, positive abnormal returns can be observed around event 2, the day when the first draft of the act was released. For the release day itself, the abnormal returns are positive, but insignificant. Giving the markets some time to digest the information, i.e. extending the observation horizon to two and three days delivers positive abnormal returns that are significant at the 1% level. For the event day and the subsequent day (i.e. two days in total) of event 2, the cumulated abnormal daily returns amount to 0.84%. Additionally including the day preceding event 2, i.e. extending the observation period to three days, increases the cumulated abnormal returns to 0.96%. Compared to the average daily sample returns over the estimation period of 0.07% the abnormal returns can be considered significant also from an economic perspective. Taking into account that the absolute compensation amounts are small in comparison to market value changes, the inference is that markets interpret the signal in a more fundamental way as

concluded by Grinstein, Weinbaum, and Yehuda (2010), Jensen and Murphy (1990) and Yermack (2006).

For the events 1 and 3 the abnormal returns are neither economically nor statistically significant which leads to the conclusion that these events were perceived by the capital markets to be of minor importance. Subsuming, the results partially confirm H2 because capital markets reacted on the legislative change. Furthermore, the significant abnormal positive returns around event 2 support the governance improvement hypothesis H2a that the disclosure amendment increases shareholder value because investors anticipate corporate governance mechanisms to subsequently improve.

Whether reactions differ between the disclosing and the non-disclosing companies remains to be answered. Panel B of Table 7 provides a first insight via the inter-group comparison. Although not mutually exclusive, the statistics slightly indicate that the legislative change led to a higher value increase for the non-disclosing companies. The difference between the market reactions for both groups is never significant, but the non-disclosing companies experience higher, and in some cases more significant, abnormal returns than the disclosing companies for all three events. Hence, the view that the increased disclosure requirements generate more value for the less transparent firms cannot be fully, but partially supported.

Motivated through the indication that markets reactions are larger for firms with less transparent schemes, I take a deeper look into the relation of market reactions and actual compensation schemes. Picking up Grinstein, Weinbaum, and Yehuda's (2010) idea of a ranked sample allows assessing whether reactions are stronger for firms with substandard pay practices. As the market reactions are the strongest for the non-disclosing companies around event 2, the release of the first draft of the amendment, it seems sensible to conduct a deeper examination for this subset. Table 8 shows the cumulative abnormal returns for the non-disclosing companies around event 2, calculated from the constant mean return model. Panel A ranks the sub sample firms according to the height of average total compensation per person, panel B conducts the ranking on base of the fix proportion of compensation. This way, the ranking picks up the previously used proxies for the prevalence of agency conflicts in compensation schemes. The results can partially confirm the findings. Although the difference of cumulative abnormal returns between the high and the low groups ("HML") is never significant, the cumulative abnormal returns tend to be larger for firms in group 1 in both panels, i.e. those firms who pay their executives more and use fix compensation to a

larger extent. The findings back up the conclusion that capital markets welcome the legislative change stronger for companies that indicate more room for improvement in compensation schemes. This inference is consistent with the findings of Lo (2003) who examines abnormal returns to be higher for companies who strongly lobby against increased disclosure requirements. Also in the German corporate landscape, capital markets consider themselves powerful enough to change bad pay practices.

Table 8: Market reactions for pay-ranked sample (event 2, only non-disclosing firms)

The table shows the cumulative abnormal returns for the non-disclosing companies around event 2 in percent. Returns are calculated as log returns, adjusted for dividends and stock splits. Abnormal returns are for each stock i calculated as difference between the actual return on day t and the prediction of the constant mean return model $R_{it} = \mu_i + \varepsilon_{it}$ with an estimation period of 220 trading days preceding one day before event 1. Cumulative abnormal returns are calculated as sum of the respective abnormal returns.

*** (**, *) denotes two-tailed significance at 1% (5%, 10%) level

Panel A: Cumulative abnormal returns, sample ranked by mean total compensation per person							
Time horizon		(0)		(0;1)		(-1;1)	
# days		1		2		3	
	Rank group	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
1 – high	N=22	0.20	0.5976	1.27**	2.3558	1.36**	2.6930
2	N=21	-0.08	-0.2550	0.38	0.7561	0.30	0.6690
3 – low	N=21	0.37	0.8500	1.05	1.3926	1.91*	1.7426
HML (Group 1 vs. 3)		-0.17	-0.3148	0.22	0.2389	-0.56	-0.4721

Panel B: Cumulative abnormal returns, sample ranked by fix pay proportion							
Time horizon		(0)		(0;1)		(-1;1)	
# days		1		2		3	
	Rank group	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
1 – high	N=22	0.37	1.0078	1.17*	1.7474	1.76*	1.7565
2	N=21	-0.07	-0.1957	0.79	1.5478	0.69	1.2761
3 – low	N=21	0.18	0.4795	0.75	1.2414	1.11*	2.0692
HML (Group 1 vs. 3)		0.20	0.3566	0.42	0.4586	0.65	0.5506

The weakness of the constant mean return model is that it captures all market-wide movements on the event days, hence the abnormal returns can as well be induced by any kind of confounding events occurring at the same day. A qualitative examination of media releases around event day 2, however, does not give rise to the expectation of confounding events. To back up the findings, Appendix 4 provides a simple mean adjusted return model, which calculates abnormal returns on base of the difference between actual returns and the return of

the DAX index, the index constituting of the 30 largest German stocks, on that respective day. As the sample includes 28 out of these 30 stocks, this alternative model should be treated with caution. The mean adjusted return model delivers significantly negative abnormal returns for event 1 which contradicts the initial findings. For event two, the alternative model displays positive abnormal returns and thus confirms the initial findings, although not significantly. To validate the findings and eliminate concerns about the use of the simple constant mean return model, the same analysis is conducted for the raw returns. Lo (2003) uses raw returns to back up his findings which suffer from the same problem of limited applicability of the market model. The outcomes for the raw returns are reported in Appendix 5 and confirm the initial findings. (Unreported) alternative estimation periods for the mean estimation do also not substantially alter the results of any model. Hence, the initial constant mean return model is expected to deliver fairly true results.

Overall, the results support the governance improvement hypothesis. Capital markets appreciate the legislative change and infer that firms will improve their compensation schemes in response to increasing disclosure requirements. Despite the late adoption of capital market actions in Germany, the market anticipates its power to be strong enough to change real compensation practices. If the firms themselves are aware that capital markets value information about executive compensation it can be expected that companies alter their compensation practices in response to the disclosure amendments. Whether abnormal returns are an incentive that is powerful enough to curb out suboptimal compensation schemes therefore has to be examined. The corresponding hypotheses will be tested in the next section.

7.3 How firms responded to the disclosure amendment

The first hypothesis estimated differences between subjects, i.e. examined whether there are differences between the disclosing and the non-disclosing group of firms. The third hypothesis in its explicit forms

H3a: Firms reduce the overall compensation amount in response to more detailed compensation disclosure requirements.

H3b: Firms increase the performance-based compensation proportion in response to more detailed compensation disclosure requirements.

addresses differences within subjects, i.e. the question whether the firms changed their compensation over time as well as differences within and between subjects, i.e. whether it was the actual amendment or other (unobserved) factors that potentially changed compensation practice. Before the hypotheses are tested it should be brought to mind that the multiple appearance of several firms over time in the sample (see Section 5.1) has to be considered in the analysis. The statistical consequences will be explained in the following subsection before the hypotheses are tested.

7.3.1 *Statistical considerations: unobserved effects and autocorrelation*

So far, statistical analyses have only been conducted for one year, namely 2005, thus any concerns about potential distortions from multiple observations of specific firms over time did not play a role. Wooldridge (2009) illustrates the distortions that affect the implemented regression models if a time component is added to the analyses. The need for statistical adoptions lies in the nature of the sample. As mentioned earlier, the repeated cross-sectional sampling approach results in an unbalanced panel. Like for standard panel data, the key assumption of ordinary least square regressions (OLS) that observations are independently distributed over time cannot be maintained. It is naïve to believe that unobserved company factors such as, for instance, activities in booming sectors will affect compensation for the respective executives in 2005, but not in 2006. Multivariate regressions are more powerful than simple regressions to circumvent the omission of important variables. But, as Wooldridge emphasizes, “there are always factors that, due to data limitations or ignorance, we will not be able to include”. He derives and exemplifies two models which are often used in practice to overcome the respective shortfalls. Based on Wooldridge’s line of argument, the *fixed effects model* (FE) and the *random effects model* (RE) shall now be briefly explained. The focus is on the introduction of the model, details on assumptions and derivations can be found in the original text.

Wooldridge introduces the “unobserved effects model” as follows:

$$y_{it} = \beta_0 + \beta_1 x_{it1} + \dots + \beta_k x_{itk} + \alpha_i + \varepsilon_{it} \quad (4)$$

y_{it} is the outcome for firm i in year t , and β_1 to β_k capture the k factors that are thought to influence firm i in year t . But as Wooldridge highlights, there are many factors that might be hard to control for. Alternatively to the approach of including more and more explanatory variables, unobserved factors can be considered to be of two types: factors that

are constant and factors that vary over time. The term α_i in the unobserved effects model captures all unobserved effects on the dependent variable y_{it} that are constant over time. α_i is also called fixed effect, unobserved heterogeneity or firm heterogeneity. ε_{it} in contrast captures all unobserved factors that change over time. These factors can be interpreted in the same way as the error terms in standard time series regressions.

The FE and the RE models offer two different approaches for estimating the parameters of the unobserved effects model. As Wooldridge points out, the key difference between the models is that the FE estimator allows for arbitrary correlation between α_i and the explanatory variables in any time period, while the RE estimator assumes the unobserved effects α_i to be uncorrelated with each explanatory variable. For the estimation, the FE model adapts the corresponding variable through subtraction of the time averages, the RE model through subtraction of a randomly distributed fraction of the time average. In the FE model, any variable that is constant over time therefore drops out because the estimator is based on time-demeaning of the variables. For unbalanced panel data, the consequence is that firms are dropped from the estimation if only one observation is available for them. The choice of one model above the other can be made on base of statistical tests. Wooldridge refers to Hausman (1978) who developed a test (commonly known as Hausman specification test) that compares both estimators to estimate whether the FE or the RE model is more applicable for an underlying data panel. As Wooldridge (2009) states, the basic idea of the test is to use the RE model unless the Hausman test rejects it. Practically, non-rejection means that FE and RE estimates are so close that it does not matter which test is used, or that the FE model is not able to estimate statistically significant fixed effects because the sample variation is too large.

Stata provides easy estimation functions for both FE and RE models as well as the Hausman test to assess their applicability. Furthermore, Stata's "cluster" command allows the standard errors to be correlated within a cluster, i.e. specifies that observations are independent across clusters but not necessarily within one cluster. Clustering the observations for each firm hence eliminates the problem of autocorrelation for firms that appear in the sample more than one time. Because the distinction between firms who disclose individual compensation figures and those who do not is of major importance to test the hypothesis, I will prefer the RE model if the Hausman specification test does not refute the hypothesis of equal applicability. The reason is that disclosure behavior is identified through dummy variables and in many cases does not change over the observation horizon. As stated earlier,

the standard FE model would drop these observations if they are not interacted with time dummies.

7.3.2 Higher transparency induces increases in variable and absolute pay

An initial test of H3a and H3b can be conducted by adding a time component to the previously established cross-sectional regression (1). Following the approach of Park, Nelson, and Huson (2001), a dummy variable is added to distinguish between the pre and the post amendment observations. The result is the following pooled cross-sectional/time series regression to test H3a:

$$\text{LogTOT}_{it} = \beta_0 + \beta_1 \text{POST}_t + \beta_2 \text{StoRet}_{it} + \beta_3 \text{LogMV}_{it} + \beta_4 \text{MV/BV}_{it} + \beta_5 \text{OWN}_{it} + \varepsilon_{it} \quad (5)$$

LogTOT_{it} is the logarithmic value of total compensation for company i in year t . POST_t is the dummy variable to distinguish between observations before and after the disclosure amendment. It equals 1 for the years 2006 and 2007 and 0 in 2005, the last year of voluntary disclosure. In case of systematically lower compensation in the two following years of mandatory disclosure, the coefficient on POST_t should be significantly negative. To control for confounding effects the previously identified additional explanatory variables, supplemented by a time index t , are included. Hence, StoRet_{it} is the respective logarithmic stock return over the previous year for company i in year t , adjusted for dividends and stock splits. LogMV_{it} is the respective logarithmic market value of equity at the year end and MV/BV_{it} the respective market-to-book ratio of equity. OWN_{it} is the percentage of closely held shares as reported in the Thomson One Banker database. The same explanatory variables were able to establish a well performing regression model to identify differences between the disclosing and non-disclosing firms in Section 7.1 for the year 2005, thus there is no reason to change them. Following the previous argumentation, the explanatory proxies for market-to-book ratio and ownership are added in a secondary regression model. Establishing the corresponding test for H3b only requires changing the dependent variable to estimate the influence on the performance based pay proportion. The regression equation to test H3b is:

$$\text{PROPperf}_{it} = \beta_0 + \beta_1 \text{POST}_t + \beta_2 \text{StoRet}_{it} + \beta_3 \text{LogMV}_{it} + \beta_4 \text{MV/BV}_{it} + \beta_5 \text{OWN}_{it} + \varepsilon_{it} \quad (6)$$

The only change to regression (5) is the dependent variable. PROPperf_{it} is the proportion of performance based compensation for company i in year t . Table 9 shows the

results of both regressions, estimated with the RE model and clustered by firm to obtain robust standard errors.

Table 9: Compensation before and after the amendment (random effects, cluster robust)

This table shows the regression results for the years 2005-2007. The dependent variable in regression (5), $LogTOT_{it}$, is the logarithmic value of the total compensation for firm i in year t . The dependent variable in regression (6), $PROPperf_{it}$, is the proportion of performance based pay for firm i in year t . $POST_t$ equals 1 for observations from the years 2006-2007, $StoRet_{it}$ is the logarithmic stock return over the previous year, adjusted for dividends and stock splits, for firm i in year t , $LogMV_{it}$ the respective logarithmic market value of equity at the year end, MV/BV_{it} the respective market-to-book ratio of equity and OWN_{it} is the respective percentage of closely held shares. Compensation data is hand collected from annual reports, all other values stem from the Thomson One Banker database. The parameters are estimated with Stata's random effects model and clustered by firms.

*** (**, *) denotes two-tailed significance at 1% (5%, 10%) level

Regression (5): $LogTOT_{it} = \beta_0 + \beta_1 POST_t + \beta_2 StoRet_{it} + \beta_3 LogMV_{it} + \beta_4 MV/BV_{it} + OWN_{it} + \varepsilon_{it}$						
	Intercept	POST	StoRet	LogMV	MV/BV	OWN
Model 1						
Coefficient	3.78***	0.57***	-0.01	0.52***		
(t-statistics)	(15.90)	(7.95)	(-0.10)	(16.23)		
(n=360 / Hausman p-value 0.2528 / overall R ² =0.5594)						
Model 2						
Coefficient	4.04***	0.53***	0.09	0.52***	-0.01	-0.01***
(t-statistics)	(14.25)	(7.07)	(0.67)	(15.44)	(-0.33)	(-3.52)
(n=304 / Hausman p-value 0.5999 / overall R ² =0.5712)						
Regression (6): $PROPperf_{it} = \beta_0 + \beta_1 POST_t + \beta_2 StoRet_{it} + \beta_3 LogMV_{it} + \beta_4 MV/BV_{it} + OWN_{it} + \varepsilon_{it}$						
	Intercept	POST	StoRet	LogMV	MV/BV	OWN
Model 1						
Coefficient	0.07	0.03*	0.07**	0.06***		
(t-statistics)	(1.16)	(1.85)	(2.16)	(8.61)		
(n=360 / Hausman p-value=0.2971 / overall R ² =0.2620)						
Model 2						
Coefficient	0.04	0.04**	0.07**	0.07***	-0.01	-0.00
(t-statistics)	(0.53)	(2.04)	(2.18)	(7.78)	(-1.22)	(-0.15)
(n=304 / Hausman p-value=0.5364 / overall R ² =0.2831)						

Before the results are interpreted it has to be mentioned that Hausman's specification test does not reject the RE model for any regression so the RE model is consequently applied.

The dummy variable POST is significantly positive at the 1% level in regression (5). This means that the absolute compensation amounts significantly increased after the introduction of the disclosure amendment. Economically, the difference is not too meaningful as the coefficient only ranges between 0.5 and 0.6, depending on the model. This means, that overall compensation amounts increased by about 0.5% to 0.6% after the amendment came into effect. Taking inflation into account, the increase is even less important. Although small, the increase in total compensation contradicts the prediction of H3a. Firms did not decrease but increase the salaries of their executives after the disclosure amendment came into effect. While stock returns are again not significantly influencing the total compensation amount, the strong influence of firm size significantly persists. Incorporating the market-to-book ratio and ownership structure as explanatory variables only slightly improves the overall R^2 from 55.94% to 57.12%. As the additional coefficients are moreover either not significant or very small, they can again be considered to be of minor importance.

The increase of total compensation after the additional disclosure rules contradicts H3a but is consistent with the findings from Section 7.1 which revealed that disclosing companies pay more than the non-disclosing companies. It seems that increasing transparency induces higher overall compensation amounts. Park, Nelson, and Huson (2001) find the same effect for the Canadian setting in 1993 and explain it with the easier assessment of peer salaries by the executives themselves. If disclosure is more detailed, managers can easily monitor how much competitors pay. Firms in turn have to increase compensation to have a stronger position in the intensified competition for labor. Further evidence of real reactions that opposed the objectives of additional legislation is given by Jensen, Murphy, and Wruck (2004) for the Omnibus Budget Reconciliation Act of 1993. The act defined fix compensation in excess of 1 million USD as unreasonable and prohibited its expense tax deduction. Firms' response was a significant increase in executive compensation (due to higher variable payments) although the populist objective was to curb out excessive pay levels. A pure look at the absolute pay levels in context of the governance improvement hypothesis and the disclosure cost hypothesis therefore points towards the disclosure cost hypothesis. If structural changes are neglected, shareholder value is reduced because of the slightly increased compensation levels in the years following the legislative change.

But the previous findings already indicated that absolute compensation levels cannot be treated with neglect of structural changes, i.e. the development of performance-based and fix pay proportions. H3b therefore focuses on the performance-based proportion of executive

compensation and is tested in regression (6). If firms decrease the fix, i.e. increase the performance-based proportion of salaries, the disclosure amendment would have actually improved incentive based remuneration. Regression (6) in Table 9 shows that the dummy for the post amendment period is indeed positive at the 10 and 5% significance level, depending on the model. The results hence confirm the underlying hypothesis H3b: firms increase the performance-based pay proportion in the years following the legislative change. Because a high share of performance-based pay is used as proxy for better compensation schemes, the outcome can from the agency point of view be seen positive. Shareholder associations' (such as DSW, 2004) and academics' (such as Jensen and Murphy, 1990) call for higher use of performance-based compensation seems to be answered by the firms. Beside the dummy coefficient, the coefficients on stock returns and market capitalization are also significantly positive (at the 5% and 1% level, respectively). This means that the performance-based pay proportion increases with company size and stock returns. While stock returns were not able to predict total pay differences they do have an influence on the pay components that rely on company performance. The inclusion of market-to-book ratio and ownership are again not of bigger importance nor are they significant.

Remembering Jensen and Murphy's (1990) statement that structural pay characteristics are more important to settle agency conflicts than absolute amounts, the higher performance dependency may outweigh the absolute increase, especially because the absolute increase was of minor height. A direct causal relationship between compensation developments and the legislative change, however, cannot be inferred, as will be explained in the next subsection.

7.3.3 Transparency supports compensation benchmarking – but only in transparent firms

The findings in Table 9 show that compensation was significantly higher and to a larger extent dependent on performance in the years following the disclosure amendment than in the year before. Deriving any causal relationships such as identifying the amendment as trigger for the compensation changes might be tempting but is not necessarily valid for a setting like this which is shown by Meyer (1995). The changes could as well result from variation over time or between firms. Due to the underlying structure of the research setting a difference-in-differences estimation is a more appropriate means to identify causal relationships, i.e. to figure out whether it was the actual disclosure amendment that led to

changes in compensation patterns or whether the changes could have occurred simply by chance.

Most academic studies apply this approach to panel data, but Imbens and Wooldridge (2007) explicitly state that the analysis can as well be conducted for cross-sectional samples. Meyer (1995) gives a straightforward explanation of the difference-in-differences approach which can be seen as extension of the “one group before and after design”, i.e. all firms before and after the legislative change, the test approach in Table 9. The reason for limited causal inferences from the previous regression lies in the necessary assumption that the observations are comparable over time in absence of the amendment. But in the research context the habit of disclosing or non-disclosing might not be totally random thus causal inferences have to be treated with caution.

A difference-in-differences analysis, sometimes also called “natural experiment”, uses an (unaffected) control group to analyze the consequences of the amendment on the “treated” group (Wooldridge, 2009). In the research context, those firms who already disclosed individual compensation details before the legislative change and continued to do so afterwards can be taken as control group because the disclosure amendment did not change their disclosure practices. This control group can then be contrasted with two groups – the group of companies who switched to voluntary disclosure when it became mandatory and the group of companies who used the opting out vote and still did not disclose individual values after the amendment. Drawbacks for the research setting stem from the lack of further control groups as the federal act affected all German companies as well as the method’s inherent problem that concurrent influences other than the disclosure amendment could have induced changes. Wooldridge (2009) shows how causal effects are identified by the difference-in-differences approach through the introduction of a time dummy variable, a group dummy variable and a term for their interaction.

Adapting the established regression approach to test H3a shows the equation that identifies changes in total compensation and causal relationships for the group of firms who always disclosed individual values and for the group of firms who switched to individual disclosure in 2006:

$$\begin{aligned} \text{LogTOT}_{it} = & \alpha_0 + \alpha_1 \text{POST}_t + \alpha_2 \text{SWITCH}_i + \beta_1 \text{POST}_t * \text{SWITCH}_i \\ & + \beta_2 \text{StoRet}_{it} + \beta_3 \text{LogMV}_{it} + \beta_4 \text{MV/BV}_{it} + \beta_5 \text{OWN}_{it} + \varepsilon_{it} \end{aligned} \quad (7)$$

As before, the dependent variable $LogTOT_{it}$ is the logarithmic value of total compensation of firm i in year t . Meyer (1995) illustrates for a comparable example how the dummy variables have to be interpreted. The dummy variable $POST_t$ equals 1 for observations after the legislative change came into effect, i.e. from the years 2006 and 2007 and equals 0 for the year 2005. It hence captures the way that both the always disclosing group and the switching group are influenced by time, e.g. macroeconomic conditions or regional growth trends. The dummy variable $SWITCH_i$ distinguishes between both groups, i.e. equals 1 if firm i is in the group of switchers and 0 if it always disclosed. It captures time-invariant differences between both groups. The interaction between the time and group dummies is captured by the term $POST_t * SWITCH_i$ which equals 1 if firm i is in the group of switchers and the observation stems from the post change period. Its coefficient therefore examines the effect the disclosure amendment had on the switching group after controlling for variation over time and between groups that would have existed also in absence of the amendment. The other explanatory variables $StoRet_{it}$, $LogMV_{it}$, MV/BV_{it} and OWN_{it} again extract influences of previous year stock returns, logarithmic equity market value, market-to-book ratio of equity and ownership structure for firm i in year t .

A simple change of the dependent variable is again sufficient to derive causal inferences on the performance-based proportion of executive compensation to more specifically test H3b:

$$PROPperf_{it} = \alpha_0 + \alpha_1 POST_t + \alpha_2 SWITCH_i + \beta_1 POST_t * SWITCH_i + \beta_2 StoRet_{it} + \beta_3 LogMV_{it} + \beta_4 MV/BV_{it} + \beta_5 OWN_{it} + \varepsilon_{it} \quad (8)$$

$PROperf_{it}$ is the performance-based pay proportion of executive compensation for firm i in year t . All other variables and their interpretation remain equal.

Obtaining valid statistics from the difference-in-differences analysis requires some further considerations. Donald and Lang (2007) emphasize the problematic of overstated t-statistics in models with a small number of groups, such as in the research context. The main reason for the overstatement are common group errors such as shocks that are correlated within the year/group cells. Stata's cluster command is able to solve this issue at least on the individual firm level. Anyway, there is no reason to expect such correlated shocks in a cross-sectional sample from one national market, so this concern can be neglected. Another problem that is often mentioned in related research is serial correlation over time (Bertrand, Duflo, and Mullainathan, 2004). To back up the findings, Bertrand, Duflo, and Mullainathan's

suggestion of averaging observations from the time series before and after the legislative change is applied alternatively to firm clustering, which results in the comparison of only two periods (pre and post change). The not reported results however do not question the findings. Table 10 shows the results of the regression for difference-in-differences between the control group of firms who always disclosed individual values and the group of companies who switched to disclosure in 2006.

Table 10: Compensation in disclosing and switching firms before and after the amendment (random effects, cluster robust)

The table shows the regression results for the years 2005-2007 for the firms who already disclosed individual compensation figures in 2005 and for firms who switched to voluntary disclosure in 2006. The dependent variable in regression (7) $LogTOT_{it}$ is the logarithmic value of the total compensation for firm i in year t . The dependent variable in regression (8) $PROPperf_{it}$ is the proportion of performance based pay for company i in year t . $POST_t$ equals 1 for observations from the years 2006-2007, $SWITCH_i$ equals 1 if firm i is in the switchers group, $StoRet_{it}$ is the respective logarithmic stock return over the previous year adjusted for dividends and stock splits for firm i in year t , $LogMV_{it}$ the respective logarithmic market value of equity at the year end and MV/BV_{it} the respective market-to-book ratio of equity. Compensation data is hand collected from annual reports, all other values stem from the Thomson One Banker database. The parameters are estimated with Stata's random effects model and clustered by firms.

*** (**, *) denotes two-tailed significance at 1% (5%, 10%) level

$$\text{Regression (7): } LogTOT_{it} = \alpha_0 + \alpha_1 POST_t + \alpha_2 SWITCH_i + \beta_1 POST_t * SWITCH_i + \beta_2 StoRet_{it} + \beta_3 LogMV_{it} + \beta_4 MV/BV_{it} + \beta_5 OWN_{it} + \varepsilon_{it}$$

	Intercept	POST	SWITCH	POST * SWITCH	StoRet	LogMV	MV/BV	OWN
Model 1								
Coefficient	4.64***	0.20***	-1.39***	1.33***	0.01	0.49***		
(t-statistics)	(21.70)	(3.21)	(-12.13)	(10.98)	(0.11)	(18.77)		
(n=279 / Hausman p-value=0.6230 / overall R ² =0.7366)								

Model 2								
Coefficient	4.63***	0.20***	-1.32***	1.22***	0.10	0.52***	-0.04	-0.01**
(t-statistics)	19.09	(2.78)	(-10.29)	(9.38)	(0.91)	(19.21)	-1.43	-2.34
(n=230 / Hausman p-value=0.9186 / overall R ² =0.7508)								

$$\text{Regression (8): } PROPperf_{it} = \alpha_0 + \alpha_1 POST_t + \alpha_2 SWITCH_i + \beta_1 POST_t * SWITCH_i + \beta_2 StoRet_{it} + \beta_3 LogMV_{it} + \beta_4 MV/BV_{it} + \beta_5 OWN_{it} + \varepsilon_{it}$$

	Intercept	POST	SWITCH	POST * SWITCH	StoRet	LogMV	MV/BV	OWN
Model 1								
Coefficient	0.09	0.05**	-0.02	-0.01	0.01	0.06***		
(t-statistics)	(1.52)	(1.96)	(-0.46)	(-0.19)	(0.44)	(8.39)		
(n=279 / Hausman p-value=0.8275 / overall R ² =0.2867)								
Model 2								
Coefficient	0.03	0.06**	0.01	-0.02	0.02	0.07***	-0.01	0.00
(t-statistics)	(0.44)	(2.17)	(0.18)	(-0.47)	(0.51)	(7.95)	(-0.83)	(0.06)
(n=230 / Hausman p-value=0.5553 / overall R ² =0.3337)								

The results from regression (7) show that significant differences exist between the periods before and after the amendment (exemplified by the coefficient on $POST_t$) as well as between the group of companies who always disclosed individual figures and the group of companies who switched to disclosure in 2006 (exemplified by the coefficient on $SWITCH_i$). Firms pay more in the years after the legislative change (which has been shown for all companies in Table 9 already) and if they have always disclosed individual figures. The variable of interest is the interaction term $POST_t * SWITCH_i$. It is significantly positive which means, that when firms switch to disclosure, they increase the total amount of executive compensation. The difference-in-differences approach leads to the conclusion that firms benchmark their compensation levels when they are forced to disclose individual figures as well. Increasing transparency raises the overall compensation level, pushed by firms who join the group of individually disclosing firms. The findings are consistent with Grinstein, Weinbaum, and Yehuda (2010) who find that increases in perquisite levels of about 190% in response to disclosure amendments mainly result from the firms who publish details for the first time. A threat to the validity arises from the assumption that the assignment to the group is switchers is purely random. If firms decide upon disclosure on base of compensation-related variables, then the assignment to the group of switchers might not be purely random, but endogenous. For the sake of completeness it has to be reported that the size proxy market value is still of significant importance (at the 1% level) while stock returns also in this setting seem to have no influence on the overall amount of compensation. With an overall R^2 of 73.66% the initial regression model performs well so that the extension to model 2 which includes insignificant market-to-book ratio influences and significant but very small influences from ownership does not add meaningful better insights.

For the performance-based proportion of compensation, the additional insights from a difference-in-difference analysis between the disclosing and the switching firms are less meaningful as can be seen from regression (8). A difference exists between the pre and post amendment disclosure regimes (as shown for all firms in Table 9) at a significance level of 10%, but neither a difference between the two groups nor the existence of the interaction term can be found.

The analyses are repeated for a secondary difference-in-differences analysis for the group of non-disclosing companies, i.e. those companies who never disclosed individual values. Again the group of companies who always disclosed individual values is taken as control group, thus only the dummy variable that distinguishes both groups has to be adapted.

Appendix 6 displays the results which do not show significant interaction terms. Deriving any inference on the reaction of non-disclosing companies towards the legislative change therefore seems to be unjustified. Those companies who did not disclose individual compensation details voluntarily and opted out the mandatory disclosure seem to not care about disclosure consequences at all. When there is a way to escape disclosure, there seems to be a way to also avoid the real effects of disclosure.

Overall, the real firm reactions are consistent with the earlier findings. Generally speaking, higher transparency favors the relative increase of performance-based payments but in turn induces higher absolute pay levels. These higher pay levels may express an increasing competition for labor, as inferred by Park, Nelson, and Huson (2001) as well as compensation for the higher risk of variable payments like Jensen and Murphy (1990) examine. From the shareholders' perspective, the interpretation of the results depends on the individual perspective. If one stands among the critics of pay levels that exceed the average worker's salary several folds, then the disclosure amendment did not reach its purpose. If, on the other hand, one accepts Jensen and Murphy's postulation that the structure of executive compensation is more important than the absolute amount, one may consider the disclosure amendment having reached its aim.

8 Conclusion

Modern economic research has processed Jensen and Meckling's (1976) theory of the firm in considerable amounts of research on how agency conflicts between managers and owners affect stock companies. A central question is how executives can be incentivized to manage a firm in the shareholders' best interest, i.e. increase shareholder value as much as possible. A broad range of related research has focused on compensation contracts as a means to overcome potential moral hazards or conflicts of interest.

Academics such as Jensen, Murphy, and Wruck (2004) or Gillenkirch (2008) regard compensation contracts as capable instruments to align the interest of managers and owners although it is frequently highlighted that firms cannot design their compensation contracts without constraints. Constraints arise from often public and political pressure (Jensen and Murphy, 1990) which is exemplified in frequently observable outrage about CEO compensation that exceeds average salaries several fold. The results are compensation schemes that are not truly related to performance although academics frequently call for exactly that relation. Alongside external pressure are questions of governance that can be detrimental to shareholder value (Brick, Palmon, and Wald, 2006). Similarly, concentrated ownership can be an important determinant of executive compensation (Elston and Goldberg, 2003).

Despite the consensus that compensation should to a considerable degree be dependent on firm performance, there is no agreement on how to measure performance. Lo (2003) favors accounting-based metrics to shelter executives from macroeconomic influences beyond their control. Gordon (2005) on the other hand points to the threat of incentives for aggressive accounting and recommends using market-based performance metrics. Regardless of the kind of performance assessment, academics are also not of one opinion about the ideal compensation instrument. Ikäheimo et al. (2004) prove that executives perceive stock options less valuable than their expensed values. The reason lies in portfolio and utility considerations. For similar reasons, Arnold and Gillenkirch (2007) prefer compensation with stock options to compensation with shares while Pirjetä, Ikäheimo, and Puttonen (2010) argue the other way around.

Related accounting and disclosure research addresses the question which information shareholders need to assess the effectiveness and efficiency of compensation contracts and how they react to the revelation of additional news. Lo (2003) finds positive capital market

reactions for increased disclosure rules which supports the view that higher transparency benefits corporate governance improvements. Grinstein, Weinbaum, and Yehuda (2010) similarly find that market response is powerful enough to curb out substandard compensation schemes. However, increased transparency may not always be in shareholders' best interest which is shown by Park, Nelson, and Huson (2001). They identify ratcheting up effects in salaries in response to more detailed compensation disclosure.

The previously quoted studies are some of the few examples that study how the disclosure of compensation affects shareholders and firms. The German legislator created the setting for a natural experiment that allows assessing the economic consequences of executive compensation disclosure. Up to 2005, the German Corporate Governance Code as a means of self-regulation recommended, but not obliged firms to disclose detailed compensation figures for each member of the executive board on an individual basis. By law, firms only had to publish the overall amounts for the entire management board. Only few firms voluntarily disclosed the recommended information which led shareholders (such as the association DSW, 2004) to call for binding disclosure rules. Against corporate resistance (DAI, 2005) politics reacted through the release of the Executive Compensation Disclosure Act (*Gesetz über die Offenlegung der Vorstandsvergütung, VorStOG*). From 2006 on, firms were obliged to disclose individual compensation figures, split by fixed, short-term variable and long-term incentive components.

Studying the economic consequences of the introduction of the Executive Compensation disclosure Act contributes to existing research in the following ways. First, this thesis examines a pure change of disclosure duties, an area that is still not fully understood (Lo, 2003). Second, it focuses on the German market, for which findings about executive compensation are still fairly scarce and less numerous than for the United States (Ernst, Rapp, and Wolff, 2009). The German market is of particular interest because German companies adopted capital market orientation much later than their Anglo-Saxon peers (Allen, 2005) and furthermore are governed by a two-tier system which might result in different findings. The third area of contribution is a deeper insight into the role of executive compensation to settle diverging interests between managers and owners in their principal-agent relationship.

Basis for the analysis is a hand-collected sample of the constituting firms of the German Stock indexes DAX, MDAX, SDAX and TecDAX for the years 2005-2007, which results in 428 firm years. Compensation data is hand-collected from the annual reports while other financial data stems from the Thomson One Banker database. Research questions are

categorized in three areas: revelation of agency conflicts, market reactions and real firm reactions. Because the academic literature is not of one opinion on the ideal compensation contract, two proxies are used to identify remuneration schemes that are in shareholders' best interest in context of agency theory: a high proportion of performance-based payments and comparatively low absolute compensation amounts.

The fact that some firms already disclosed individual compensation figures before it became mandatory allows contrasting these firms against those who waited for the legislative amendment. A comparison of means, a size-ranked paired sample test and OLS regressions show that voluntary disclosure is indeed a characteristic that distinguishes firms. Voluntary disclosing firms pay absolutely more, but rely less heavily on fix compensation. Referring to the proxies for good compensation schemes, the results contradict each other. A possible reconciliation stems from the risk aspect of compensation contracts. In contrast to fix payments, performance-based components vary and are hence riskier for the individual executive. To compensate for this risk, the respective absolute pay level has to be higher (Jensen and Murphy, 1990). Remembering Lo's (2003) and Beyer et al.'s (2010) prediction that firms will voluntarily disclose only information that is sufficiently favorable leads to the inference that firms regard the structure of compensation contracts, i.e. the ratio of performance-based and fix components, as more important than absolute pay levels. This inference is in line with Jensen and Murphy's (1990) postulation that "it's not how much you pay, but how".

Because shareholders such as the DSW (2004) heavily promoted the introduction of the disclosure amendment while executives lobbied against the act (DAI, 2005), it is of interest how the capital markets reacted towards the introduction of the increased transparency rules. An event study that focuses on abnormal stock returns around the key dates of the legislative process does not fully prove, but at least partially support the governance improvement hypothesis. Both a constant mean return model and a compensation-ranked return model (backed up with mean-adjusted and raw return models) indicate positive abnormal returns in response to the introduction of the disclosure amendment. The returns seem to be higher the worse a compensation scheme is, i.e. the larger the room for improvement is. The inference is that shareholders expect the disclosure amendment to improve compensation schemes in the shareholders' interest. Hence, previous findings (Lo, 2003; Grinstein, Weinbaum, and Yehuda, 2010) for the United States market are transferable to the German stock market. Also in the German two-tier system and despite the late adoption

of capital market orientation by German firms, the stock markets consider themselves to be powerful enough to influence governance practices.

Taking a look at the real firm reactions, i.e. the development of compensation schemes in response to the disclosure amendment allows assessing whether firms actually reacted in the shareholders' sense. Random effects regressions of the unbalanced panel data to account for unobserved firm effects (Wooldridge, 2009) show that firms significantly increase the performance-based pay proportions but also the absolute compensation amounts. A deeper examination by means of a difference-in-differences analysis can only show that firms increase absolute pay levels when they switch from non-disclosure to disclosure. Alternative to the reconciliation by means of the relation between compensation and risk, Park, Nelson, and Huson (2001) point to the increasing competition for labor as possible explanation. If compensation contracts become more transparent, not only shareholders but also the executives themselves are enabled to take a closer look at pay levels. The induced competition for labor in turn results in higher pay levels because firms want to gain a competitive stance in the hunt for talent.

Referring to the interpretation of the first two research questions derives a consistent conclusion. Higher transparency of executive compensation contracts benefits the improvement of compensation schemes in sense of the principal-agent theory in structural terms. If compensation contracts are easier for shareholders to assess and monitor, individual executives get a hard time to exploit firms through poorly incentivized working contracts. The consequence is an increase of performance-based payments that are much more powerful to align the interests of managers and owners than fix payments. In turn shareholders have to accept, that compensation schemes with a higher reliance on performance result in higher absolute pay levels. If the reason is an increased competition for labor or executives' compensation for the higher pay risk does not matter here – higher salaries reduce shareholder value. But if the improved incentives from the better pay-performance relation motivate managers to compensate the higher absolute expenses, then shareholders are truly better off. In this case, the economic consequences of the introduction of the Executive Compensation Disclosure Act would have reached shareholders' intention: the improvement of compensation practice and creation of additional shareholder value.

The interpretation directly links to areas of possible future research. The German corporate landscape still needs research on extended time horizons. Up to 2011, research has mainly focused on cross-sectional analyses over restricted time horizons. But the true

relationship between pay and performance can only be estimated for longer time horizons that include both boom and recession years. This need is particularly evident because of the identified poor link between pay and performance in corporate Germany. Shareholder value is only generated if the firm value increase on back of the higher performance-based payments outweighs the absolute pay increases. Beyond the presented findings, the introduction of the Executive Compensation Disclosure Act provides other opportunities for future research. Due to the two-tier structure of the German corporate governance system, it seems worthwhile to also examine the consequences the Act had for compensation of the supervisory board members. Furthermore, it is of interest how the disclosure amendment affected debt capital holders.

It has to be mentioned that the critical academic, like in any study of real research settings, has to be aware of the threat of over interpreting of the results. Focusing on executive compensation is a simplification and exemplification of agency conflicts within a firm. Although executive compensation may send fundamental signals about a company that far outweigh its actual costs (Yermack, 2006), working contracts at the top of the organizational hierarchy may not always be representative for other levels of the organizational structure.

Appendix

Appendix 1: Differences in ownership

The table shows the results of a two sample t-test with unequal variances for the proportion of closely held shares. According to the source, Thomson One Banker, the number of closely held shares includes shares held by officers, directors and their immediate family, shares held in trust, shares held by another operating corporation, shares held by pension/benefit plans and shares held by individuals who hold 5% or more of the outstanding shares.

*** (**, *) denotes two-tailed significance at 1% (5%, 10%) level

	2005		2006		2007	
	Disc.	Non-Disc.	Disc.	Non-Disc.	Disc.	Non-Disc.
Number of obs.	54	56	94	25	92	26
Percentage closely held shares	34.71	38.21	31.05	44.38	32.49	47.91
SD	24.61	23.30	21.08	21.25	20.99	22.36
Difference	3.50		13.33***		15.42***	

Appendix 2: Structural compensation differences between disclosing and non-disclosing companies in 2005

The table shows the mean compensation amounts per person. The values per person are for each company calculated as the sum of annualized payments for all executives, divided by the number of executives on the board. The distinction between *variable* and *lti* payments is made upon the declaration in the annual report.

Mean variable and LTI compensation (EURm) in 2005

Mean (SD)	Disclosing	Non-Disclosing
Number of firms	68	69
Variable pay per person	599.41 (661.08)	491.33 (531.75)
Variable proportion	0.4025 (0.1902)	0.4098 (0.2209)
LTI pay per person	331.37 (600.70)	134.87 (352.78)
LTI proportion	0.1555 (0.1888)	0.0764 (0.1310)

Wilcoxon-Mann-Whitney test for difference of variable proportion

	n	rank sum	expected		
Disclosing	68	4631	4692	adjusted variance	53,930.17
Non-Disclosing	69	4822	4761	z	0.263
combined	137	9453	9453	p-value	0.7928

Wilcoxon-Mann-Whitney test for difference of LTI proportion

	n	rank sum	expected		
Disclosing	68	5359	4692	adjusted variance	47,065.55
Non-Disclosing	69	4094	4761	z	-3.074
combined	137	9453	9453	p-value	0.0021

Appendix 3: Alternative performance proxies and split regressions

The table shows the cross-sectional regression results for the year 2005, last trading day values. $Dependent_i$ is the dependent compensation variable (specified in each model's header) for company i in 2005, D_i a dummy variable that equals 1 if company i is disclosing individual values, $PerformanyProxy_i$ is the respective performance proxy (specified in each model's header), $LogMV_i$ is the logarithmic market value of equity, MV/BV_i the respective market-to-book ratio of equity and OWN_i the percentage of closely held shares. Compensation data is hand collected from annual reports, all other values stem from the Thomson One Banker database.

*** (**, *) denotes two-tailed significance at 1% (5%, 10%) level

Regression (1) $Dependent_i = \beta_0 + \beta_1 D_i + \beta_2 PerformanceProxy_i + \beta_3 LogMV_i + \varepsilon_i$

	Intercept	D	PerformanceProxy	LogMV
Alternative 1: Dependent = log total compensation, PerformanceProxy = non-lagged stock returns				
Coefficient	3.52***	1.32***	0.03	0.46***
(t-statistics)	(15.27)	(12.19)	(0.19)	(14.04)
	(n=125 / adj. R ² =0.7915 / BIC=236.19)			
Alternative 2: Dependent = log total compensation, PerformanceProxy = net income				
Coefficient	3.53***	1.32***	0.01	0.46***
(t-statistics)	(11.22)	(12.19)	(0.05)	(9.85)
	(n=125 / adj. R ² =0.7914 / BIC=236.23)			
Alternative 3: Dependent = log total compensation, PerformanceProxy = lagged stock returns, excluding financials				
Coefficient	3.64***	1.33***	0.13	0.45***
(t-statistics)	(14.90)	(11.67)	(0.09)	(13.37)
	(n=108 / adj. R ² =0.8052 / BIC=194.01)			
Alternative 3: Dependent = log fix compensation, PerformanceProxy = lagged stock returns				
Coefficient	4.00***	1.30***	-0.13	0.28***
(t-statistics)	(18.64)	(13.46)	(-1.01)	(9.91)
	(n=125 / adj. R ² =0.7524 / BIC=207.43)			
Log perf pay as dependent, previous stock returns				
Coefficient	2.91***	1.67***	0.84	0.62***
(t-statistics)	(8.75)	(9.40)	(2.70)	(9.27)
	(n=125 / adj. R ² =0.7522 / BIC=297.15)			

Appendix 4: Market reactions on the disclosure amendments (mean adjusted return model)

The table shows the cumulative abnormal returns around the event days in percent. Returns are calculated as log returns, adjusted for dividends and stock splits. Abnormal returns are for each stock i calculated as difference between the actual return on day t and the return of the large cap stock index DAX on that day. Cumulative abnormal returns are calculated as sum of the respective abnormal returns.

*** (**, *) denotes two-tailed significance at 1% (5%, 10%) level

Panel A: Cumulative abnormal returns (mean adjusted return model), full sample in percent							
Time horizon	(0)		(0;1)		(-1;1)		
# days	1		2		3		
(n=126)	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic	
Event 1	-0,38**	-2,1990	-0,83***	-3,4962	-0,26	-0,8538	
Event 2	0,26*	1,6646	0,38	1,4519	0,67**	2,3692	
Event 3	-0,61**	-2,5430	-0,47	-1,6057	-0,31	-1,0134	
All three events (3/6/9 days)	-0,74**	-2,1808	-0,92**	-2,1894	0,11	0,2018	

Panel B: Cumulative abnormal returns (mean adjusted return model), group specific in percent							
		Disclosing (n=62)		Non-Disclosing (n=64)		Difference	
	# Days	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Event 1	2	-1,13***	-3,7220	-0,53	-1,4849	-0,60	-1,2600
Event 2	2	0,28	0,7087	0,47	1,3800	-0,19	-0,3650
Event 3	2	-0,57	-1,0480	-0,38	-1,5271	-0,19	-0,3209
All 3 events	6	-1,41**	-2,0688	-0,44	-0,8917	-0,97	1,1641

Appendix 5: Market reactions on the disclosure amendments (raw returns)

The table shows the cumulative absolute returns around the event days in percent. Returns are calculated as log returns, adjusted for dividends and stock splits. Cumulative raw returns are calculated as sum of the respective raw returns.

*** (**, *) denotes two-tailed significance at 1% (5%, 10%) level

Panel A: Cumulative raw returns, full sample in percent							
Time horizon	(0)		(0;1)		(-1;1)		
# days	1		2		3		
(n=126)	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic	
Event 1	0,14	0,8064	-0,15	-0,6203	-0,45	-1,4820	
Event 2	0,29*	1,8485	0,98***	3,7363	1,17***	4,1250	
Event 3	0,04	0,2087	0,34	1,1517	0,27	1,0306	
All three events (3/6/9 days)	0,48	1,4118	1,17*	2,7805	0,99**	2,0320	

Panel B: Cumulative raw returns, group specific in percent							
		Disclosing (n=62)		Non-Disclosing (n=64)		Difference	
	# Days	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Event 1	2	-0,45	-1,4796	0,15	0,4055	-0,56	-1,2600
Event 2	2	0,88**	2,2082	1,07***	3,1193	-0,19	-0,3650
Event 3	2	0,24	0,4470	0,43*	1,7403	-0,19	-0,3209
All 3 events	6	0,67	0,9817	1,65***	3,3480	0,97	1,1641

Appendix 6: Compensation in disclosing and non-disclosing firms before and after the amendment (random effects, cluster robust)

The table shows the regression results for the years 2005-2007 for the firms who already disclosed individual compensation figures in 2005 and for firms who disclosed individually. The dependent variable in regression (A1) $LogTOT_{it}$ is the logarithmic value of the total compensation for firm i in year t . The dependent variable in regression (A2) $PROPperf_{it}$ is the proportion of performance based pay for company i in year t . $POST_t$ equals 1 for observations from the years 2006-2007, $NODISC_i$ equals 1 if firm i is in the non-disclosing group, $StoRet_{it}$ is the respective logarithmic stock return over the previous year adjusted for dividends and stock splits for firm i in year t , $LogMV_{it}$ the respective logarithmic market value of equity at the year end and MV/BV_{it} the respective market-to-book ratio of equity. Compensation data is hand collected from annual reports, all other values stem from the Thomson One Banker database. The parameters are estimated with Stata's random effects model and clustered by firms.

*** (**, *) denotes two-tailed significance at 1% (5%, 10%) level

$$\text{Regression (A1)} \quad LogTOT_{it} = \alpha_0 + \alpha_1 POST_t + \alpha_2 NODISC_i + \beta_1 POST_t * NODISC_i \\ + \beta_2 StoRet_{it} + \beta_3 LogMV_{it} + \beta_4 MV/BV_{it} + \beta_5 OWN_{it} + \varepsilon_{it}$$

	Intercept	POST	NODISC	POST * NODISC	StoRet	LogMV	MV/BV	OWN
Model 1								
Coefficient	4.92***	0.24***	-1.19***	-0.12	-0.04	0.45***		
(t-statistics)	(18.69)	(3.70)	(-8.69)	(-0.76)	(-0.35)	(13.83)		
(n=279 / Hausman p-value=0.0467 / overall R ² =0.7248)								

Model 2								
Coefficient	5.07***	0.24***	-1.19***	-0.15	-0.02	0.46***	-0.03	-0.00*
(t-statistics)	(17.02)	(3.34)	(-8.30)	(-0.88)	(-0.15)	(12.57)	(-1.19)	(-1.80)
(n=239 / Hausman p-value=0.1337 / overall R ² =0.7036)								

$$\text{Regression (A2)} \quad PROPperf_{it} = \alpha_0 + \alpha_1 POST_t + \alpha_2 NODISC_i + \beta_1 POST_t * NODISC_i \\ + \beta_2 StoRet_{it} + \beta_3 LogMV_{it} + \beta_4 MV/BV_{it} + \beta_5 OWN_{it} + \varepsilon_{it}$$

	Intercept	POST	NODISC	POST * NODISC	StoRet	LogMV	MV/BV	OWN
Model 1								
Coefficient	0.12*	0.05*	-0.02	-0.06	0.09**	0.05***		
(t-statistics)	(1.65)	(1.87)	(-0.09)	(-1.27)	(2.40)	(6.13)		
(n=279 / Hausman p-value=0.3827 / overall R ² =0.2274)								
Model 2								
Coefficient	0.08	0.06**	0.02	-0.07	0.10**	0.06***	-0.01	0.00
(t-statistics)	(0.90)	(2.10)	(0.36)	(-1.38)	(2.41)	(5.55)	(-0.94)	(0.90)
(n=239 / Hausman p-value=0.5315 / overall R ² =0.2279)								

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My M.Sc. studies at Aalto University School of Economics, Finland have been conducted as part of the mutual Double Degree Program with the University of Cologne, Germany. For the mutual acceptance of this thesis the inclusion of the German plagiarism statement as well as my personal curriculum vitae is compulsory.

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Cologne, 25th August 2011

Place, Date

A handwritten signature in black ink, appearing to read 'M. Zapp', written over a horizontal line.

Signature

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Professional Experience

Aug 09 – Jul 10	HSBC Trinkaus, Duesseldorf, Germany Working student in equity research for German small- and mid-caps <ul style="list-style-type: none">▪ Support of analysts in daily research, correspondence, modeling and publishing▪ Focus on DCF- and peer-group valuations	12 Months
Jan 09 – Feb 09	Procter & Gamble, Geneva, Switzerland Internship in the Prestige Products division <ul style="list-style-type: none">▪ Project on the analysis and improvement of the spending structure in the Luxury and Premium Fine Fragrances unit in Western Europe	2 Months
Jul 07 – Aug 07	HSBC Trinkaus, Duesseldorf, Germany Internship in equity research for German small- and mid-caps	5 Months
Jun 06 – Aug 06	and <ul style="list-style-type: none">▪ Supported the release of a number of research reports▪ Researched general industry information on the renewable energy and healthcare sectors▪ Analyzed financial statements and publications▪ Calculated appraised share prices using DCF and peer-group valuations	
Aug 04 – Jun 06	HSBC Trinkaus, Duesseldorf, Germany Apprenticeship, Qualified Bank Officer degree <ul style="list-style-type: none">▪ Cycled through all core fields of the bank▪ Passed the IHK-exam (chamber of commerce and industry) with grade 'sehr gut' (best possible achievement)	22 Months
May 04 – Jun 04	Aengevelt Immobilien, Duesseldorf, Germany Internship in real estate investment <ul style="list-style-type: none">▪ Evaluated of object, customer and market data▪ Accompanied real estate deals from acquisition to sale▪ Visited property with potential customers	2 Months
Jul 03 – Apr 04	Fernmeldebataillon 820, Duesseldorf, Germany Extended mandatory military service, corps of signals <ul style="list-style-type: none">▪ Basic training▪ Served as radio operator▪ Attended several military training courses	10 Months
Apr 01 – Jun 03	HSBC Trinkaus, Duesseldorf, Germany Temporary job in human resources department <ul style="list-style-type: none">▪ Supported the human resources controlling	27 Months

Computer Skills

Microsoft Office	▪ Working knowledge of advanced functions in MS Excel, MS Word, MS Powerpoint
Bloomberg, Factset	▪ Working knowledge of basic research functions
Lotus Notes	▪ Working knowledge of basic functions

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Academic History

- Double Master Program University of Cologne / Aalto University School of Economics**
Expected graduation date: Summer 2011
Master's thesis on *The Economic Consequences of Executive Compensation Disclosure: Evidence from Germany*
- Since Aug 10 Aalto University School of Economics, Finland** (formerly Helsinki School of Economics)
Studies of Business Administration, M.Sc. Class of 2011
- Major: Finance
 - GPA: 4.7 (max 5.0)
 -
- Oct 09 – Jul 10 University of Cologne, Germany**
Studies of Business Administration, M.Sc. Class of 2011
- Major: Finance
 - GPA: 1.5 (top 10%, Dean's Award, max. 1.0)
-
- Sep 06 – Jun 09 University of Mannheim, Germany**
Studies of Business Administration, B.Sc. Class of 2009
- GPA 1.7 (well above average, max 1.0)
 - Bachelor thesis on *Constraints of Socially Responsible Investments (SRI) on the Risk-Return Profile*, grade: 1.0
 - Tutor in the *Finance 1* course for 2nd semester students
 - GMAT score: 700 (max 800)
- Jul 08 – Nov 08 University of the Sunshine Coast, Queensland, Australia**
Study abroad
- GPA: 1.3 (well above average, max 1.0)
 - Full-semester workload of graded business administration courses
- Aug 94 – Jun 03 Goethe-Gymnasium, Duesseldorf, Germany**
- Abitur (German A-levels equivalent /High School Diploma) with grade 1.1 (top 3%, max 1.0)
 - Bilingual German-English education until 11th grade
 - Participated in student exchanges with partner schools in France and the United States

Languages

- German** ▪ Native speaker
- English** ▪ Excellent command of written and spoken English
- TOEFL internet-based score: 113 (max 120) in March 2009

Miscellaneous

- Since Dec 06 Panzergrenadierbataillon 212, Augustdorf, Germany**
Voluntary reserve officer training in the German Army, corps of armored infantry
- Successfully completed all theoretical components
 - Current rank Ensign (Faehnrich d.R.)
- Other Interests**
- Sports, especially track and skiing
 - International capital markets