Essays on Empirical Corporate Governance

Inauguraldissertation

zur Erlangung des akademischen Grades

eines Doktors der Wirtschaftswissenschaften

der Universität Mannheim

vorgelegt von

Bernd Albrecht

Mannheim

Dekan: Dr. Jürgen M. Schneider

Referent: Professor Ernst Maug, Ph.D.

Korreferent: Professor Dr. Holger Daske

Tag der mündlichen Prüfung: 16.06.2015

Contents

List of Figures

List of Tables

Chapter I

Introduction

The recent financial crisis has put executive compensation on the radar screen of the general public. Public commentators and politicians speculate that executive compensation fostered excess risk-taking and myopic behavior, and was therefore a main culprit of the financial meltdown. Concerns about flaws in compensation designs are not new. They typically reoccur during economic downturns when seemingly high payoffs to executives outrage the public. In response to public outrage, governments passed many reforms of executive compensation over the last decades.

The public debate inspired the academic community. In a highly influential book, Bebchuk and Fried (2004) argue that managerial power can better explain observed compensation patterns than the "traditional" optimal contracting paradigm. Their managerial power view is quiet timely because it theoretically justifies regulations of executive compensation and reforms of corporate governance more generally. Bebchuk and Fried's (2004) claims caused hot debates in the literature on whether executive compensation is efficient or not.

While Bebchuk and Fried (2004) give an academic voice to proponents of regulatory intervention, there is almost no evidence whether regulations of executive compensation yield more efficient compensation designs and increase shareholder value. In particular, there is no evidence on the effect of stricter disclosure rules for executive compensation. Pay disclosures are at the heart of regulatory intervention because they facilitate public outrage and, hence, trigger ever more reforms and ever more disclosure requirements.

The current debate and recent regulations of executive compensation focus on bonus payments and equity incentives. However, executives receive substantial amounts in the form of pensions and deferred compensation. These compensation components provide debt-like incentives because they are unsecured claims in the event of bankruptcy. The debate therefore overlooks an important part of compensation practice for the assessment of existing incentive structures.

This dissertation contributes to the debate on the costs and benefits of disclosure regulation and to the debate on incentives from executive compensation. In Chapter II, I analyze how stock prices react to the announcement of mandatory increases in pay disclosures. I find that stock prices react positively. This result supports prevalent calls for tighter disclosure requirements. However, the stock price reaction also depends on the quality of corporate governance. Positive abnormal returns are decreasing in shareholdings of institutional investors and become negative for large institutional ownership. This result supports skeptical views about "one size fits all" regulations.

In Chapter III, I analyze differences in performance and corporate policies between firms that do and do not voluntarily disclose the costs of pensions for their incumbent executives. I find that shareholders value firms that hide pension costs at a discount. These firms have lower operating performance, pay their employees higher wages, and make worse acquisitions. I find evidence that hidden pensions costs are associated with weak boards and inefficient compensation designs. Stock prices of firms that hide pension costs react positively to the announcement of a corporate governance reform. The provisions of this reform address concerns about ineffective boards and inefficient compensation designs. These results support the view that stealth compensation indicates agency problems.

In Chapter IV, I analyze how executive pensions and compensation deferrals are related to corporate risk-taking. I find that firms pursue more conservative investment and financing

policies when their CEOs have accumulated more wealth in the form of pensions and deferrals. These results should be of interest for policy makers who seek to reduce risk-taking incentives in executive compensation.

Chapter II

Is Disclosure of Executive Compensation Good or Bad? Evidence from a Natural Experiment

1 Introduction

Calls for reform of executive compensation typically reoccur during economic downturns when concerns about income inequality or seemingly high payouts for low perceived performance spark public outrage. In response to such calls, policy makers routinely expand disclosure requirements (see Conyon et al. (2011)). Despite their widespread use as a regulatory tool, the economic consequences of pay disclosures are not clear. In this paper, I analyze stock price reactions to the announcement of mandatory increases in pay disclosures. The main result is that mandatory pay disclosures are a two-edged sword: On average, stock prices react positively. However, the stock price reaction also depends on the quality of corporate governance. Abnormal returns are decreasing in shareholdings of institutional investors and become negative for large institutional shareholdings.

The results bring together the contradicting views about the effect of pay disclosures. The literature suggests that disclosures can mitigate inefficiencies in compensation designs or distort efficient compensation designs. Under the managerial power view, disclosures are good. They allow outsiders to target inefficient compensation, which a powerful CEO designs in her own best interest. Disclosures increase shareholder value because the board agrees on more efficient compensation to minimize reputational costs from outrage (see

Bebchuk and Fried (2004)). Under the optimal contracting view, mandatory disclosures are bad. They allow outsiders to target efficient compensation, which the board agrees on in the best interest of shareholders. Disclosures destroy shareholder value because political or social forces pressure the board to reduce pay-performance sensitivities (see Jensen and Murphy (1990)).[1]

Since pay disclosures facilitate public outrage, they also impact the governance environment more generally when public outrage triggers other governance reforms. These reforms include direct regulations of executive compensation, such as accounting and tax regulations, and indirect regulations that affect the interplay between shareholders and the board or between non-executive and executive directors. These regulations may themselves have unintended consequences.[2]

While the costs and benefits of mandatory disclosures are well understood on theoretical grounds, an empirical analysis of the net effect is challenging for several reasons. First, Jensen and Murphy (1990) point out that it is difficult to identify the effect of any political costs since they are not directly measurable and disclosure requirements exist in the US since the 1930s. Second, corporate governance reforms commonly apply to all firms in the market. Therefore, it is challenging to find a control group of comparable firms, for which the reform does not apply (see, e.g., Leuz (2007) and Hochberg, Sapienza, and Vissing-Jorgensen (2009)). Third, new disclosure requirements are often part of broader reforms.

[1] A third hypothesis about the impact of mandatory disclosures has become known as the Lake Wobegon Effect: Companies pay CEOs above average to signal that their CEOs are above average. Thus, disclosures may contribute to an ever ratcheting-up of executive compensation. See Hayes and Schaefer (2009) for a model. I assume that the costs from an inefficient incentive alignment far exceed the costs from increased pay levels (see also Bebchuk and Fried (2004)). Therefore, I attribute any wealth changes mainly to expected distortions of pay-performance sensitivities rather than being present value effects of expected increases in pay levels.

[2] For single events that triggered public outrage and, in turn, pay regulations in several countries, see Conyon et al. (2011). See Murphy (2013) and for a general overview of pay regulation and their consequences for pay arrangements. See Aboody and Kasznik (2009) for the impact of accounting and tax regulations. Yermack (2010) surveys the literature about voting rights. For the requirement of board independence, see the contradicting evidence of Chhaochharia and Grinstein (2009) and Guthrie, Sokolowsky, and Wan (2012).

Therefore, it is challenging to disentangle the effect of mandatory pay disclosures from the effect of concurrent reforms.

Probably for these reasons, prior research on the subject is rare. Weisbach (2007) provides a critical review of Bebchuk and Fried's (2004) claims and their reform proposals, such as more transparent pay disclosures. He concludes that it is an open question whether such reforms result in an equilibrium that is closer to the efficient contracting view. In a similar vein, Dew-Becker (2009) surveys the literature on the impact of pay regulation in the US. He concludes that there is little direct evidence on the impact of mandatory disclosures and highlights the importance to study the experience in other countries.

I exploit a regulatory change in Germany to analyze the net effect of mandatory pay disclosures. The regulatory environment in Germany provides a compelling set-up for dealing with all the challenges in such an analysis. First, disclosure rules did not emerge gradually. Norms of privacy and confidentiality, which dominated the debate about pay disclosures in the US until the 1930s (see Wells (2009)), were the dominating forces for disclosure legislation in Germany until 2005. Firms had to disclose total compensation for all executives jointly, and they could hide compensation completely if the aggregated sum allowed any inference about the compensation of individual executives. In the first half of 2005, firms faced a sweeping change in disclosure legislation when the German parliament passed a law on the "Disclosure of management board compensation" (henceforth "the Law"). Since 2006, firms have to disclose the amount and composition of compensation for each executive separately. They can stick to the old rules for a period of five years if shareholders vote against the new rules with a three-quarters majority at the annual general meeting. After five years, a new shareholder vote is required.

Second, the Law did not affect all firms equally. Some firms were not affected because they voluntarily disclosed pay for individual executives in line with the new rules already

before enactment of the Law. These early adopters form the control group. Ex ante, the Law principally affected all other firms that hid pay for individual executives. Ex-post, however, the Law affected only the subsample of firms that finally switched from hidden pay before Law enactment to observable pay afterwards. The Law did not affect the remaining firms that could stick to hidden pay because their shareholders voted against the new rules.

Third, the Law is a compelling instrument to identify any efficiency gains or losses from higher disclosure requirements. The Law does only require more disclosures of executive compensation. It does not address any other governance characteristics.

I analyze the effect of the Law on shareholder value for a sample of 312 German firms that complied with the highest transparency standards of the Frankfurt Stock Exchange during the year before Law enactment. The analysis has two parts. In the first part, I perform an event study to analyze the average effect. Using a difference-in-differences approach and controlling for common risk factors, I find that firms that hide pay of individual executives before Law enactment have abnormal returns of 1.51% on event days. Event days are days when shareholders receive news about the Law. This finding supports the managerial power view that mandatory pay disclosures are good.[3]

In the second part, I run a cross-sectional regression to analyze heterogeneity in the effect of the Law. If positive abnormal returns reflect efficiency gains from the Law, firms that finally switch from hidden pay before Law enactment to observable pay afterwards should have a stronger stock price reaction than firms that stick to hidden pay.[4] Furthermore, I

[3] This interpretation assumes that shareholders did not price in wrong expectations about the content of the Law before the events. Otherwise, a positive stock price reaction may suggest that the new disclosure rules are bad, but investors are happy about the rules being too lax. Similarly, negative abnormal returns may suggest that the new disclosure rules are good, but investors are unhappy about the rules being too lax. See Zhang (2007) and Chhaochharia and Grinstein (2007) for a similar argument.

[4] Since this analysis uses ex-post information about the disclosure policy, the regression is likely to suffer from an omitted variable bias and, hence, does not estimate causal effects. Shareholders must be able to

hypothesize that abnormal returns are decreasing in institutional ownership. Prior research suggests that compensation conforms to the optimal contracting view in firms with large blockholders and institutional investors (see, e.g., Bertrand and Mullainathan (2000), Hartzell and Starks (2003), Kim and Lu (2011)). I find that only firms that switch from hidden to observable pay have significantly positive abnormal returns. For these firms, abnormal returns of 2.26% are decreasing in institutional ownership. This finding is consistent with the managerial power view. Efficiency gains from mandatory pay disclosures decrease in institutional ownership because institutional investors decrease the power of the CEO in the bargaining process (see also Bebchuk and Fried (2004)). For institutional ownership of around 30%, abnormal returns become negative. This finding is consistent with the optimal contracting view. Pay disclosures can have unintended consequences and exaggerate agency problems in well-governed firms. Negative abnormal returns indicate that large institutional investors are able to balance off the power of the CEO. However, they are not able to balance off political or social forces that enter the bargaining table once compensation is disclosed.

This paper contributes to two strands of literature. The first strand exploits an exogenous shock to existing corporate governance structures to analyze the relationship between corporate governance and shareholder value. In this stream of research, my paper is close to studies that analyze announcement effects to reforms that partly address pay disclosures. Lo (2003) analyzes the effect of SEC's mandated increase in pay disclosures in 1992. In an event window of eight months, he finds a positive stock price reaction of 6% for firms that lobby more against the reform relative to firms that did not lobby. Lo carefully notes that other events could contribute to these results. Indeed, the SEC reform combines disclosure rules with reforms of the proxy access more generally. Most notably, the SEC allowed

forecast which companies do and do not switch to observable pay. The forecast may depend on other variables that impact stock returns.

shareholders to vote on non-binding proposals about CEO pay.[5] Greenestone, Oyer, and Vissing-Jorgensen (2006) study the Securities Acts Amendments from 1964 that extended disclosure requirements to firms traded over the counter. For firms that were most affected, they find positive abnormal returns up to 22.1 percent during the period until law enactment. The disclosure requirements did not only include executive compensation. Firms were also required to disclose balance sheets, income statements or insider trades.[6] Thus, both studies study broader reforms and do not identify the causal effect of mandatory increases in pay disclosures.[7]

The second strand of literature analyzes whether compensation conforms to the managerial power or optimal contracting view. In this stream of research, some studies relate the amount and composition of compensation to the governance environment of the company. However, the efficiency implications from such variations are not clear. My findings implicitly highlight the complementary nature of the managerial power and optimal contracting view and give an estimate for expected efficiency gains and losses resulting from mandatory increases in pay disclosures.[8]

The paper proceeds as follows: In Section 2, I present the content of the Law and identify events and confounding events along the political process up to enactment of the Law. Section 3 develops hypotheses about the expected effect of the Law on shareholder value.

[5] Two unpublished papers, Johnson, Nelson, and Shackell (2001) and Prevost and Wagster (1999), also study the wealth effects of this reform. In contrast to Lo (2003), these studies find a negative impact on shareholder value. Both studies include more events and use other, notably smaller, samples.

[6] Ferrell (2007) also finds a positive stock price reaction. Battalio, Hatch, and Loughran (2011) do not find a significant reaction. They argue that most OTC companies voluntarily provided financial information to investors before the Amendments. Bushee and Leuz (2005) find a negative stock price reaction to a regulatory change in 1999 that companies from the OTC bulletin board have to disclose financial information. The 1964 Securities Act Amendments did not apply to these smaller companies.

[7] There are several other studies about the value effect of legislative intervention. Larcker, Ormazabal, and Taylor (2011) study the announcement effects of pay-related proposals between 2007 and 2009. For announcement effects of the Say-on-Pay Bill in the US, see Cai and Walkling (2011). For announcement effects of the Sarbanes-Oxley Act, see, among others, Li, Pincus, and Rego (2008), Jain and Rezaee (2006), Chhaochharia and Grinstein (2007), and Iliev (2010).

[8] See Bebchuk and Fried (2004) for a discussion of many controversial pay practices. See Core, Guay, and Thomas (2005) for a critique of Bebchuk and Fried's (2004) claims.

Section 4 describes the sample and data. I report empirical results for the average effect in Section 5, and for heterogeneity in the effect in Section 6. Section 7 concludes.

2 Institutional background

Germany has a two-tier board system. Executive directors are members of the management board and manage the day-to-day operations. Non-executive directors are members of the supervisory board. The supervisory board advises and monitors the management board and is accountable for executive compensation. German legislation requires that 50% of all members of the supervisory board are worker representatives when the company has more than 2000 employees. For firms with more than 500 and less than 2000 employees, one third of the board seats are reserved for worker representatives. Some of the worker representatives must be union representatives. The chairman of the supervisory board is a shareholder representative. Her vote is pivotal in case of a tie (see Dittmann, Maug, and Schneider (2010) for further details).

Until 2005, German disclosure rules allowed secretive boards to hide details of executive compensation. In summer 2005, the German parliament passed the Law on the "Disclosure of management board compensation", which greatly increased the disclosure requirements. The Law provides all ingredients of an experimental setting. The disclosure requirements assign firms to treatment and control groups. Political milestones until Law enactment represent events, which define the treatment periods.[9]

[9] The single event that triggered public outrage and ultimately enactment of the Law relates to the hostile takeover of Mannesmann by Vodafone in 2000. Several members of the management and supervisory board of Mannesmann got accused of embezzlement for approving bonus and severance payments worth € 60 million to Mannesmann's executives. While commentators criticized the amount of payments, it was a snapshot in court that fueled public outrage. Joseph Ackermann, former CEO of Deutsche Bank and member of Mannesmann's supervisory board, showed the victory sign while waiting for judicial proceedings. The Mannesmann case caused hot debates about pay practice in German board rooms in general.

2.1 Old versus new disclosure rules

Table II.1 contrasts the old disclosure rules before Law enactment with the new rules introduced by the Law. The Law addresses pay disclosures along five dimensions:

(1) How to disclose: Under the old rules, firms had to disclose total compensation for all executives jointly. If such disclosures revealed the compensation of individual executives, firms did not have to disclose executive compensation at all. However, the German Corporate Governance Code already called for more transparency.[10] The Code recommended disclosing fixed compensation, short-term incentives, and long-term incentives for individual executives. The Law made this recommendation legally binding, with one exception: Firms do not have to follow the new rules if shareholders vote against them with a three-quarters majority at the annual meeting. Executives who hold shares are not allowed to vote. A positive voting outcome is binding for at most five years, and new votes are allowed afterwards. If shareholders vote against the new rules, firms have to disclose total compensation for all executives jointly.[11]

(2) What to disclose: Under the old rules, firms had to disclose total compensation as the sum of salary, short-term incentives, long-term incentives, and all other benefits, such as insurance premiums or perquisites. The Law adds three compensation components to this list. Firms have to disclose separation agreements (pensions, severance pay), benefits from third parties, and any other compensation arrangement stated in the financial statements. For separation agreements, the Law does not require firms to disclose compensation levels.

[10] The Corporate Governance Code supplements legally binding laws with recommendations for best market practice. Recommendations are not binding. If companies do not comply with a recommendation, they have to explain the reason in an official document on their website.

[11] The opt-out clause is essentially designed for secretive family firms (see also Conyon et al. (2011)). Critics called the opt-out clause "Lex Wiedeking". Wendelin Wiedeking, former CEO of Porsche AG, was considered as one of the best paid managers in Germany and was well connected to Chancellor Gerhard Schröder. Porsche AG has a high ownership concentration with two families as the largest shareholders.

Firms shall only describe qualitative details and outline significant differences between separation agreements for executives and other employees.

(3) How to value long-term incentives: Since 2005, International Financial Reporting Standards (IRFS) require firms to report fair values at grant date for equity-based compensation. The Law makes clear that firms have to apply these valuation principles for disclosures of executive compensation. In addition, firms have to account for any value changes that result from changing the vesting conditions.

(4) Compensation report: Before 2006, the Code recommended that firms describe the compensation system on the company's website and in the annual report. While the Law does not make compensation reports mandatory, it underscores their importance by recommending compensation descriptions in the management report.

(5) Where to disclose: Under the old rules, firms had to disclose total compensation in the notes of the financial statements. The Code also recommended that firms disclosed compensation for individual executives in the notes. The Law explicitly allows firms to make these disclosures as part of the compensation report. Such a disclosure policy was already common market practice among early adopters that followed the Code recommendation and disclosed pay for individual executives before enactment of the Law.

The Law applies to all listed German firms for fiscal years after 2005. It does not apply to listed firms with a foreign headquarter, to firms traded over the counter, and to listed firms that are a mixture of a stock corporation and a limited partnership.[12]

The sharp increase in disclosure requirements comes from the new rules of how to disclose executive compensation. Ex ante, the Law principally treats all listed German firms that hid the amount and composition of pay for individual executives before enactment of the

[12] Only a few German companies adopt such a legal form. In these companies, one partner is unlimited liable for the company's debt.

Law (i.e. in fiscal year 2004). Ex-post, however, the Law does effectively not treat, at least for five years, the subsample of firms whose shareholders vote against the new rules. These firms can stick to hidden pay. The Law effectively treats the remaining firms that hid pay for individual executives before enactment of the Law and have to make pay observable afterwards.

2.2 Events

The left column of Table II.2 shows the timeline of events that are related to enactment of the Law. For the identification of events I compile an initial list of legal documents and press articles. For legal documents I search the websites of the Department of Justice and of the German parliament. For press articles I search LexisNexis and Factiva with all permutations of "Vergütung" (compensation), "Vorstand" (management board), and "Offenlegung" (disclosure). From the initial list of legal documents, I extract all documents that provide news about the content of the Law. The documents are the first draft bill, which the Attorney General presented on March 31, 2005, the revised draft bill, which the government presented on May 18, 2005, and the revised and final draft bill, which the German parliament approved on June 30, 2005. I supplement the three bills with press articles that report any content of a bill before the official presentation. Shareholders received news about Attorney General's draft bill on March 11 and about the final draft bill on June 27. Finally, I add days when politicians officially debated about the Law. From political debates, investors may sense the disposition across political parties for bill revisions, and they may revise their probability estimates for Law enactment. Two official

debates took place on June 03 and on June 20. In total I identify seven events until enactment of the Law:[13]

(1) Attorney General's press conference: On March 11, the Attorney General presented the main content of her upcoming draft bill in a press conference. She specified how to disclose executive compensation and suggested that firms disclose any other compensation designs ("what to disclose").

(2) *Attorney General's draft bill*: Three weeks later, on March 31, she presented the official bill.

(3) Government's draft bill: On May 18, the government presented a revised version of Attorney General's bill. The government decided that executives who hold shares are not allowed to vote against the new disclosure rules. In addition, the government specified how to value long-term incentives, recommended a compensation report, and recommended where to disclose executive compensation.

(4) Draft bill in parliament: On June 3, politicians discussed government's bill in parliament. While a majority of politicians agreed on the bill content in general, some politicians called for experts to discuss details.

(5) Discussion with experts: On June 20, the press reported that the discussion with experts had settled final disputes.

(6) Final draft bill: On June 27, the press reported final revisions to government's bill. The revisions specified what to disclose (separation agreements and benefits from third parties).

(7) Vote in parliament: On June 30, 2005, the German parliament approved the final draft bill.

[13] If shareholders received news on a non-trading day, I define the next trading day as the event day.

2.3 Confounding macroeconomic and political events

The seven events related to the Law may coincide with other events relevant for the pricing of stocks. The middle and the right column of Table II.2 show macroeconomic events and ex-post interpretations of the market development for each event day. I collect news about macroeconomic events from the Handelsblatt (the largest daily newspaper about business and finance news in Germany). Its section "Markets Today" summarizes upcoming events during the business day. Interpretations of developments in the stock market are from the Wall Street Journal Europe. Its section "European Stocks" summarizes and interprets the development of European stock markets on the prior trading day. As shown in Table II.2, shareholders received macroeconomic news such as news about consumer prices, labor market data, and broader economic indicators on each event day. The ex-post interpretations suggest that stock prices reacted to macroeconomic news.

Besides these daily confounding events, the four events in June occur against a background of a broader political change, which has an indirect effect on the Law. Until the first half of 2005, Chancellor Gerhard Schröder from the social-democratic party had promoted many economic reforms with liberal elements, which were highly controversial among social-democratic representatives in parliament. Controversies peaked on May 22, when the social-democratic party lost a crucial regional election. One day later, Schröder announced that he sought early parliamentary elections. He paved the way for early elections when he lost a vote of confidence in parliament on July 1.[14] Throughout June, commentators explained the robust market development and the positive market sentiment in Germany with the hope for early elections. Early elections increased the likelihood for a Christian-democratic government, which is considered to be more business-friendly than the social-

[14] Germany has a parliamentary system. The parliament appoints and can dismiss, by a vote of no confidence, the chancellor.

democratic party. After the elections in autumn, Christian-democrat Angela Merkel became chancellor.

The indirect effect on the Law comes from Schröder's call for a vote of confidence. The vote, scheduled on July 1, shortened the time frame for parliamentary procedures and, thus, made enactment of the Law uncertain. On the first three event days in June, articles about the Law speculated about whether the Law could be passed. The uncertainty was finally resolved when parliament approved the final draft bill on June 30, which is one day before parliament withdrew confidence from Chancellor Schröder.

3 Hypothesis development

3.1 Public outrage and executive compensation

Disclosures of executive compensation make CEO pay observable not only for shareholders, but also for the general public with its distinct political and social forces. These forces get at least an indirect voice at the bargaining table because the board can bear financial and non-financial costs when observed compensation outrages outsiders (see Jensen and Murphy (1990) and Bebchuk and Fried (2004)).

An example is negative press coverage. Each year after the proxy season, some commentators create an image of "greedy" CEOs by providing stories about huge payouts to CEOs (see Murphy (1996) and Core, Guay, and Larcker (2008)). Such embarrassments are non-financial costs for CEOs in their business and private communities (see Dyck and Zingales (2002)). Negative media coverage can also result in financial costs when it stimulates market forces. An example is reputational harm in the market for decision control (see Fama (1980) and Fama and Jensen (1983)). Outrage may depreciate human capital of directors in their role as control experts. Two studies show that the market for decision control punishes directors for approving compensation that stimulates outrage.

Ertimur, Ferri, and Maber (2012) find that directors are more likely to lose their board seats when they have served on compensation committees of firms that announce investigations in option backdating. Wernicke (2014) finds directors are more likely to lose their board seats when the media criticizes executive compensation in their firms. Such costs can explain associations between executive compensation and public outrage. Kuhnen and Niessen (2012) find that boards reduce option grants in response to negative press coverage of CEO pay. The reductions are increasing in the board's reputational concerns. It is not clear, however, whether public outrage about executive compensation is justified and, hence, whether mandatory disclosures of executive compensation are good or bad.

3.2 Disclosure of executive compensation is good

Bebchuk and Fried (2004) argue that executive compensation is by and large inefficient. Under their managerial power view, the CEO can exert considerable power over directors, and she does so in the bargaining process to extract rents at the expense of shareholders. Directors do not bargain with the CEO in the best interest of shareholders because they have financial, psychological, and social motives to accept the compensation that the CEO proposes for herself.[15]

In such a bargaining environment, outrage constrains what the CEO proposes and what directors will accept. To minimize outrage costs, the CEO tries to camouflage the amount of pay she extracts. Since the CEO chooses compensation forms for their camouflage value and not for their incentive effects, the compensation designs are likely to be inefficient. Thus, the managerial power view predicts that firms that do not voluntarily disclose

[15] I am agnostic about whether worker representatives are more or less captive than shareholder representatives. The general debate on whether worker representation on the board is efficient also remains inconclusive. See Kim, Maug, and Schneider (2014) for a brief summary of the main arguments for and against worker representation on the board.

compensation have inefficient compensation designs. Mandatory pay disclosures are good because they make the outrage constraint work. The CEO and the directors will agree on more efficient compensation in the first place. In addition, pay disclosures make complaints about inefficient compensation more likely since shareholders are better able to judge whether directors fulfill their duty and design compensation packages in the best interest of shareholders. Park, Nelson, and Huson (2001) show that Canadian firms increased pay-performance sensitivities after 1993 when stricter disclosure requirements for executive compensation were implemented. Similar to the new rules in Germany, Canadian firms had to switch from aggregated disclosures of total compensation to disclosures of compensation components for individual executives.

More efficient compensation reduce agency costs between the CEO and shareholders (Jensen and Meckling (1976)). Bebchuk and Fried (2004) speculate that gains from a stronger incentive alignment far exceed any gains from reductions in pay levels. There is empirical evidence that the adoption of incentive plans is associated with positive changes in shareholder value.[16] Thus, the managerial power view predicts that the stock price reaction to enactment of the Law is positive for firms that hide pay of individual executives:

Hypothesis 1A: *On event days, firms that hide pay before enactment of the Law have positive abnormal returns.*

This hypothesis describes an average effect across firms that do and do not switch from hidden pay before enactment of the Law to observable pay afterwards. However, firms can

[16] See DeFusco, Johnson, and Zorn (1990) and Kato et al. (2005) for the positive effect of stock option plans. See Core and Larcker (2002) for share ownership guidelines. See Morgan and Poulsen (2001) for manager-sponsored proposals of compensation plans.

stick to hidden pay and, hence, do not enter treatment when their shareholders vote against the new rules. Thus, I predict that the effect of the Law is heterogeneous across firms with hidden pay:

Hypothesis 2A: *On event days, firms that hide pay before enactment of the Law and make pay observable afterwards have positive abnormal returns. Firms that stick to hidden pay are not affected.*

This hypothesis relies on two assumptions. First, investors are able to forecast whether shareholders vote against the new rules. Second, the disclosure policy is stable such that the assignment of firms to groups that do and do not switch to observable pay is likely to hold in the long-run.[17]

Under the managerial power view, the opt-out clause is not necessarily a bad tool because the CEO does not have much power in firms with a controlling shareholder. The controlling shareholder may just vote against pay disclosures to protect the privacy of the CEO. For this reason, Bebchuk and Fried (2004) assume the Jensen and Meckling (1976) type of company with dispersed ownership for the most part of their discussion.[18]

[17] This assumption is not unreasonable. For a random subsample of companies from both groups, I find that the disclosure policy in the first year after Law enactment (i.e.in 2006) is almost a perfect predictor for the disclosure policy in later years.

[18] An alternative view is that the CEO has more power because she is affiliated with the controlling shareholder. The controlling shareholder may decide against pay disclosures because she colludes with the CEO at the expense of minority shareholders. However, Bebchuk, Fried, and Walker (2002) argue that the CEO does not have strong incentives to extract rents through compensation in this situation. The controlling shareholder and the CEO have access to larger sources of rent extraction such as self-dealing. They may agree on reasonable pay levels to pretend to be loyal to minority shareholders.

3.3 Disclosure of executive compensation is bad

It is not clear that existing compensation practice results in inefficient compensation designs. Under the optimal contracting view, directors bargain with the CEO in the best interest of shareholders. The resulting compensation design is efficient given any restrictions in the contracting environment.[19]

In such a bargaining environment, outrage distorts efficient compensation. Jensen and Murphy (1990) argue that political forces target firms with high payout levels. To minimize outrage costs, boards truncate the upper tail of the payout distribution, and then, in equilibrium, also the lower tail. Jensen and Murphy (1990) relate the decline in pay-performance sensitivities from the 1930s to the 1980s to the steady increase in disclosure requirements, which increased the pressure of political forces.[20]

The board may also follow public opinion when approving or disapproving compensation components. Since boards from different firms are subject to the same norms and social evaluations, pay disclosures can result in a "one size fits all" compensation design. Such practice can be particularly harmful, on average, when all boards design contracts in line with common social evaluations irrespective of the individual contracting environment. Kuhnen and Niessen's (2012) finding that boards reduce option grants in response to negative press coverage of CEO pay actually results in lower pay-performance sensitivities.

To mitigate distortions from political and social forces, boards hide efficient compensation designs. Mandatory pay disclosures are bad because they invite such forces to the

[19] See Edmans and Gabaix (2009) for an overview of theoretical work that reconciles many features of controversial pay practices within the optimal contracting framework.

[20] I am agnostic about whether worker representation on the board mitigates or strengthens the influence of political forces once pay is disclosed. Worker representation may shield companies from public outrage if worker representatives exert pressure to reduce pay-performance sensitivities before pay is disclosed. However, once pay is disclosed, public outrage may particularly motivate worker representatives to reduce wage differentials between the CEO and employees.

bargaining table. Thus, the optimal contracting view predicts that the stock price reaction is negative for firms that hide pay of individual executives:

Hypothesis 1B: *On event days, firms that hide pay before enactment of the Law have negative abnormal returns.*

Hypothesis 2B: *On event days, firms that hide pay before enactment of the Law and have to make pay observable afterwards have negative abnormal returns. Firms that stick to hidden pay are not affected.*

Under the optimal contracting view, the opt-out clause is a good tool. However, the approval threshold of a three quarters majority creates a free-rider problem. While the Law allows shareholders to vote against the new rules, the high approval threshold effectively gives only firms with a high ownership concentration the opportunity to stick to hidden pay.

3.4 The role of institutional investors

Institutional investors actively monitor firms and they are more effective monitors the more shares they hold (see, e.g., Shleifer and Vishny (1986) and Gillan and Starks (2007)). Institutional investors care strongly about executive compensation (see McCahery, Sautner, and Starks (2010)), and they use their influence to assure more efficient compensation designs. Several studies find that institutional investors lower CEO pay and increase pay-performance sensitivities (see David, Kochhar, and Levitas (1998), Bertrand and Mullainathan (2000), Hartzell and Starks (2003), and Brav et al. (2008)). These findings suggest that the managerial power view and the optimal contracting view complement each other. If institutional ownership is low, compensation practice conforms

to the managerial power view. If institutional ownership is high, compensation practice conforms to the optimal contracting view.

Institutional ownership can be interpreted as an inverse proxy for CEO power (see Bebchuk and Fried (2004)). Thus, mandatory pay disclosures have a positive effect on firms that have no institutional shareholders. The positive effect should decrease in institutional ownership. As long as the overall effect remains positive, CEOs have some undue influence at the bargaining table consistent with the managerial power view. Under the optimal contracting view, the overall effect becomes negative because institutional investors are not able to balance off the negative influence of political and social forces:

Hypothesis 3A: *On event days, firms that hide pay before enactment of the Law and make pay observable afterwards have positive abnormal returns, which are decreasing in institutional ownership. The overall effect is not negative.*

Hypothesis 3B: *On event days, firms that hide pay before enactment of the Law and make pay observable afterwards have negative abnormal returns when institutional ownership is large.*

These hypotheses assume that institutional investors have private access to compensation data through informal channels and negotiate with firms behind the scenes. There is empirical evidence for both. Sautner and Weber (2011) use compensation data from a large institutional investor in their study of stock option designs around Europe. They point out that this investor, one of the largest in Germany, could exert considerable power to get details of stock option plans granted in 2003. These data seem even more detailed than what firms have to disclose under the new Law. Becht et al. (2010) study the monitoring activities of Hermes, a U.K. pension fund. The fund managers rely mainly on private

negotiations behind the scenes. For example, they meet the chairmen of compensation committees to require changes in compensation designs.

4 Sample and data

The sample consists of 312 firms. I identify 374 firms, which were included in the Prime All Share index at some time between August 2004 and July 2005. The Prime All Share index tracks the performance of firms that comply with the highest transparency requirements of the Frankfurt Stock Exchange.[21] The time period from August 2004 to July 2005 forms the estimation period of 256 trading days. From this initial sample, I exclude (1) nine firms, which do not have common shares outstanding, (2) one company with missing stock prices in Compustat Global, (3) 12 firms whose stock prices trade below one Euro (penny stocks), and (4) 40 firms, which do not have to comply with the new disclosure rules: 35 firms have a foreign headquarter and five firms are a mixture of a stock corporation and a limited partnership.

I exclude penny stocks because they are less likely to incorporate market information efficiently. Penny stocks tend to have low liquidity and low investor attention (see, e.g., Chhaochharia and Grinstein (2007)).[22] I do not use firms, which do not have to comply with the Law, as additional control group because the majority of these firms have a foreign headquarter. Foreign firms are not comparable to local firms in event studies because any confounding macroeconomic and political news, such as the hope for new

[21] These requirements follow international practice and are beyond legislative requirements. For example, companies have to provide quarterly reports and ad-hoc announcements in English, and they have to invite analysts to a conference call at least once a year.

[22] The Federal Financial Supervisory Authority in Germany routinely cautions against manipulations of penny stocks.

elections in Germany, are likely to affect foreign firms differently than their local counterparts.[23]

For the remaining 312 firms, I collect information on the disclosure policy from annual reports for fiscal years 2004 and 2006. I use this information to assign firms to treatment and control groups in two steps. In the first step, the assignment relies only on information from 2004 and, hence, on ex-ante information that was available to shareholders at the time of Law enactment. Ex-ante, the Law affects all firms that hide pay in 2004. In the second step, I refine this assignment rule using information about the disclosure policy in 2006, which is the first year under the new disclosure rules. Based on this ex-post information, I can identify firms that do actually not enter treatment because their shareholders vote against the new rules.

Table II.3 shows the disclosure policy of the sample firms in 2004 and 2006. The disclosure policy in 2006 is not available for nine firms, which were acquired, and for four firms, which filed for bankruptcy. The dotted line separates treated firms from control firms according to the ex-ante assignment. Ex ante, the Law assigns 214 firms (69%) to the treatment group and 98 firms (31%) to the control group. The treatment group includes all firms, which hide pay for individual executives in 2004: six firms do not disclose any compensation; 201 firms disclose total compensation for all executives jointly; seven firms disclose only CEO compensation separately. The control group includes 98 early adopters, which voluntarily disclose pay for individual executives already in 2004.

The shaded area highlights firms that are effectively treated according to the ex-post assignment. Among the 214 firms with hidden pay in 2004, the Law does effectively treat 133 firms. These firms switch from hidden pay in 2004 to observable pay in 2006. The

[23] Leuz (2007) makes a similar point in his discussing of Zhang's (2007) paper about the net effects of SOX. Zhang (2007) analyzes the stock price reaction to the enactment of SOX. Her control group includes foreign companies.

Law does effectively not treat the remaining 72 firms that stick to hidden pay in 2006. Note that from the early adopters, only shareholders of three firms vote against the new rules.

I use several sources to compile the final data set. Fama-French industry groups come from Kenneth French's website, daily stock returns and company financials from Compustat Global, data on ownership structure from Hoppenstedt company profiles (a periodical comparable to Moody's manuals), data on executive compensation from 2004 annual reports, returns on the Prime All Share index from Datastream, and daily risk factors for Germany from Richard Stehle's website.[24]

Table II.4 reports descriptive statistics for the sample. Panel A shows the distribution of firms across Fama-French 12 industry groups. While the sample covers a broad range of economic activities, two industries dominate. Almost one third of the sample firms operate in the business equipment industry and 16% operate in the manufacturing industry. The second and the third column show that the industry distribution is quite similar between early adopters and firms with hidden pay in 2004. Two exceptions are the finance and manufacturing industries. Finance firms tend to be early adopters, while manufacturing firms tend to hide pay. The right two columns show the industry distribution across firms with hidden pay in 2004 that do and do not switch to observable pay in 2006. The industry distribution is quite similar. One exception is healthcare, medical equipment, and drugs. Firms from this industry tend to make pay observable in 2006.

Panel B shows summary statistics for firm characteristics, executive compensation, stock returns, and risk factors. The sample firms have mean (median) market capitalization of € 2.35 billion (€ 0.13 billion) between August 2004 and July 2005. Market capitalization varies considerably. On the lower tail, 5% of the observations fall below a market

[24] Risk factors are available at http://www.wiwi.hu-berlin.de/professuren/bwl/bb/data/fama-french-factors-germany.

capitalization of € 13 million. On the upper tail, 5% of the observations are above € 12 billion. The sample firms have mean (median) book-to-market of 0.69 (0.57). I calculate book-to-market as the book value of common equity for the last fiscal year divided by daily market capitalization. The calculation excludes observations with a negative book value.

To capture the influence of institutional investors, I construct the variable *Institutional ownership*, which is the sum of shares owned by independent investment firms (hedge funds, private equity firms, general asset management firms) and wealthy private investors. I do not add shareholdings of banks. Banks may have financial motives to collude with the CEO, and their shareholdings do not represent their actual voting power. Dittmann, Maug, and Schneider (2010) study the role of bankers on German boards. They find that bankers promote their own business and do not monitor the CEO. They also point out that banks' own shareholdings are a noisy proxy for their actual voting power since German law allows banks to vote the shares of their customers. Institutional investors have mean (median) shareholdings of 8% (0%). Institutional investors are present in 123 firms and have mean (median) shareholdings of 21% (14%) in these firms.

To gain some insight into compensation levels, I collect compensation data from 2004 annual reports. For firms that hide pay for individual executives in 2004 I collect data on the number of executives that served throughout the year to get an estimate for average total compensation per executive. The management board receives mean (median) total compensation of € 2.90 million (€ 1.14 million) in fiscal year 2004. The mean (median) total compensation per executive amounts to € 0.66 million (€ 0.39 million). The number of observations is 306 because six firms do not disclose executive compensation for fiscal year 2004.

Excess returns are daily stock returns minus the risk-free rate. The risk-free rate is derived from the one-month money market rate. During the estimation period, firms have mean (median) excess returns of 0.15% (-0.01%). Risk factors are the Fama and French (1993) factors *RMRF*, *SMB*, and *HML*, and the Carhart (1997) factor *WML*. *RMRF* is the market factor and measures return differences between the market portfolio and the risk-free rate, *SMB* is the size factor and measures return differences between small stocks and big stocks, *HML* is the book-to-market factor and measures return differences between high and low book-to-market stocks, and *WML* is the momentum factor and measures return differences between past winners and past losers. Mean and median factor returns are slightly positive except for *SMB*. Mean factor returns are estimates of daily risk premiums. Simple *t*-tests show that the risk premiums are significantly positive except for SMB, which is not significantly different from zero.[25]

The left two columns of Panel C show mean values for early adopters and firms with hidden pay in 2004. Firms with hidden pay are smaller and have higher book-to-market. Higher book-to-market suggests that investors either value these firms with a discount or forecast lower growth opportunities for them. Institutional investors have mean shareholdings of around 8% in both subsamples. The management board receives significantly lower compensation in firms that hide pay for individual executives. Although the two subsamples differ in size and book-to-market, mean excess returns are similar during the estimation period. On event days, however, firms with hidden pay outperform early adopters. Firms with hidden pay have mean excess returns of 0.38% while early adopters have mean excess returns of 0.16%. A simple *t*-test suggests that the return

[25] Richard Stehle provides three data sets of daily risk factors. One data set includes only stocks that are traded on markets regulated by federal law ("top segment"). The other two data sets additionally include stocks that are traded on markets regulated by exchanges. See Brückner et al. (2014) for details. I use the risk factors calculated from the top segment. The estimation results are virtually identical for the other two data sets.

difference is statistically significant at the 10% level. This result provides preliminary evidence that disclosure of executive compensation is good.

The right two columns of Panel C show mean values for firms with hidden pay in 2004 that do and do not switch to observable pay in 2006. Firms that switch to observable pay are larger and have higher book-to-market. Mean institutional ownership and mean excess returns are similar between the subsamples.[26] Firms that switch to observable pay have mean excess returns of 0.46% on event days while firms that stick to hidden pay have mean excess returns of 0.30%. This difference is not statistically significant.

Finally, I compare excess returns on event days for the subsamples in the right two columns with excess returns of early adopters in the left column. Firms that do and do not switch to observable pay in 2006 have higher excess returns than early adopters, on average. Results from *t*-tests suggest that the difference is statistically significant only for firms that switch to observable pay. This result provides additional evidence that disclosure of executive compensation is good, and that firms with effective treatment benefit most.

5 Average effect of the Law on shareholder value

5.1 Methodology

To test whether disclosure of executive compensation is good or bad, I perform an event study for early adopters and firms that hide pay in 2004. The event study measures the average effect of the Law on shareholder value because the treatment group consists of all firms with hidden pay in fiscal year 2004, no matter whether they switch to observable pay afterwards (Hypothesis 1A versus 1B). For the identification of the average effect, I

[26] Note that the subsamples have lower mean values for institutional ownership and higher mean values for excess returns than the respective group means in column 2. The reason is that the mean values in column 2 include all companies with hidden pay in 2004 while the mean values in the last two columns exclude companies for which data on the disclosure policy are not available in 2006.

estimate difference-in-differences (diff-in-diff) in excess returns by adding dummy variables to Carhart's (1997) four factor model:

$$\begin{aligned} \textit{Excess return}_{i,t} = \alpha \; &+ \beta_1 \times \textit{Hidden pay}_i + \beta_2 \times \textit{All events}_t \\ &+ \beta_3 \times \textit{Hidden pay}_i \times \textit{All events}_t \\ &+ \beta_4 \times RMRF_t + \beta_5 \times SMB_t + \beta_6 \times HML_t + \beta_7 \times WML_t + \varepsilon_{i,t} \end{aligned} \qquad \text{(II.1)}$$

The four factor model attributes the daily *Excess return*$_{i,t}$ to the three Fama and French (1993) factors $RMRF_t$, SMB_t, and HML_t, and to Carhart's (1997) momentum factor WML_t. The sample period is from August 2004 to July 2005. The dummy variables *Hidden pay*$_i$, *All events*$_t$, and the interaction term *Hidden pay*$_i$ times *All events*$_t$ establish the diff-in-diff approach. *Hidden pay*$_i$ equals one if company *i* hides pay for individual executives in 2004. This dummy controls for time-invariant differences between firms with hidden pay and early adopters, such as differences in governance characteristics that may affect excess returns (see Gompers, Ishii, and Metrick (2003)). *All events*$_t$ equals one on the seven days when investors receive news about the Law. This dummy controls for confounding macroeconomic and political events that affect stock prices from both subsamples and are not fully captured by the market factor $RMRF_t$.[27] The interaction term *Hidden pay*$_i$ times *All events*$_t$ is the main variable of interest. Its coefficient β_3 is the diff-in-diff estimate and

[27] This interpretation assumes that the Law does not create spill-over effects on early adopters, or that any spill-over effects average out. Positive spill-over effects may arise if companies with hidden pay create a negative externality in the competition for managerial talent before Law enactment. For example, companies with hidden pay may drive up the price for managerial talent if they allow the CEO to extract rents. Negative spill-over effects may arise if mandatory disclosures yield more efficient compensation designs in companies with hidden pay. Efficiency gains may be detrimental for early adopters. For example, companies that have to switch from hidden to observable pay may drive up competition in the product market if their CEOs are better incentivized after Law enactment.
Positive spill-over effects on well-governed companies also arise in models, in which companies with good and poor corporate governance co-exist (see Acharya and Volpin (2010) and Dicks (2012)). Negative spill-over effects do not arise in these models because corporate governance and incentive pay are substitutes. Poorly governed companies grant their CEOs higher incentive pay. In contrast, the managerial power view assumes that CEOs grants themselves lower incentive pay.

measures the average abnormal return for firms with hidden pay. The average abnormal return is the difference in excess returns between firms with hidden pay and early adopters on event days relative to non-event days. If β_3 is positive, disclosure is good (Hypothesis 1A). If β_3 is negative, disclosure is bad (Hypothesis 1B). I calculate cumulative abnormal returns as $7 \times \beta_3$ (number of event days times average abnormal return) to measure the average effect of the Law on shareholder value.

To draw statistical inference, I perform two tests. The first test is the common two sided *t*-test that β_3 differs from zero. For this test, I cluster standard errors by day and company (see Petersen (2009)). Standard errors clustered by day allow for cross-sectional correlation of contemporaneous residuals. Standard errors clustered by company allow for serial correlation of residuals. The second test is a one-sided test that a positive estimate of β_3 is higher or a negative estimate of β_3 is lower than the average diff-in-diff estimate on non-event days. Under the null of no effect of the Law, β_3 comes from the same distribution as any diff-in-diff estimate on non-event days. Thus, if β_3 measures the positive (negative) effect of the Law, it should be significantly higher (lower) than the average diff-in-diff estimate on non-event days. I assess the significance of β_3 with a bootstrap p-value. I run the regression above 5000 times with placebo event dummies instead of the true event dummy and save the resulting diff-in-diff estimate. Each time, I randomly draw seven non-event days from the estimation period to recalculate the placebo event dummy. The bootstrap p-value represents the fraction of the 5000 diff-in-diff estimates that are higher than β_3 if β_3 is positive, or that are lower than β_3 if β_3 is negative. Since I compare the diff-in-diff estimate on event days with diff-in-diff estimates on non-event days, this test is a variant of a difference-in-difference-in-differences (diff-in-diff-in-diff) approach.[28]

[28] Thus, my motivation for bootstrap differs from prior work. Prior work motivates bootstrap to allow for serial correlation (see, e.g., Bertrand, Duflo, and Mullainathan (2004)) or cross-sectional correlation (see, e.g., Black and Kim (2012)) in diff-in-diff regressions with a low number of clusters. A low number of

The *All events* dummy is the sum of seven event dummies, each of which equals one on one event day. I re-estimate the regression with a vector of seven event dummies instead of the aggregated *All events* dummy to analyze whether certain events drive the overall effect. The seven diff-in-diff estimates indicate the abnormal return on each event day separately.

Diff-in-diff estimates identify the average effect of the Law on shareholder value only if excess returns from the two subsamples follow parallel trends (see, e.g., Angrist and Pischke (2009)). To check for global trends, I graph trend lines for excess returns on the portfolio of firms with hidden pay and on the portfolio of early adopters. To check for local trends, I graph diff-in-diff estimates for event windows around each event day. If diff-in-diff estimates on event days are not part of a local trend, they are local maxima or local minima. This identification strategy allows for stock price run-ups and post-announcement drifts as long as they are smaller in magnitude than the stock price reaction on the event day itself. Such a graphical identification, however, fails if an event coincides with the beginning or end of a trend. I therefore perform a more formal test that diff-in-diff estimates for pre-event and post-event periods are equal to zero. This test assumes that there are no price-run ups or post-announcement drifts related to an event.

5.2 Results

Table II.5 shows coefficient estimates in percentage terms from the regression with the *All events* dummy. The estimates suggest that disclosure of executive compensation is good. The interaction term, *Hidden pay* times *All events*, has a coefficient of 0.2152%, which is statistically significant at the 10% level. The p-value of the *t*-statistic is 5.02% and the bootstrap p-value, presented at the bottom, is 7.5%. The coefficient estimate suggests that

clusters cause problems since clustered standard errors rely on asymptotic theory. As a rule of thumb, consistent estimates require around 50 clusters (see, e.g., Angrist and Pischke (2009)). My panel consists of 256 days and 312 companies.

firms with hidden pay have mean abnormal returns of 0.2152% per day when shareholders receive news about the Law. The cumulative abnormal return of 1.51% (7 times 0.2152%) implies that the average company with hidden pay experiences an increase in shareholder value of around € 17.5 million (1.51% times € 1.16 billion) on event days. The increase in value seems small. However, it is an estimate across firms that are and are not effectively treated. The stock price reaction reflects expected gains multiplied by both the probability that firms indeed switch to observable pay after Law enactment and, conditional on disclosure, that these firms adjust executive compensation. This interpretation indicates that expected gains cannot come from expected decreases in pay levels alone. The average company that hides pay for individual executives pays the management board an aggregated amount of € 2.33 million. Assuming a discount rate of 10%, the average company would have to decrease total compensation by around 75% to save € 17.5 million.[29] The stock price reaction is more consistent with Bebchuk and Fried's (2004) claim that gains mainly come from a better incentive alignment and not from decreases in pay levels.

The dummy variables *All events* and *Hidden pay* have coefficient estimates close to zero and are not statistically significant at conventional levels. For the *All events* dummy, this estimate suggests that early adopters do not experience significant stock price reactions on event days. Confounding events do not play a significant role. For the *Hidden pay* dummy, the estimate suggests that any time-invariant differences between the subsamples do not affect excess returns during the estimation period. The disclosure policy does not proxy for any omitted risk factors.

Two of the four risk factors have a significant association with excess returns. The market factor *RMRF* has a coefficient estimate close to one and the size factor *SMB* has a

[29] 75% times € 2.33 million divided by 0.1 equals € 17.5 million.

coefficient estimate of 40%, both of which are statistically significant at the 1% level. The book-to-market factor *HML* and the momentum factor *WML* are not significantly different from zero.

Table II.6 shows coefficient estimates in percentage terms from the regression with individual event dummies. The table omits coefficient estimates and *t*-statistics for the *Hidden pay* dummy and the risk factors. These estimates are virtually identical to those presented in Table II.5. The left column shows coefficient estimates for event dummies interacted with the *Hidden pay* dummy. The estimates suggest that no single event drives the average effect of the Law on shareholder value. Six of the seven interaction dummies have a positive coefficient. Firms with hidden pay have positive abnormal returns of 0.43% on the day, when the Attorney General details plans for a draft bill in a press conference (March 11); of 0.51% on the day, when the Attorney General presents her bill (March 31); of 0.05% on the day, when the draft bill is first discussed in parliament (June 3); of 0.16% on the day, when politicians resolve final issues in discussions with experts (June 20); of 0.30% on the day, when revisions to the draft bill get public (June 27); and of 0.40% on the day, when parliament approves the final draft bill (June 30). Firms with hidden pay have negative abnormal returns of -0.32% on the day, when shareholders receive news about government's draft bill (May 18). Six of the seven abnormal returns have *t*-statistics, which are significant at the 1% level. However, single event dummies seem to produce quite noisy estimates. If the estimates are compared to the distribution of coefficients from non-event days, only the abnormal return on March 31 remains statistically significant. The bootstrap p-value indicates statistical significance at the 10% level.

The bottom of Table II.6 shows results from a Wald test that the sum of the coefficient estimates equals zero. The sum of 1.51% is the cumulative abnormal return and identical to the estimate derived from the aggregated *All Events* dummy. The cumulative abnormal

return has an *F*-statistic significant at the 1% level, and a bootstrap p-value significant at the 10% level.

The right column of Table II.6 presents coefficient estimates for the event dummies. The estimates confirm the prior conclusion that confounding events do not play an important role, on average. While five coefficient estimates have *t*-statistics significant at the 5% level or better, only the coefficient estimate for June 03 has a bootstrap p-value, which is significant at conventional levels (4.40%). On June 03, early adopters experience a significant stock price increase of 0.62%. The Wald test, presented at the bottom of Table II.6, confirms that the sum of the coefficient estimates is close to zero and that both the *F*-statistic and the bootstrap p-value are not significant.

To check for local trends, Figure II.1 shows abnormal returns around each event day. Abnormal returns are coefficient estimates for interactions of pre-event dummies, event dummies, and post-event dummies with the *Hidden pay* dummy. Pre-event and post-event dummies are equal to one on five days before and after an event, except for the event windows between June 20 and June 27 (four days) and between June 27 and June 30 (two days). Abnormal returns on event days are similar to the estimates in the left column of Table II.6. For the first four events, the graphical pattern and the results from *t*-tests suggest that there are no local trends. For events on March 11 and March 31, abnormal returns are local maxima. For events on May 18 and June 3, abnormal returns are local minima. Abnormal returns in pre-event and post-event periods around the first four events are close to zero with *t*-statistics, which are not statistically significant at conventional levels.[30]

For the last three events, the pattern is less clear. Abnormal returns are increasing from June 20 to June 27, are slightly lower between June 27 and June 30, and finally peak on

[30] The *t*-statistics are available from the author upon request.

June 30. On days between the event days, firms with hidden pay have abnormal returns of 0.21% per day with *t*-statistics significant at the 5% level or better. The graphical pattern and the results from the *t*-tests are consistent with a local trend. However, the increase in abnormal returns could also reflect stock price run-ups related to enactment of the Law. Politicians resolved uncertainty about enactment of the Law during the last ten days in June, when they settled final disputes about the content of the Law. Moreover, the upward pattern suddenly ends on June 30. This is the day, when parliament approved the draft bill, and it is just one day before parliament gave Chancellor Schröder a vote of no confidence. Ultimately, it remains an open question whether the event on June 30 coincides with the end of a local trend unrelated to the Law or whether the upcoming enactment of the Law caused the upward pattern. Estimates from cross-sectional regressions below shed some light on the question which scenario is more plausible.

To check for global trends, Figure II.2 shows trend lines for portfolio excess returns of the two subsamples. Since the trend lines are virtually identical, Figure II.2 does not indicate that excess returns from the two subsamples follow different global trends during the estimation period.

5.3 Robustness tests

Table II.7 shows estimation results for alternative model specifications with bootstrap p-values at the bottom. The left two columns show results from regressions with portfolio returns. Portfolio returns implicitly control for heteroskedasticity and cross-sectional correlation of firm residuals. The first portfolio includes early adopters. The second portfolio includes firms with hidden pay in 2004. I regress portfolio returns on the four risk factors and the *All events* dummy. Standard errors are robust to heteroskedasticity (see

White (1980)).[31] The main conclusions remain unchanged. Coefficient estimates in the first column suggest that the portfolio of early adopters does not earn significant abnormal returns on event days. Coefficient estimates in the second column suggest that the portfolio of firms with hidden pay earns significant abnormal returns of 0.2% on event days.

The right two columns show results from regressions that use market-adjusted returns at the company level as the dependent variables. Market-adjusted returns are stock returns minus the return on the Prime All Share index. Control variables are also measured at the company level. I include the logarithm of lagged market capitalization, the logarithm of lagged book-to-market, and lagged market-adjusted returns over the past six months to control for size, book-to-market, and momentum effects (see, e.g., Larcker, Ormazabal, and Taylor (2011) for such an approach). In the last column, I additionally include industry fixed effects based on the Fama-French 48 industry classification to control for industry differences in returns (see Fama and French (1997)). Standard errors are clustered by day and firm. In both specifications, the coefficient of the main variable of interest remains unchanged compared to the baseline result in Table II.5. The interaction term *Hidden pay* times *All events* has a coefficient estimate of 0.22% with a *t*-statistic significant at the 5% level and a bootstrap p-value significant at the 10% level.[32]

[31] See, for example, Greenestone, Oyer, and Vissing-Jorgensen (2006), Chhaochharia and Grinstein (2007), and Cai and Walkling (2011) for such a portfolio approach.

[32] The results are virtually identical when I control for industry fixed effects based on Fama-French 12 industry groups.

6 Heterogeneity in the effect of the Law

6.1 Methodology

To analyze heterogeneity in the effect of the Law, I run a cross-sectional regression that accounts for different effects across three groups and allows these effects to vary by institutional ownership:

$$\begin{aligned} CAR_i = \delta_0 \; &+ \delta_1 \times Hidden\ pay_i + \delta_2 \times Forced\ disclosure_i + \delta_3 \times Institutional\ ownership_i \\ &+ \delta_4 \times Hidden\ pay_i \times Institutional\ ownership_i \\ &+ \delta_5 \times Forced\ disclosure_i \times Institutional\ ownership_i + \varepsilon_{i,t} \end{aligned} \quad \text{(II.2)}$$

The dependent variable CAR_i is the cumulative abnormal return for company *i* on event days. For each company, I regress the time-series of excess returns on the Fama and French (1993) factors, Carhart's (1997) momentum factor, and the seven event dummies. The sum of the coefficient estimates on the event dummies represents the cumulative abnormal return for company *i*. Independent variables are the dummy $Hidden\ pay_i$, the dummy $Forced\ disclosure_i$, $Institutional\ ownership_i$, and interaction terms of $Institutional\ ownership_i$ with each of the dummy variables. As in equation (II.1), $Hidden\ pay_i$ equals one if company *i* hides pay for individual executives in 2004. $Forced\ disclosure_i$ equals one for the subsample of firms that have to switch from hidden pay in 2004 to observable pay for individual executives in 2006. The inclusion of the *Forced disclosure* dummy changes the interpretation of the coefficient on *Hidden pay*. The *Hidden pay* dummy now captures differences in cumulative abnormal returns between early adopters and firms that hide pay in 2004 and stick to hidden pay in 2006. The *Forced disclosure* dummy captures differences in cumulative abnormal returns between firms that have to switch to observable pay in 2006 and firms that stick to hidden pay in 2006.

Since the model relies on ex-post information about the disclosure policy, I assume that investors are able to forecast whether shareholders vote against the new rules. This assumption implies that the regression model estimates cross-sectional correlations and does not estimate causal effects. The coefficient estimates are likely to suffer from an endogeneity bias since the forecast can depend on variables that influence the magnitude of cumulative abnormal returns.

To draw statistical inference, I perform two tests. The first test is the common two-sided *t*-test based on heteroskedasticity robust standard errors (see White (1980)). To control for cross-sectional correlation, I perform a second test based on bootstrap p-values (see, e.g., Cai and Walkling (2011) and Lo (2003)). For each company, I calculate cumulative abnormal returns on seven non-event days, which I randomly draw from the estimation period. I run the cross-sectional regression with these cumulative abnormal returns and save the coefficient estimates. I re-do both steps 5000 times and receive empirical distributions of the coefficient estimates for the independent variables. The bootstrap p-value is the fraction of positive (negative) coefficient estimates that are larger (smaller) than the coefficient estimate from the original regression. This test implicitly accounts for time-invariant group differences that affect cumulative abnormal returns. If the association between cumulative abnormal returns and the independent variables also holds for non-event days, the independent variables are likely to proxy for other risk characteristics and do not capture a specific pattern related to the Law. Since the test compares cumulative abnormal returns on event days and non-event days for different groups, it is a variant of a diff-in-diff approach (see also Larcker, Ormazabal, and Taylor (2011)).

6.2 Results

Panel A of Table II.8 shows coefficient estimates in percentage terms with Wald tests for linear combinations at the bottom. Wald tests are for institutional ownership of 14%, which represents the percentage holdings in the median company conditional on an investment. Since cumulative abnormal returns at the company level are noisy estimates, I winsorize their empirical distribution at the top and bottom 1% to mitigate the impact of outliers.

The left column in Panel A of Table II.8 shows results from a regression that includes only the disclosure dummies as independent variables. The estimates confirm that disclosure is good. They further suggest that only firms with effective treatment benefit. The *Hidden pay* dummy has a coefficient estimate of 0.12%, which is not significant at conventional levels. The estimate indicates that the Law has no effect on firms that stick to hidden pay. These firms do not change their disclosure policy after enactment of the Law. The *Forced disclosure* dummy has a coefficient estimate of 1.34%. While the *t*-statistic misses significance (p-value of 18.4%), the bootstrap p-value is significant at the 10% level. The estimate suggests that firms that have to switch from hidden to observable pay outperform firms that stick to hidden pay by 1.34% on event days. The sum of the coefficient estimates amounts to 1.46% with an *F*-statistic from a Wald test and a bootstrap p-value, which are significant at the 10% level. The estimate indicates that firms that switch to observable pay outperform early adopters by 1.46%.

The right column in Panel A of Table II.8 shows results from a regression that allows the effects to vary by institutional ownership. The estimates confirm that the Law has no effect on firms that stick to hidden pay. The *Hidden pay* dummy and its interaction with *Institutional ownership* have coefficient estimates of 0.07% and 0.79% with *t*-statistics and bootstrap p-values, which are not statistically significant. The second Wald test shows that the sum of these estimates amounts to 0.18% for institutional ownership of 14% (0.07%

plus (14% times 0.79%)). The *F*-statistic and the bootstrap p-value are not statistically significant at the 10% level.

The estimates further confirm that the Law is beneficial for firms that have to switch to observable pay. The *Forced disclosure* dummy increases to 2.2% with a *t*-statistic and a bootstrap p-value, which are significant at the 5% level. The sum of the coefficients on *Hidden pay* and *Forced Disclosure* increases to 2.26% with an *F*-statistic from a Wald test and a bootstrap p-value, which are significant at the 5% level. The estimate indicates that firms that switch to observable pay have cumulative abnormal returns of 2.26% relative to early adopters.

Cumulative abnormal returns of 2.26% imply that mandatory pay disclosures are associated with an increase in shareholder value of more than € 33 million (2.26% times € 1.47 billion). This estimate provides additional evidence that expected gains are likely to come from a better incentive alignment. For example, assume that shareholders expect the average company to adjust compensation with a probability of 50%. Then, shareholder value would increase by another € 33 million when compensation adjustments are actually announced. Such gains can hardly be explained by present value effects from pay reductions since the management board receives € 2.7 million in the average company that switches to observable pay. Gains from a better incentive alignment could be of this order of magnitude. For a sample of S&P 500 firms, Morgan and Poulsen (2001) find that stock prices increase by 0.52% when shareholders receive news on proposals for executive incentive plans. The average company in their sample has a 1994 market capitalization of $ 6.1 billion. The value increase thus amounts to $ 32 million. Assuming an inflation rate of 3%, the effect equals $ 43 million in 2005 dollars or € 33 million.[33]

[33] On average, one Euro equals $ 1.286 during the first half of 2005.

The positive effect is decreasing in *Institutional ownership*. The interaction term, *Forced disclosure* times *Institutional ownership,* has a coefficient estimate of -10.3% with a *t*-statistic significant at the 5% level and a bootstrap p-value significant at the 1% level. The coefficient estimate suggests that *Institutional ownership* of 14% is associated with a decrease in cumulative abnormal returns of 1.44% (-10.3% times 14%) for a company that switches to observable pay relative to a company that sticks to hidden pay. The effect is of similar size when the stock price reaction for early adopters is the benchmark. The third Wald test shows that the sum of the interaction terms of *Hidden pay* and *Forced disclosure* with *Institutional ownership* has a coefficient estimate of -1.33%. The *t*-statistic is significant at the 10% level and the bootstrap p-value is significant at the 5% level. The coefficient estimate indicates that *Institutional ownership* of 14% is associated with a decrease in cumulative abnormal returns of 1.33% for a company that switches to observable pay in 2006 relative to the average early adopter.

The last two Wald tests show that the overall differences remain positive, but insignificant, for a company with institutional ownership of 14%. The difference in cumulative abnormal returns amounts to 0.75% between firms that do and do not switch to observable pay. The difference amounts to 0.93% between firms that switch to observable pay and early adopters. These results are consistent with the managerial power view. The efficiency gains from mandatory disclosures vanish because institutional investors discipline the CEO at the bargaining table behind the scenes.

Panel B of Table II.8 shows results from Wald tests for differences in cumulative abnormal returns as a function of *Institutional ownership*. The first row shows differences between firms that stick to hidden pay in 2006 and early adopters. The difference is positive, but remains insignificant for the whole range of institutional ownership between 5% and 95%. The other two rows show differences between firms that have to switch to observable pay

and firms that stick to hidden pay (row 2), and early adopters (row 3). The difference is positive and significant for low institutional ownership of around 5%, and becomes negative and insignificant for institutional ownership of around 30%. The negative differences become significant for institutional ownership of around 50% when firms that stick to hidden pay are the benchmark. The differences become significant for institutional ownership of around 70% when early adopters are the benchmark. Negative cumulative abnormal returns are quite substantial. Firms that switch to observable pay lose 0.95% for every 10% increase in institutional ownership relative to early adopters. For institutional ownership of 70%, the underperformance amounts to -4.4%.

Negative differences are consistent with the optimal contracting view. While mandatory pay disclosures are good in general, they can be costly for well-governed firms. It seems that institutional investors are not able to fully resist unwelcome guests that are invited to the bargaining table by mandatory pay disclosures. The estimates give some support for proponents of the opt-out clause. A loophole to vote against pay disclosures may save shareholder value if firms have a strong governance mechanism to ensure efficient contracting. Note, however, that the estimates for institutional ownership beyond 40% are almost an out-of-sample prediction. Institutional ownership of 41.5% is the 95% percentile of the sample distribution. In the German case, mandatory pay disclosures had a significantly negative effect only on a handful of firms.

6.3 Robustness tests

The first column of Table II.9 shows estimated coefficients from the Sefcik and Thompson (1986) approach. The approach relies on portfolio returns and, thus, implicitly accounts for heteroskedasticity and cross-sectional correlation of firm residuals. I construct six time series of portfolio returns for the five independent variables and the constant. For each

variable, the portfolio weights equal the OLS weights that identify the coefficient estimate in the cross-sectional regression. The portfolio returns are then regressed on the *All events* dummy and the four risk factors. The coefficient on the *All events* dummy indicates the association between the respective independent variable and the average abnormal return.[34] Column 1 shows that the results are robust to this approach. The coefficient estimates are smaller because the portfolio approach estimates associations for average abnormal returns and not for cumulative abnormal returns. When I multiply the coefficient estimates by seven (since there are seven events), they are close to the estimates from the cross-sectional regression (see column 2 in Panel A of Table II.8).

The second column of Table II.9 shows results from a specification as in equation (II.2), except that the dependent variable now measures cumulative abnormal returns over the last three event days. The trend analysis indicates that the stock price reactions on these days may be part of a local trend and not related to the Law. The estimates reveal a pattern that is quite close to the heterogeneity identified across all events. While the difference in cumulative abnormal returns is not statistically significant between firms that do and do not switch to observable pay (bootstrap p-value of 13.4%), the difference is positive and significant between firms that switch to observable pay and early adopters. The sum of the coefficients on *Hidden pay* and *Forced disclosure* amounts to 1.41%. The *F*-statistic from the Wald test and the bootstrap p-value are significant at the 5% level. The positive effect is also decreasing in *Institutional ownership*. The sum of the interactions of the dummy variables with *Institutional ownership* has a coefficient estimate of -0.95%, which is also statistically significant at the 5% level. If cumulative abnormal returns on these days are just part of a local trend and not related to the Law, this trend is positive for firms that switch to observable pay and is decreasing in institutional ownership.

[34] See the Appendix at the end of this chapter for further details.

7 Conclusion

This paper analyses how stock prices react to the announcement of mandatory pay disclosures. On average, mandatory pay disclosures have a positive effect on shareholder value. This result supports prevalent calls for tighter disclosure requirements. However, the results also indicate that mandatory pay disclosures can be costly. In cross-sectional regressions, I find that the effect is decreasing in institutional ownership and can become negative. This result supports long-standing skeptical views about "one size fits all" regulations (see, e.g., Leuz (2007)), and underscores the complementary nature of the managerial power and optimal contracting view.

The analysis is informative for policy makers that plan mandatory pay disclosures elsewhere. In particular, the option to vote against pay disclosures, a specific feature of the German disclosure legislation and highly criticized in the press, may shield well-governed firms from unintended consequences of mandatory disclosures.

The results must be interpreted with some caution. First, they do not reflect overall changes in social welfare. Changes in social welfare reflect the costs and benefits of all stakeholders. By contrast, this paper only analyzes changes in shareholder value, and these changes may partly reflect a wealth transfer between insiders and outsiders or between bondholders and stockholders. Second, the results reflect only shareholder expectations about the net effect of mandatory pay disclosures. The long-run effect on company performance is still an open question. Third, the option to vote against pay disclosures and the specific German rules about corporate governance, most notably the mandatory worker representation on a two-tier board system, raise questions about the role of family ownership and the external validity of the results. The option to vote against pay disclosures effectively gives secretive family firms with large shareholdings the

opportunity to self-select out of treatment. The value implications for this subset of firms are not clear, and my results for the role of institutional investors can at best give an indication for the association between family ownership and mandated pay disclosures. This association is important for our understanding of disclosure rules since family ownership is the prevalent ownership structure around the world (see La Porta, Lopez-de-Silanes, and Shleifer (1999)). It is also not clear whether a two-tier board system with worker representation is more or less captive than the typical Anglo-Saxon one-tier system with only shareholder representatives. While this difference may mitigate the external validity of the quantitative results, the qualitative results should still hold for the Anglo-Saxon case since pay disclosures do not directly intervene in compensation designs and other governance choices of firms. Analyzing the effect on social welfare, on long-run performance and in countries where firms operate in a different legislative environment are fruitful avenues for future research.

Tables

Table II.1: Old versus new disclosure rules

The table summarizes disclosure rules for executive compensation in Germany along five dimensions. The left column describes disclosure rules which were effective until 2005. The right column describes disclosure rules which are effective since 2006. The new rules were announced in summer 2005 when the German parliament passed the Law on the "Disclosure of management board compensation".

Old disclosure rules (until 2005)	New disclosure rules (since 2006)
(1) How to disclose?	
Disclose total compensation for all executives jointly.	Disclose total compensation for all executives jointly.
Code recommendation: You shall divide total compensation into fixed compensation, short-term incentives, and long-term incentives. You shall disclose these components for individual executives.	Divide total compensation into fixed compensation, short-term incentives, and long-term incentives. Disclose these components for individual executives.
If disclosure of total compensation for all executives reveals the compensation of individual executives, you can opt out of any compensation disclosures.	Opt out of individualized disclosures for five years if shareholders agree with a three-quarters majority at the annual meeting. If you opt out, disclose total compensation for all executives jointly. New votes are allowed afterwards. Executives are not allowed to vote.
(2) What to disclose?	
Total compensation: salary, short-term incentives, long-term incentives, and all other benefits, such as insurance premiums, expense allowances, and perquisites	Total compensation: salary, short-term incentives, long-term incentives, and all other benefits, such as insurance premiums, expense allowances, and perquisites Separation agreements (pensions and severance pay): Provide qualitative details and outline significant differences between the separation agreements for executives and other employees. Benefits that an executive receives from third parties for fulfilling her duties for the company. Any other compensation arrangements that you state in the financial statements.
(3) How to value long-term incentives?	
	For stock options and other equity-based compensation, disclose the number granted and the fair value at grant date. Account for any later changes in value that result from changing the vesting conditions.
(4) What about a compensation report?	
Code recommendation: You shall detail the compensation system on the company's website and in the annual report.	You shall detail the compensation system in the management report.
(5) Where to disclose?	
In the notes of the financial statements	In the notes of the financial statements or in the management report

Table II.2: Timeline of events and confounding events

The table presents events related to enactment of the Law in the left column, confounding macroeconomic events in the middle column, and interpretations of the market development in the right column. Events are days when shareholders received news about the content of the Law, or when politicians officially debated about the Law. The list of events is compiled from legal documents and press articles. News about macroeconomic events are collected from the Handelsblatt, which is Germany's largest daily newspaper about business and finance news. Interpretations of the market development come from the Wall Street Journal Europe.

Events	Macroeconomic events	Ex-post interpretation of the market development
March 11, 2005		
▪ The Attorney General presents key points of a draft bill in a press conference	▪ Germany: consumer prices ▪ Euro zone: money supply M3 ▪ International: monthly oil market report	▪ "European stocks closed higher Friday, after three consecutive sessions of losses, as chip makers gained on Intel's elevated sales outlook. (…) Frankfurt's Xetra DAX Index gained 22.81 to 4360.49." (from March 14)
March 31, 2005		
▪ The Attorney General presents a draft bill	▪ Germany: labor market data ▪ US: labor market data, NAPM-Chicago purchasing managers' index	▪ "Shares in Europe were mixed Thursday, falling well off the day's highs after a late-day spike in the price of crude oil. (…) The German DAX Xetra 30 index rose 0.03% to 4349, (...)." (from April 01)
May 18, 2005		
▪ The government presents a draft bill	▪ US: consumer prices and real disposable personal income	▪ "European shares made broad-based gains, helped by data that showed the underlying rate of U.S. inflation was unchanged in April. (…) In Frankfurt, the XETRA DAX Index rose 1.7%, or 72.83 points, to 4324.6." (from May 19)
June 3, 2005		
▪ Parliament discusses government's draft bill	▪ Germany: non-manufacturing index Euro zone: non-manufacturing index ▪ US: labor market data and ISM index ▪	▪ "Major European stock markets fell slightly Friday, after U.S. data showed the American jobs market slowed in May to its weakest level in nearly two years. (…) Frankfurt's Xetra DAX Index fell 21.78 points to 4510.39." (from June 06)
June 20, 2005		
▪ The discussion with experts has settled final disputes	▪ Germany: central bank's monthly report ▪ US: index of leading economic indicators	▪ "Most European markets ended lower as crude-oil prices touched record levels. (…) Germany's XETRA DAX Index closed down 17.71 at 4586.86 (…)." (from June 21)
June 27, 2005		
▪ Final revisions to government's draft bill	▪ Germany: business climate index	▪ "European shares closed broadly lower yesterday as pressure from record crude-oil prices spread beyond traditionally oil-sensitive airline and automotive stocks to depress general market sentiment. (...) At the close, Germany's DAX Index shed 0.9% to 4523.82 (...). In Germany, shares also traded against a background of economic news, as the Ifo Institute said German business sentiment improved in June. The Ifo index rose to 93.3 from 92.9 in May, in line with economists' forecasts." (from June 28)
June 30, 2005		
▪ Parliament approves final draft bill	▪ Germany: labor market data, wholesale data ▪ Euro zone: consumer confidence indicator, business climate indicator, consumer prices US: NAPM-Chicago purchasing ▪ managers' index	▪ "European shares closed mixed Thursday, with investors focused on rate moves in the U.S. (…) At the close, Germany's XETRA DAX Index inched up 0.06% to 4586.28 (…)." (from July 01)

Table II.3: Disclosure policy of the sample firms

The table shows how the sample firms disclose executive compensation in 2004, i.e. before Law enactment, and in 2006, i.e. after Law enactment. Data on the disclosure policy come from annual reports. The dotted line in the left part separates treated firms from control firms according to the disclosure policy in 2004. Firms with hidden pay in 2004 represent the treatment group. Firms with observable pay in 2004 are early adopters and represent the control group. The shaded area in the right part includes firms that switch from hidden pay in 2004 to observable pay in 2006. These firms are effectively treated by the Law.

Disclosure policy in 2004 (before Law enactment)		Disclosure policy in 2006 (after Law enactment)		
		Hidden pay	**Observable pay**	
	# companies	Disclosure of total compensation for all executives jointly	Disclosure of compensation components for individual executives	n/a
Hidden pay				
No disclosure at all	6	1	4	1
Disclosure of total compensation for all executives jointly	201	70	123	8
Disclosure of CEO compensation separately, but for other executives jointly	7	1	6	0
Observable pay (early adopters)				
Disclosure of compensation components for individual executives	98	3	91	4
Total	312	75	224	13

Table II.4: Descriptive statistics

The table presents descriptive statistics for the sample firms. Panel A shows the industry distribution across Fama-French 12 industry groups. The left column shows the industry distribution for all sample firms. The second and the third column show the industry distribution for the subsamples of firms that do and do not voluntarily disclose pay for individual executives in 2004, and the last two columns for firms with hidden pay in 2004 that do and do not switch to observable pay in 2006. Panel B shows summary statistics for all variables used in the analysis. *Market cap* is measured on a daily basis and calculated as daily share price times common shares outstanding. *Book-to-market* is the book value of common equity for the last fiscal year divided by Market cap. *Institutional ownership* is the percentage shareholdings of independent investment firms and wealthy private investors. *Total compensation* is the aggregate amount paid to the management board as reported in 2004 annual reports. *Total compensation per executive* is total compensation divided by the number of executives that were members of the management board in 2004. *Excess returns* are daily stock returns minus the risk-free rate. *Market-adjusted returns* are daily stock returns minus the return on the Prime All Share index. *Return past 6 months* is the market-adjusted return over the prior six months. Daily risk factors for Germany are the market factor *RMRF*, the size factor *SMB*, the book-to-market factor *HML*, and the momentum factor *WML* as proposed by Fama and French (1993) and Carhart (1997). The sample period is from August 2004 to July 2005. Panel C shows mean values of selected variables. In the left columns, mean values are for the subsamples of firms that do and do not voluntarily disclose pay for individual executives in 2004. In the right columns, mean values are for firms with hidden pay in 2004 that do and do not switch to observable pay in 2006. ***, **, and * denote statistically significant differences in mean values at the 1%, 5%, and 10% level according to *t*-tests.

Panel A: Industry distribution

			Pay in 2004		Hidden pay in 2004: Switch to observable pay in 2006	
	Fama-French industry groups	Sample	Observable (early adopters)	Hidden	No	Yes
1	Business Equipment	32%	31%	33%	35%	32%
2	Chemicals and Allied Products	4%	4%	4%	3%	5%
3	Consumer Durables	3%	2%	3%	0%	5%
4	Consumer NonDurables	2%	0%	3%	6%	2%
5	Energy	0%	0%	0%	1%	0%
6	Finance	10%	18%	6%	7%	6%
7	Healthcare, Medical Equipment, and Drugs	9%	11%	8%	4%	11%
8	Manufacturing	16%	8%	19%	17%	22%
9	Telephone and Television Transmission	4%	4%	4%	3%	2%
10	Utilities	1%	1%	0%	0%	1%
11	Wholesale, Retail, Laundries, Repair Shops	5%	7%	4%	7%	2%
12	Other	13%	13%	14%	18%	11%
	Observations	312	98	214	72	133

Panel B: Summary statistics

Variables	Obs.	Mean	Std. Dev.	5th Perc.	Median	95th Perc.
Market cap (bn €)	75,052	2.3512	7.6188	0.0128	0.1283	12.0309
Book-to-market	74,100	0.6924	0.549	0.1481	0.5675	1.6073
Institutional ownership (%)	312	8.3568	16.341	0	0	41.5
Total compensation ('000 €)	306	2,896	5,417	291	1,136	11,376
Total compensation per executive ('000 €)	306	658	764	138	385	2,205
Excess returns (%)	75,052	0.1474	2.7193	-3.5602	-0.006	4.2402
Market-adjusted returns (%)	75,052	0.0515	2.708	-3.6423	-0.0741	4.1157
Return past 6 months (%)	73,254	5.5014	34.7021	-38.0595	1.3731	65.312
RMRF (%)	256	0.0864	0.5735	-0.951	0.114	0.95
SMB (%)	256	-0.0201	0.535	-0.898	-0.0045	0.849
HML (%)	256	0.0712	0.4337	-0.564	0.063	0.798
WML (%)	256	0.0542	0.4274	-0.735	0.0825	0.739

Panel C: Mean values of selected variables for subsamples

	Pay in 2004		Hidden pay in 2004: Switch to observable pay in 2006	
Variables	Observable (early adopters)	Hidden	No	Yes
Market cap (bn €)	4.9229	1.1605 ***	0.6977	1.4665 ***
Book-to-market	0.6279	0.7223 ***	0.7091	0.7429 ***
Institutional ownership (%)	7.9428	8.5463	7.7461	8.52
Total compensation ('000 €)	4,090	2,334 ***	1,797	2,698
Total compensation per executive ('000 €)	823	581 ***	511	630
Excess returns (%)	0.1452	0.1485	0.1619	0.1509
Event days: Excess returns (%)	0.1649	0.3847 *	0.3022	0.4598

Table II.5: Average effect of the Law on shareholder value

The table presents results from a differences-in-differences regression with *Excess returns* as the dependent variable. The main variable of interest is the interaction term between *Hidden pay* and *All events*. *Hidden pay* is a dummy variable and equals one if the firm hides pay for individual executives in 2004. *All events* is a dummy variable and equals one on seven event days. Control variables are the market factor *RMRF*, the size factor *SMB*, the book-to-market factor *HML*, and the momentum factor *WML*. The sample period is from August 2004 to July 2005. Coefficient estimates are in percentage terms. *t*-statistics appear in parentheses. Standard errors are clustered by day and firm. At the bottom of the table, bootstrap p-values appear in brackets for the dummy variable *ALL events* and for the interaction term between *Hidden pay* and *All events*. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Variables	Excess returns	
	(1)	
Hidden pay	-0.0123	
	(-0.522)	
All events	-0.0036	
	(-0.030)	
Hidden pay × All events	0.2152	*
	(1.958)	
RMRF	92.2392	***
	(8.378)	
SMB	40.2679	***
	(4.114)	
HML	-4.949	
	(-0.992)	
WML	5.8686	
	(0.990)	
Intercept	0.0405	
	(1.393)	
Adjusted R^2	0.0204	
Observations	75,052	
Bootstrap p-values:		
All events	[0.487]	
Hidden pay × All events	[0.075]	*

Table II.6: Abnormal returns on individual event days

The table presents results from a differences-in-differences regression with *Excess returns* as the dependent variable. Independent variables are *Hidden pay*, seven event dummies, interaction terms between *Hidden pay* and the event dummies, the market factor *RMRF*, the size factor *SMB*, the book-to-market factor *HML*, and the momentum factor *WML*. *Hidden pay* is a dummy variable and equals one if the firm hides pay for individual executives in 2004. Each of the event dummies equals one on one event day. The left column shows coefficient estimates for the interaction terms. The right column shows coefficient estimates for the event dummies. Results from Wald tests are presented at the bottom. The sample period is from August 2004 to July 2005. Coefficient estimates are in percentage terms. Estimates on *Hidden pay*, the risk factors, and the intercept are omitted. *t*-statistics and *F*-statistics from Wald tests appear in parentheses. Standard errors are clustered by day and firm. Bootstrap p-values appear in brackets. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Events	Event dummy × Hidden pay (test statistic) [bootstrap p-value]	Event dummy (test statistic) [bootstrap p-value]
March 11: Attorney General's press conference	0.4305 (16.643) *** [0.12]	-0.0452 (-0.763) [0.410]
March 31: Attorney General's draft bill	0.5055 (12.025) *** [0.093] *	-0.075 (-0.907) [0.369]
May 18: Government's draft bill	-0.3245 (-8.288) *** [0.222]	-0.291 (-3.352) *** [0.201]
June 03: Draft bill in parliament	0.0497 (1.388) [0.416]	0.6159 (10.000) *** [0.044] **
June 20: Discussion with experts	0.1554 (3.455) *** [0.329]	0.1866 (2.658) *** [0.299]
June 27: Final draft bill	0.2957 (22.046) *** [0.245]	-0.2613 (-4.762) *** [0.216]
June 30: Vote in parliament	0.4018 (10.901) *** [0.146]	-0.1388 (-2.091) ** [0.336]
Wald test: Sum of the coefficients equals zero	1.5141 (21.052) *** [0.08] *	-0.0087 (0.001) [0.501]

Table II.7: Portfolio returns and market-adjusted returns

The table presents results from alternative model specifications. In the left columns, the dependent variables are portfolio excess returns. In column 1, the portfolio includes firms that are early adopters and voluntarily disclose pay for individual executives in 2004. In column 2, the portfolio includes firms that hide pay in 2004. Independent variables are the dummy *All events*, which equals one on seven event days, the market factor *RMRF*, the size factor *SMB*, the book-to-market factor *HML*, and the momentum factor *WML*. The right columns present results from differences-in-differences regressions with *Market-adjusted returns* as the dependent variables. Independent variables are *Hidden pay*, *All events*, the interaction term between *Hidden pay* and *All events*, the logarithm of lagged market cap, the logarithm of lagged book-to-market, and lagged market-adjusted returns over the past six months. The right column additionally includes industry fixed effects based on the Fama-French 48 industry classification. *Market-adjusted returns* are daily stock returns minus the return on the Prime All Share index. *Hidden pay* is a dummy variable and equals one if the firm hides pay for individual executives in 2004. The sample period is from August 2004 to July 2005. Coefficient estimates are in percentage terms. *t*-statistics appear in parentheses. Standard errors are robust to heteroskedasticity in the portfolio regressions and clustered by day and firm in the differences-in-differences regressions. At the bottom of the table, bootstrap p-values appear in brackets for the dummy variable *ALL events* and for the interaction term between *Hidden pay* and *All events*. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Variables	Portfolio returns - RF		Market-adjusted returns	
	Observable pay (early adopters)	Hidden pay		
	(1)	(2)	(3)	(4)
Hidden pay			-0.0147	-0.0067
			(-0.644)	(-0.278)
All events	0.052	0.2002 *	0.0511	0.0522
	(0.401)	(1.711)	(0.280)	(0.286)
Hidden pay × All events			0.2198 **	0.2205 **
			(2.137)	(2.141)
RMRF	102.9101 ***	77.8315 ***		
	(12.346)	(7.455)		
SMB	29.5694 ***	38.8325 ***		
	(3.492)	(3.839)		
HML	-1.903	-7.7337		
	(-0.293)	(-1.207)		
WML	7.8603	3.2753		
	(1.177)	(0.506)		
$\log(\text{Market cap})_{t-1}$			-0.003	-0.0031
			(-0.500)	(-0.425)
$\log(\text{Book-to-market})_{t-1}$			-0.0004	-0.0072
			(-0.029)	(-0.500)
$\text{Return past 6 months}_{t-1}$			-0.0391	-0.0688
			(-0.622)	(-1.085)
Intercept	0.0568 **	0.086 ***	0.0047	-0.0324
	(2.223)	(3.107)	(0.204)	(-0.305)
Industry fixed effects	No	No	No	Yes
Adjusted R^2	0.6023	0.4135	0.0001	-0.0001
Observations	256	256	72,124	72,124
Bootstrap p-values:				
All events	[0.346]	[0.075] *	[0.371]	[0.366]
Hidden pay × All events			[0.072] *	[0.071] *

Table II.8: Heterogeneity in the effect of the Law

The table presents results from cross-sectional OLS regressions with cumulative abnormal returns (*CARs*) as the dependent variables. Cumulative abnormal returns are the sum of coefficient estimates on seven event dummies, estimated from regressions of *Excess returns* on the event dummies, the market factor *RMRF*, the size factor *SMB*, the book-to-market factor *HML*, and the momentum factor *WML*. Independent variables are the dummy *Hidden pay*, the dummy *Forced disclosure*, *Institutional ownership*, and interaction terms between the dummy variables and *Institutional ownership*. *Hidden pay* equals one if the firm hides pay for individual executives in 2004. *Forced disclosure* equals one if the firm switches from hidden pay in 2004 to observable pay in 2006. *Institutional ownership* measures the percentage shareholdings of independent investment firms and wealthy private investors. Panel A of the table presents regression results in the upper part and results from five different Wald tests in the lower part. These Wald tests assume institutional ownership of 14%. Panel B presents results from Wald tests for other percentage shareholdings of institutional investors. Cumulative abnormal returns are winsorized at the 1% and 99% levels. Coefficient estimates are in percentage terms. *t*-statistics and *F*-statistics from Wald tests appear in parentheses. Standard errors are robust to heteroskedasticity. Bootstrap p-values appear in brackets. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Panel A: Regression results with Wald tests for institutional ownership of 14%

Variables	CARs	CARs
	(1)	(2)
Hidden pay	0.1208	0.0667
	(0.121)	(0.060)
	[0.464]	[0.488]
Forced disclosure	1.3357	2.1968
	(1.332)	(2.012) **
	[0.094] *	[0.028] **
Institutional ownership		1.9834
		(0.572)
		[0.325]
Hidden pay × Institutional ownership		0.794
		(0.154)
		[0.445]
Forced disclosure × Institutional ownership		-10.3043
		(-2.008) **
		[0.008] ***
Intercept	0.4917	0.3276
	(0.865)	(0.497)
	[0.283]	[0.342]
Adjusted R^2	0.0053	0.0127
Observations	293	293
Wald tests		
(1) H_0: Hidden pay + Forced disclosure = 0	1.4565	2.2635
	(3.224) *	(6.225) **
	[0.055] *	[0.011] **
(2) H_0: Hidden pay + Hidden pay × Institutional ownership × 14% = 0		0.1778
		(0.030)
		[0.441]
(3) H_0: Hidden pay × Institutional ownership × 14% + Forced disclosure × Institutional ownership × 14% = 0		-1.3315
		(3.800) *
		[0.029] **
(4) H_0: Forced disclosure + Forced disclosure × Institutional ownership × 14% = 0		0.7542
		(0.529)
		[0.226]
(5) H_0: Hidden pay + Forced disclosure + Hidden pay × Institutional ownership × 14% + Forced disclosure × Institutional ownership × 14% = 0		0.9321
		(1.198)
		[0.165]

Panel B: Wald tests for different percentage shareholdings of institutional investors

Wald tests	Institutional ownership of										
	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Hidden pay + Hidden pay ×	0.1064	0.1461	0.2255	0.3049	0.3843	0.4637	0.5431	0.6224	0.7018	0.7812	0.8209
Institutional ownership × X% = 0	(0.011)	(0.021)	(0.04)	(0.044)	(0.043)	(0.04)	(0.038)	(0.036)	(0.035)	(0.034)	(0.033)
	[0.468]	[0.454]	[0.429]	[0.428]	[0.427]	[0.430]	[0.432]	[0.431]	[0.434]	[0.435]	[0.433]
Forced disclosure + Forced disclosure ×	1.6816	1.1664	0.1360	-0.8945	-1.9249	-2.9553	-3.9858	-5.0162	-6.0466	-7.0771	-7.5923
Institutional ownership × X% = 0	(2.740) *	(1.356)	(0.014)	(0.363)	(1.031)	(1.585)	(1.997)	(2.303)	(2.535)	(2.715)	(2.791) *
	[0.052] *	[0.122]	[0.462]	[0.239]	[0.120]	[0.070] *	[0.049] **	[0.035] **	[0.029] **	[0.025] **	[0.023] **
Hidden pay + Forced disclosure +	1.7880	1.3125	0.3614	-0.5896	-1.5406	-2.4917	-3.4427	-4.3938	-5.3448	-6.2958	-6.7713
Hidden pay × Institutional ownership × X% +	(4.694) **	(2.618)	(0.135)	(0.198)	(0.786)	(1.305)	(1.699)	(1.997)	(2.226)	(2.406)	(2.481)
Forced disclosure × Institutional ownership × X% = 0	[0.029] **	[0.077] *	[0.371]	[0.344]	[0.205]	[0.145]	[0.113]	[0.094] *	[0.080] *	[0.071] *	[0.067] *

Table II.9: Robustness tests

The table presents results from two robustness tests. The left column presents results from portfolio time-series regressions as suggested by Sefcik and Thompson (1985). The Appendix at the end of this chapter details the estimation procedure. The right column shows results from a cross-sectional regression, specified as in equation (II.2) and described in Table II.8. The only difference is that cumulative abnormal returns are now measured over the last three events. Results from five different Wald tests are presented in the lower part of the table. Wald tests assume institutional ownership of 14%. Coefficient estimates are in percentage terms. *t*-statistics and *F*-statistics from Wald tests appear in parentheses. Standard errors account for cross-sectional correlation and heteroskedasticity in the left column, and for heteroskedasticity in the right column. Bootstrap p-values appear in brackets. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level

Variables	Portfolio returns	CARs
	All events	June 20 + 27 + 30
	(1)	(2)
Hidden pay	-0.0336	0.5679
	(-0.389)	(0.854)
	[0.414]	[0.235]
Forced disclosure	0.3426	0.8404
	(2.262) **	(1.279)
	[0.030] **	[0.134]
Institutional ownership	0.1742	2.9606
	(0.454)	(1.466)
	[0.387]	[0.154]
Hidden pay × Institutional ownership	0.0283	-3.8829
	(0.060)	(-1.566)
	[0.481]	[0.137]
Forced disclosure × Institutional ownership	-1.3773	-2.8695
	(-1.833) *	(-1.130)
	[0.022] **	[0.177]
Intercept	0.0287	-0.2401
	(0.186)	(-0.610)
	[0.407]	[0.365]
Adjusted R^2		0.0083
Observations	256	292
Wald tests		
(1) H_0: Hidden pay + Forced disclosure = 0	0.3091	1.4083
	(5.814) **	(6.625) **
	[0.021] **	[0.015] **
(2) H_0: Hidden pay + Hidden pay × Institutional ownership × 14% = 0	-0.0296	0.0243
	(0.298)	(0.002)
	[0.423]	[0.480]
(3) H_0: Hidden pay × Institutional ownership × 14% + Forced disclosure × Institutional ownership × 14% = 0	-0.1889	-0.9453
	(5.612) **	(5.387) **
	[0.032] **	[0.024] **
(4) H_0: Forced disclosure + Forced disclosure × Institutional ownership × 14% = 0	0.1498	0.4387
	(2.277)	(0.588)
	[0.166]	[0.259]
(5) H_0: Hidden pay + Forced disclosure + Hidden pay × Institutional ownership × 14% + Forced disclosure × Institutional ownership × 14% = 0	0.1202	0.4630
	(1.947)	(0.839)
	[0.192]	[0.220]

Figures

Figure II.1: Local trends

The figure shows abnormal returns around event days for firms with hidden pay in 2004. Abnormal returns are coefficient estimates on interaction terms from a differences-and-differences regression. The dependent variable is *Excess returns*. Independent variables are *Hidden pay*, seven event dummies, pre-event dummies, post-event dummies, interaction terms between these dummies and *Hidden pay*, the market factor *RMRF*, the size factor *SMB*, the book-to-market factor *HML*, and the momentum factor *WML*. *Hidden pay* is a dummy variable and equals one if the firm hides pay for individual executives in 2004. Each of the event dummies equals one on one of the seven event days. Pre-event and post-event dummies are equal to one on five days before and after an event day. Two exceptions are dummies around June 27, which cover four days before June 27 and two days after June 27. The sample period is from August 2004 to July 2005. Standard errors are clustered by day and firm. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level according to *t*-tests.

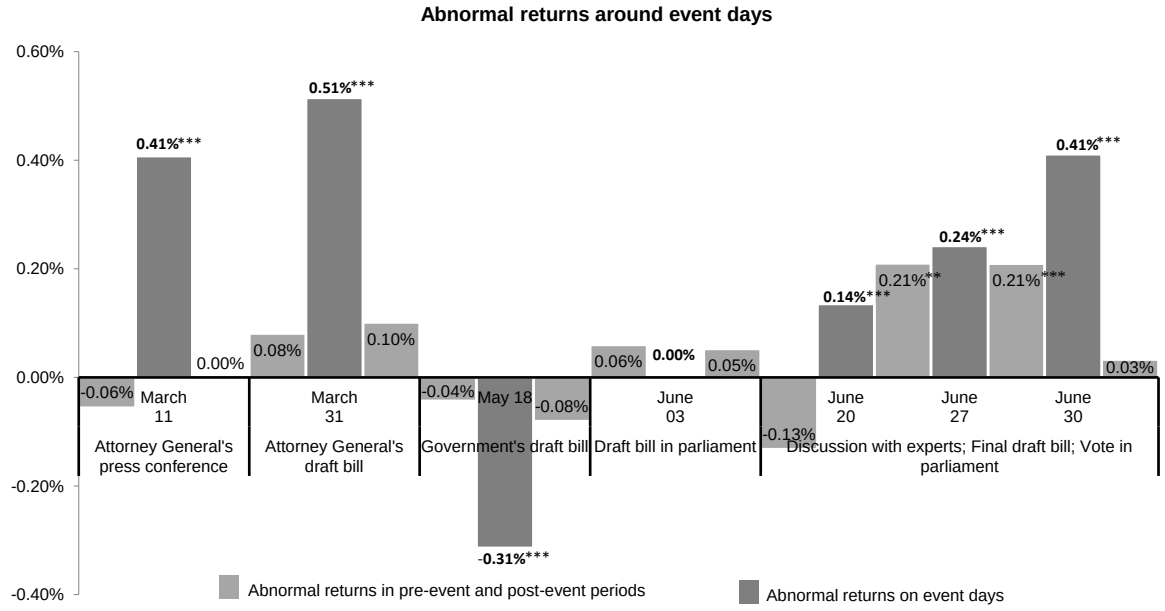
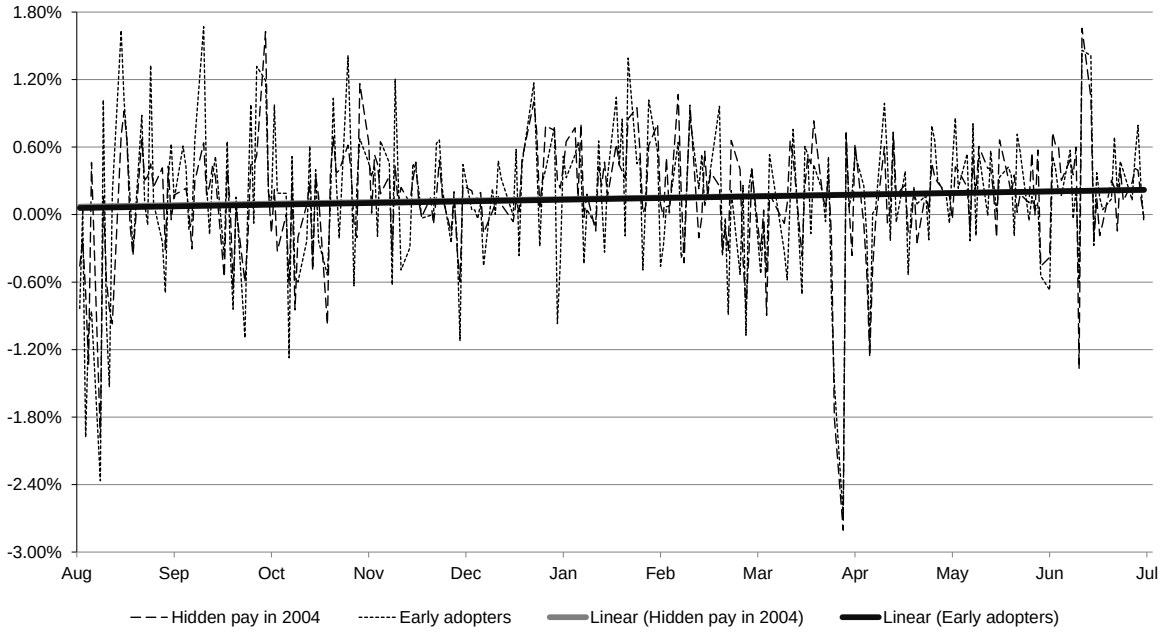


Figure II.2: Global trends

The figure shows daily excess returns for the portfolios of firms that do and do not hide pay in 2004. The dashed line shows portfolio returns for firms that hide pay in 2004. The dotted line shows portfolio returns for firms that are early adopters and voluntarily disclose pay for individual executives in 2004. The lighter solid line indicates the linear trend of portfolio returns for firms with hidden pay in 2004. The darker solid line indicates the linear trend of portfolio returns for early adopters. The time period is from August 2004 to July 2005.



Appendix

The Sefcik and Thompson (1986) approach

Sefcik and Thompson (1986) propose portfolio time series regressions to analyze the sensitivity of abnormal returns to firm characteristics. The portfolio weights are the weights from OLS cross-sectional regressions of abnormal returns. The portfolio approach implicitly accounts for heteroskedasticity and cross-sectional correlation of firm residuals. The portfolio return $r_{p,t}$ on day t for firm characteristic p is calculated in the following way:

$$r_{p,t} = W_p' R_t \quad \text{(II.3)}$$

where

$W = [X'X]^{-1}X'$ P×N weighting matrix from cross-sectional OLS (II.4)

$X = [1\ X_2\ \cdots\ X_P]$ N×P data matrix of P-1 firm characteristics for N firms (II.5)

W_p' p-th row of W identifies the portfolio weights for firm characteristic p

R_t N×1 vector of firms' excess stock returns on day t

The approach results in P portfolios for P-1 firm characteristics and the constant. For each portfolio, I estimate the following time-series regression:

$$r_{p,t} = \gamma_{1p} + \gamma_{2p} \times All\ events_t + \gamma_{3p} \times RMRF_t + \gamma_{4p} \times SMB_t + \gamma_{5p} \times HML_t + \gamma_{6p} \times WML_t + \varepsilon_{p,t} \quad \text{(II.6)}$$

The coefficient γ_{2p} measures the association between company characteristic p and the average abnormal return on event days. For the results presented in Table II.9, I estimate

the equations jointly with the Seemingly Unrelated Regression (SUR) model introduced by Zellner (1962). The SUR model allows hypotheses tests across equations.

Chapter III

Hidden Pensions, Agency Costs, and Firm Performance

1 Introduction

Executive pensions have long been considered as the ultimate form of stealth compensation that allows the CEO to extract rents at the expense of shareholders (see Murphy (1999)). In this paper I analyze differences in performance and sources of agency costs for a sample of German firms that do and do not voluntarily disclose the costs of pensions for their incumbent executives. Firms with hidden pension costs have lower firm values, lower operating performance, pay their employees higher wages, and make worse acquisitions. These firms experience positive abnormal returns at the announcement of a governance reform that mandates the disclosure of pension costs and makes the board more accountable for executive compensation in general.[35]

The role of pensions in executive compensation is controversial and part of broader debate in the literature about whether executive compensation is efficient or not. Under the managerial power view, executive compensation is largely inefficient (see Bebchuk and Fried (2004)). Boards are weak and enable the CEO to set her own pay. To minimize outrage about excess pay, the CEO extracts rents through compensation forms that are not observable to outsiders. Since disclosure requirements for executive pensions were limited

[35] The term "board" refers to the supervisory board. Germany has a two-tier board system. Executive directors are members of the management board and manage the day-to-day operations. Non-executive directors are members of the supervisory board. The supervisory board monitors the management board, appoints and dismisses executives, and decides on executive compensation. See Dittmann, Maug, and Schneider (2010) for further details.

until recently, Bebchuk and Fried (2004) regard executive pensions as a suitable compensation form to camouflage the amount and the performance-insensitivity of CEO pay. The managerial power view thus predicts that hidden pension costs indicate weak boards and inefficient compensation designs.[36]

Proponents of the efficient contracting view argue that executive compensation is largely efficient. Under this view, the board uses pensions as part of an efficient compensation arrangement that is in the best interest of shareholders. Firms may grant pensions (1) to reduce the tax burden for the CEO at no cost for the company (see Scholes et al. (2014)), (2) to time the retirement decision of the CEO (see Sundaram and Yermack (2007)), and (3) to mitigate the agency costs of debt if pension benefits are unsecured claims in the event of bankruptcy (see Jensen and Meckling (1976) and Edmans and Liu (2011)). Under an optimal contracting view, it is difficult to explain why firms hide pension costs (see Weisbach (2007)). Jensen and Murphy (1990) argue that pay disclosures invite political forces that are not primarily interested in the maximization of shareholder value to the bargain table. These forces may exert pressure on the board to deviate from efficient compensation designs. Under this view, hiding pension costs does not indicate agency problems, but is part of an optimal compensation and disclosure policy.[37]

The managerial power view has become quite timely as many countries passed reforms of pay disclosures and corporate governance more generally in the aftermath of the financial crisis.[38] There is, however, almost no empirical evidence that limited pay disclosures cause market failure or that they are associated with agency costs and low firm performance.

[36] The Securities and Exchange Commission (SEC) increased the transparency of pension disclosures in 2007 (see, e.g., Wei and Yermack (2011)). In Germany, pensions were not transparent until 2010.

[37] That pension disclosures are costly for shareholders is difficult to explain if pensions are unsecured claims in the event of bankruptcy. If high pension grants are efficient, any reductions in response to public outrage may be costly for debtholders and beneficial for shareholders. Wei and Yermack (2011) find that bond prices rise and equity prices fall when companies disclose large pension values. In contrast to the US, executive pensions in Germany are secured claims in the event of bankruptcy.

[38] For an overview of recent reforms in many countries, see Hill (2010) and Conyon et al. (2011).

Consequently, it is also an open question whether mandatory pay disclosures and related governance reforms produce more efficient compensation designs and increase shareholder value (see Weisbach (2007)).[39] An analysis of the association between pay disclosures, agency costs, and firm performance is challenging because the notion of hidden pay is a vague concept (see Murphy (2002)). It is difficult to define when pay disclosures are actually transparent (see Bolton, Scheinkman, and Xiong (2006)).

In this paper, I analyze the association between voluntary disclosures of pension costs, agency costs, and firm performance for a sample of German firms. The corporate governance environment in Germany provides an objective rule to assign firms to subsamples with more and less transparent disclosures of pension costs. German disclosure requirements are effectively a mixture of legally binding rules and non-binding recommendations. Recommendations are summarized in the Corporate Governance Code. If firms do not comply with a recommendation, they have to explain the reasons in an official document on their website. Since 2006, a new disclosure law requires firms to disclose salary (including perquisites), short-term incentives, and long-term incentives for individual executives. Disclosures of pension values or pension costs are not required, but firms have to provide descriptive details about the plans. The Corporate Governance Code tries to fill this gap and recommends that firms additionally disclose pension costs. Pension costs represent the yearly change in the present value of pensions and are thus highly correlated with the yearly compensation that the CEO earns in the form of pensions.[40] The

[39] Theoretical work is also rare. Kuhnen and Zwiebel (2008) provide a model, in which a powerful CEO can hide part of her compensation. In the model, however, firm performance does not depend on effort. I am not aware of a model that relates hidden compensation to efficiency losses.

[40] Compensation in the form of pensions is the present value of pension benefits that the CEO gains for an additional year of service (service costs). The yearly change in the present value of pensions is influenced by additional factors, such as changes in interest rates.

Code recommendation provides an objective assignment rule: Some firms follow the recommendation and make pension costs observable while other firms hide them.[41]

The disclosure law includes a loophole which is designed for secretive family firms (see also Conyon et al. (2011)). The disclosure rules do not apply if shareholders vote against them with a three-quarters majority. In this case, firms have to disclose total compensation, without pension costs, for all executives jointly. Executives who hold shares are not allowed to participate in the vote. The loophole separates firms with high ownership concentration from firms with low ownership concentration. In the analysis I focus on those firms whose shareholders do not vote against disclosures of individual executive pay. The sample is thus biased towards the Jensen and Meckling (1976) type of firms with dispersed ownership. In these firms, agency problems are higher and the CEO, and not outside shareholders, decides about the transparency of pension disclosures.[42]

The sample includes 138 non-financial firms that were included in the four main German stock market indexes, DAX, MDAX, SDAX, and TecDAX, at any point in time between 2003 and 2009. The main independent variable is a pension disclosure dummy that equals one once the company discloses pension costs. I identify 97 firms that start disclosing pension costs during the sample period. This subsample includes 23 firms, which do not follow the Code recommendation just because they do not grant pensions.[43]

[41] One may argue that legally binding descriptions of pension plans enable shareholders to calculate the change in pension values for all companies. However, these calculations require sophisticated actuarial skills that are probably beyond the skills of most professional investors (see Wei and Yermack (2011)). Even if some investors are able to estimate pension values, the CEO does not bear any outrage costs as long as the amounts are hidden from a broader audience (see Bebchuk and Fried (2004)).

[42] Companies whose shareholders vote against the disclosure rules are small, have high ownership concentration, and perform better. Bebchuk and Fried (2004) assume the Jensen and Meckling (1976) type of company with dispersed ownership in the discussion of the managerial power view.

[43] Most companies initially disclose pension costs in 2006, which is the year when all sample companies have to disclose the composition of pay for individual executives. In Albrecht (2014) I find that stock prices react positively for poorly-governed companies when the disclosure law was announced. This finding suggests that any benefits from mandatory pay disclosures should bias the results against finding any significant performance differences between companies with hidden and observable pensions.

The analysis has three parts. In the first part, I analyze differences in firm value and operating performance. I find that firms with hidden pensions have a 3.3% lower Tobin's Q and a 1.12 percentage point lower operating profit margin than firms with observable pensions.

In the second part, I explore the nature of any agency costs. I analyze corporate policies that may reflect managerial preferences rather than the maximization of shareholder value. One view suggests that uncontrolled CEOs enjoy a quiet life and pay employees higher wages to maintain a peaceful working environment (see Bertrand and Mullainathan (2003)). Consistent with the quiet-life hypothesis I find that employee wages are 8.8% higher in firms with hidden pensions. An alternative view suggests that uncontrolled CEOs make value-destroying acquisitions to build their own empires. Consistent with the empire-building hypothesis I find that firms with hidden pensions have a 1.91 percentage point lower cumulative abnormal return around acquisition announcements than firms with observable pensions.

In the third part, I analyze the stock price reaction to the announcement of a governance reform, which the German parliament passed in 2009. The reform was motivated by perceptions that existing compensation practice fostered myopic behavior and excessive risk-taking, and was therefore a main culprit in the financial crisis (see also Maug and Albrecht (2011)). The reform mandates disclosures of pension costs and includes provisions, which make the board more accountable for executive compensation in general.[44] On announcement days, firms with hidden pensions experience cumulative abnormal returns of 4.95% consistent with the view that hidden pensions indicate weak

[44] The reform includes a say-on-pay provision, increases the board's attention to set pay for long-term performance, suggests the use of caps and clawback provisions, makes deductibles in D&O insurances mandatory, and introduces cooling-off periods for the appointment to the supervisory board.

boards and inefficient compensation designs. For firms with observable pensions, the stock price reaction is also positive, but not significantly different from zero.

Part of the performance differences between firms with hidden and observable pensions could be explained under the assumption that high firm performance insulates the CEO from public outrage about her compensation. The implication is that the CEO is more willing to disclose pension costs when she forecasts good performance for her company (see Murphy (1996)). I do not find any evidence for this asymmetric information story. An investment strategy that buys stocks of firms with observable pensions and sells stocks of firms with hidden pensions does not earn significantly abnormal returns. In addition, I do not find a significant pattern of abnormal stock returns around the year of initial disclosures.

This paper contributes to three streams of research within the large literature on executive compensation.[45] First, the paper contributes to the growing literature that studies the role of pensions in executive compensation. Bebchuk and Jackson (2005) provide descriptive statistics about executive pensions in the US. They argue that the sheer size of pension values indicates managerial rent extraction. Sundaram and Yermack (2007) find that the distance to default is larger for firms whose CEOs have large pension claims. This result is consistent with the view that US firms use pensions to mitigate the agency costs of debt (see Jensen and Meckling (1976)). Wei and Yermack (2011) find that bond prices rise and stock prices fall for firms that disclose large CEO pensions. Total firm value decreases consistent with the view that CEOs hold too much debt-like incentives. My analysis differs from these studies because I relate theories about pensions to the disclosure decision and not to actual grant levels. Moreover, I analyze the implications for firm performance and

[45] See Frydman and Jenter (2010) for a recent survey.

corporate policies in a governance environment, in which pensions do not mitigate the agency costs of debt.

Second, the paper contributes to the literature about opportunistic disclosure decisions. Yermack (1997), Aboody and Kasznik (2000), and Bebchuk, Grinstein, and Peyer (2010) find that CEOs time the disclosure of good news around option grant dates to increase the value of their option packages. My paper contributes to this literature because I assume that the CEO decides against pension disclosures for opportunistic reasons.

Third, the paper contributes to the literature about the relation between corporate governance mechanisms and executive compensation. Several papers produce evidence that compensation is efficient in well-governed firms and inefficient in poorly-governed firms (see Gerakos (2010), Bertrand and Mullainathan (2000, 2001), Kim and Lu (2011)). I analyze performance differences under the assumption that hidden pensions indicate weak boards and inefficient compensation designs.

The paper also contributes to the literature that studies how corporate governance characteristics are related to firm performance and corporate polices. Starting with Gompers, Ishii, and Metrick (2003), several papers analyze differences between firms that adopt fewer antitakeover provisions ("democracies") and firms that adopt more antitakeover provisions ("dictatorships").[46] My paper adds to this literature because the pension disclosure dummy can be interpreted as an indicator for democracies. In the language of Gompers, Ishii, and Metrick (2003), firms with observable pensions are democracies that allow voters (shareholders) to observe the yearly increase in pension values of bureaucrats (managers).

[46] See Cremers and Nair (2005), Bebchuk and Cohen (2005), Core, Guay, and Rusticus (2006), Masulis, Wang, and Xie (2007), Bebchuk, Cohen, and Ferrell (2009), Giroud and Mueller (2011), and Bebchuk, Cohen, and Wang (2013).

Finally, the paper contributes to the literature that studies stock price reactions to the announcement of corporate governance reforms. Event studies mitigate endogeneity concerns since reforms represent an exogenous shock to existing corporate governance practices. Greenestone, Oyer, and Vissing-Jorgensen (2006) find a positive stock price reaction to the passage of the 1964 Securities Acts Amendments, which include provisions for pay disclosures. Cai and Walkling (2011) find that a positive stock price reaction for weakly governed firms when the House of Representatives passed the Say-on-Pay bill in April 2007. Larcker, Ormazabal, and Taylor (2011) find a negative stock price reaction to several governance changes proposed between 2007 and 2009.[47] My finding that firms with hidden pensions experience a positive stock price reaction to Germany's corporate governance reform from 2009 adds to this literature.

The paper proceeds as follows: In Section 2, I outline the main features of the institutional environment. In Section 3, I develop hypotheses about the association between pension disclosures, agency costs, and firm performance. Section 4 describes the sample and data. I report empirical results in Section 5. Section 6 concludes.

2 Institutional background

2.1 Disclosure requirements for executive compensation

The rules for pay disclosures come from three sources: German law, International Financial Reporting Standards (IAS/IFRS), and the German Corporate Governance Code.[48] Norms of privacy and confidentially dominated the disclosure legislation until 2006. Firms had to disclose the amount of total compensation for all executives jointly. If the

[47] Other work studies stock price reactions to the Sarbanes-Oxley Act from 2002. See, e.g., Chhaochharia and Grinstein (2007), Li, Pincus, and Rego (2008), and Iliev (2010).

[48] Current and prior versions of the Corporate Governance Code are available at http://www.dcgk.de/en/code.html. International Financial Reporting Standards that were adopted by the European Union are available at http://ec.europa.eu/internal_market/accounting. The standard, which regulates pay disclosures, is IAS 24.

compensation of individual executives could be inferred from the aggregated amount, firms did not have to disclose executive compensation at all. Total compensation included fixed compensation, short-term incentives, and long-term incentives. Pensions were not part of total compensation.

Since the beginning of 2005, listed German firms are required to report their consolidated financial statements according to IFRS. Under IFRS, firms have to disclose short-term benefits, post-employment benefits, other long-term benefits, termination benefits, and share-based payments for all members of the management and supervisory board jointly. German law, however, explicitly states that the adoption of IFRS does not exempt firms from the disclosure of executive compensation according to German rules. Probably for this reason, firms do generally not disclose executive compensation according to IFRS, but stick only to the German rules.

The Corporate Governance Code from 2003 called for more transparency. The Code recommended disclosing fixed compensation, short-term incentives, and long-term incentives for individual executives. In 2005, the German parliament passed a law on the "Disclosure of management board compensation", which made this recommendation legally binding for fiscal years after 2005.[49] However, the disclosure law provides a loophole. If shareholders vote against the new disclosure rules with a three-quarters majority at the annual meeting, firms can stick to the old rules and have to disclose only the amount of total compensation for all executives jointly. Opt-out votes are binding for

[49] Demands for more disclosures often follow public outrage about perceived compensation excesses in single events. The single event in Germany relates to the hostile takeover of Mannesmann by Vodafone in 2000. Several members of the management and supervisory board of Mannesmann got accused of embezzlement for approving bonus and severance payments worth € 60 million to Mannesmann's executives. While commentators criticized the size of the pay package, it was a snapshot in court that fueled public outrage: Joseph Ackermann, former CEO of Deutsche Bank and member of Mannesmann's supervisory board, showed the victory sign while waiting for judicial proceedings. The Mannesmann case caused hot debates about the governance practice in German board rooms and ultimately triggered the disclosure law. For single events triggering higher disclosure requirements in other European countries, see Conyon et al. (2011).

five years and new votes are allowed afterwards. Executives who hold shares are not allowed to vote. The new rules apply to all listed German stock firms. They do not apply to listed firms with a foreign headquarter and to some listed German firms with a special legal form.[50]

The new rules do not require firms to disclose pension values. Instead, firms shall describe the main features of the pension plans and outline any significant differences between the pension plans for executives and other employees. The Corporate Governance Code in its revised version from June 2006 encourages firms to voluntarily overcome this opaqueness. The Code recommends that firms disclose allocations to pension provisions or pension funds for individual executives.

2.2 Executive pensions

Executive pensions in Germany are classified as defined benefit plans under IFRS. For these plans, the investment risk falls on the company and not on the CEO. The company guarantees fixed annual benefits after retirement and not fixed contributions to plan assets (defined contribution plans). The benefits are often defined as a fraction of salary, and the fraction increases with the years of service. To finance pension claims, the company accrues pension provisions or pays contributions to an external fund, which settles the pension claims on behalf of the company.

Most firms in Germany accrue pension provisions. The allocations to pension provisions consist of service costs plus interest on the liability minus interest on plan assets plus net amortizations of actuarial gains or losses.[51] Service costs are the pension analog of other

[50] Some German companies are a mixture of a stock corporation and a limited partnership. One partner is unlimited liable for the company's debt.

[51] This composition was required by the old version of IAS 19, which companies had to comply with since 2005. Under the revised version, which companies have to comply with since 2013, allocations to pension provisions include net changes in the actuarial value of liabilities and plan assets and not net amortizations.

flow compensation that the CEO receives for her service in the company. Total allocations to pension provisions are the pension analog of changes in the equity portfolio that the CEO holds (see Sundaram and Yermack (2007)). Total allocations can be negative if, for example, the CEO agrees on a salary cut, if interest rates change, or if the company changes the terms of the pension agreement.

Executive pensions are secured claims. German law requires firms to pay premiums to an insurance company that settles the pension claims if the company files for bankruptcy. The insurance is also mandatory if the company pays contributions to an external fund. If the external fund files for bankruptcy, the company becomes liable for the pension claims.

Executive pensions receive a beneficial tax treatment. Allocations to pension provisions or external funds are immediately tax deductible for the company. The CEO does not have to pay taxes until pension benefits are paid out.

The treatment of executive pensions is quite different in the US. US firms commonly grant executive pensions through supplemental executive retirement plans (SERPs), which are also mainly defined benefit plans. However, pension benefits are unsecured claims that receive the same treatment as the claims of other creditors in the event of bankruptcy. Moreover, US firms enjoy the tax deductibility at the time when executive pensions are paid out. A reduction of the joint tax burden thus depends on the current and future marginal tax rates that apply to the income of the company and the CEO (see Bebchuk and Jackson (2005) and Sundaram and Yermack (2007)).

2.3 The corporate governance reform from 2009

The recent financial crisis brought executive compensation under the public's radar screen. Politicians and commentators hypothesized that executive compensation induced myopic behavior and excessive risk-taking and was therefore a main culprit in the crisis. In

response to such concerns, several governments passed reforms of executive compensation and corporate governance (see Hill (2010) and Conyon et al. (2011)). In Germany, the parliament passed a law on the "Adequacy of management board compensation" in summer 2009. The provisions provide guidelines for adequate compensation levels and adequate compensation structures, make the supervisory board more accountable for executive compensation, and regulate the composition of the supervisory board:

(1) Disclosure of pensions and severance pay: The law makes the Code recommendation on the disclosure of pension costs legally binding. For fiscal years after 2009, firms have to disclose the yearly allocations to pension provisions or pension funds. In addition, firms have to disclose the present value of pensions for individual executives and have to report any value changes that result from changing the pension agreements. The same rules apply to separation agreements in the event of early termination (severance pay).

(2) Say-on-pay: The law gives shareholders a non-binding vote to approve the compensation system at the annual meeting.

(3) Adequate compensation levels: Under the old rules, the supervisory board had to consider the tasks of the executive and the financial situation of the company to determine adequate compensation levels. The new rules add two criteria. The supervisory board shall consider the performance of the executive and shall use the compensation in peer firms as a benchmark for "common" compensation levels.

(4) Adequate duration of executive compensation: The law clarifies that the supervisory board has to design executive compensation in a way that supports a sustainable corporate development. The law increases the minimum vesting period from two to four years for equity-based plans that are settled in equity from contingent capital. The four-year vesting

period provides a reference value for other variable compensation components. In general, all variable compensation shall be based on performance measured over several years.

(5) Adequate risk-taking incentives: The compensation agreement shall include caps and clawback provisions to account for extremely positive and negative developments. If the company takes out a directors' and officers' liability insurance (D&O), the insurance for executives has to include a deductible of at least 10% of the loss up to a minimum amount of 150% of fixed compensation.

(6) Responsibility of the supervisory board: The law clarifies that the supervisory board as a whole – and not any of its committees – sets executive compensation. The law further underscores that supervisory board members are personally liable if executive compensation is not adequate.

(7) Composition of the supervisory board: Executives can be appointed to the supervisory board no earlier than two years after they left the management board. The cooling-off period is not binding if shareholders support the proposal for appointment with 25% of the voting rights.

The shock to existing governance and compensation practice mainly comes from the mandatory increase in disclosures of pensions and severance pay, from say-on-pay, from mandatory deductibles in D&O insurances, and from mandatory cooling-off periods. Statements about caps, clawback provisions, and long-term performance benchmarks are unspecific and ultimately remain recommendations that were already covered by the Corporate Governance Code before the law. While four-year vesting periods become mandatory for equity claims on contingent capital, firms can easily circumvent this rule by granting virtual equity instruments, such as phantom stocks and stock appreciation rights.

3 Hypothesis development

3.1 Theories about pensions and implications for the disclosure policy

The different roles of pensions in executive compensation follow from the two dominating views about whether executive compensation is efficient or not. Under the managerial power view, executive compensation is largely inefficient. This hypothesis relies on three assumptions (see Bebchuk and Fried (2004)). First, the CEO prefers more compensation to less compensation (non-satiation). Second, the CEO has captured the board and sets her own pay. Third, excess pay attracts public outrage, which imposes financial and non-financial costs on the CEO and the board.

The first and the second assumption imply that CEOs grant themselves more pay than they would receive under arm's length bargaining. The second assumption implies that internal governance mechanisms, such as blockholders and independent boards, and external governance mechanisms, such as product market competition and the market for corporate control, are not strong enough to prevent the CEO from extracting excess pay.[52] The second and the third assumption imply that the CEO and the board have an incentive to hide or camouflage the amount of excess pay to mitigate public outrage. The notion of outrage and the costs it entails are the critical assumptions. The fear from outrage stimulates the CEO to deviate from optimal incentive levels because the CEO adopts compensation components for their camouflage value and not for their incentive effects (see also Murphy (2002)). Bebchuk and Fried (2004) speculate that the losses from an inefficient incentive design far exceed the losses from excess pay.

[52] See Shleifer and Vishny (1997) for an overview of corporate governance mechanisms.

To provide empirical evidence for the managerial power view, Bebchuk and Fried (2004) and Bebchuk and Jackson (2005) discuss, among others, the role of pensions.[53] They argue that pensions have long been a suitable candidate to hide pay. Until 2006, US firms had to provide only descriptive details about executive pensions. While it was principally possible to estimate the present value of pensions from the descriptions, the calculations required sophisticated actuarial skills which were probably beyond the skills of most investors (see Sundaram and Yermack (2007)). A broader audience was unaware of the magnitude of pension values until Bebchuk and Jackson (2005) provided a descriptive analysis for a subsample of S&P 500 firms.[54] According to their calculations, the present value of pensions is worth around 30% of total compensation that the CEO receives throughout her tenure. They conclude that pension grants enable the CEO to understate the actual compensation level and to overstate compensation paid for performance.

Bebchuk and Fried's (2004) claims about the role of executive pensions have been challenged on theoretical and empirical grounds. Proponents of the efficient contracting view put forward three reasons for the use of pensions.[55] First, firms grant pensions because they reduce the tax burden for the CEO at no cost for the company (see Scholes et al. (2014)). This is true for Germany where the CEO pays income taxes at the time when pensions are paid out while the company immediately enjoys the tax deduction for allocations to pension funds and pension provisions.

Second, Sundaram and Yermack (2007) argue that pension grants enable firms to time the retirement decision of the CEO. The CEO has an incentive to stay with the company until the age, at which she is entitled to the full amount of her pensions. Sundaram and Yermack

[53] Bebchuk and Fried (2004) doubt the efficiency of many pay components. For a summary of their arguments, see Bebchuk and Fried (2005).

[54] Sundaram and Yermack (2007) is the first article with a systematic treatment of pensions.

[55] For an overview of models that reconcile many controversial pay patterns with the optimal contracting view, see Edmans and Gabaix (2009). For empirical evidence against the managerial power view in general, see Murphy (2002) and Core, Guay, and Thomas (2005).

(2007) estimate that voluntary CEO turnover increases by around 4 percentage points once pensions are fully payable.

Third, Edmans and Liu (2011) formalize Jensen and Meckling's (1976) claim that pensions mitigate the agency costs of debt. Since equity is an option on the company's cash flows, the CEO who holds only equity sub-optimally increases the riskiness of the cash flows at the expense of debtholders. Pensions can mitigate the risk-shifting problem because they align the interests of the CEO with those of debt holders. This hypothesis, however, relies on the assumption that executive pensions are unsecured claims in the case of bankruptcy and is therefore not applicable to the German case.

There is empirical evidence that the two views, managerial power and optimal contracting, are complementary and that the quality of corporate governance determines which view is more appropriate. Gerakos (2010) finds that strong boards grant their CEOs one dollar of pensions in exchange for one dollar of other compensation while weak boards grant their CEOs one dollar of pensions in addition to other forms of compensation.[56]

The complementary nature of the theories can explain why some firms hide pensions while other firms make pensions observable. Hidden pensions indicate weak boards, in which uncontrolled CEOs extract excess pay in the form of pensions as part of an inefficient compensation arrangement. If firms grant pensions as part of an efficient contract, they have nothing to hide. Observable pensions thus indicate strong boards that grant pensions as part of an efficient compensation arrangement. There is empirical evidence that firms with strong boards provide more detailed disclosures of executive compensation in general. Laksmana (2008) develops a transparency index for pay disclosures. She finds that pay disclosures are more detailed if board members are independent, serve on fewer other boards, and were not appointed by the CEO.

[56] Bertrand and Mullainathan (2000, 2001) and Kim and Lu (2011) provide further evidence that contracting is efficient in companies with strong internal and external governance mechanisms.

The derived implications for the disclosure policy assume that pay disclosures are not costly for shareholders. Jensen and Murphy (1990), however, argue that pay disclosures give a voice to political forces, which raise concerns about fairness or income inequality and care less about the maximization of shareholder value. To minimize the costs from outrage, boards may deviate from efficient compensation designs at the expense of shareholders. Under this view, hidden pensions do not indicate weak boards and inefficient compensation designs. Rather, firms hide pensions to prevent deviations from efficient arrangements.

3.2 Empirical predictions

I derive empirical predictions under Bebchuk and Fried's (2004) assumption that hidden pensions indicate weak boards and inefficient compensation designs. Prior studies produce evidence that weakly governed firms have lower firm values and lower operating performance.[57] If Bebchuk and Fried's (2004) assumption holds, we should observe similar differences between firms with observable and hidden pensions:

Hypothesis 1: *Firms with hidden pensions have lower firm values than firms with observable pensions.*

Hypothesis 2: *Firms with hidden pensions have lower operating performance than firms with observable pensions.*

To explore the nature of any agency costs I analyze corporate policies that may reflect managerial preferences rather than the maximization of shareholder value. One hypothesis

[57] For the influence of board size, see Yermack (1996). For staggered boards, see Bebchuk and Cohen (2005). For shareholder rights, see Gompers, Ishii, and Metrick (2003) and Bebchuk, Cohen, and Ferrell (2009). For powerful CEOs relative to other executives, see Bebchuk, Cremers, and Peyer (2011).

is that CEOs prefer to live the quiet life, and that uncontrolled CEOs can do so. Bertrand and Mullainathan (1999, 2003) find that employee wages rise after the passage of antitakeover laws while productive efficiency does not. They argue that antitakeover laws reduce the disciplining effect of the market for corporate control. CEOs have more discretion to avoid stressful tasks, such as bargaining with unions, and higher employee wages create a peaceful atmosphere in the company consistent with the quiet life hypothesis.

Another hypothesis is that CEOs prefer to run larger firms (Jensen (1986)), and that uncontrolled CEOs can pursue this goal by making value-destroying acquisitions. Consistent with the empire-building hypothesis, Gompers, Ishii, and Metrick (2003) find that firms with more antitakeover provisions are more acquisitive. Masulis, Wang, and Xie (2007) find that bidder returns around acquisition announcements are lower if the bidder has more antitakeover provisions, operates in industries with lower product market competition, or has a CEO who is also the chairman of the board.

If the disclosure policy for pensions indicates the magnitude of agency problems, we should observe similar differences between firms with observable and hidden pensions:

Hypothesis 3: *Firms with hidden pensions pay higher wages than firms with observable pensions.*

Hypothesis 4: *Firms with hidden pensions are more acquisitive and make worse acquisitions than firms with observable pensions.*

The four hypotheses state associations between the disclosure policy for pensions, firm performance, and agency costs. To address causality, I analyze announcement returns to the corporate governance reform, which the German parliament passed in summer 2009.

The law represents an exogenous shock to corporate governance structures, which firms have determined endogenously in equilibrium. Thus, the law serves as a natural instrument that mitigates endogeneity concerns and allows us to identify causal effects of changes in the governance structure.

The law includes many provisions that mirror Bebchuk and Fried's (2004) suggestions to improve the quality of board decision-making.[58] If existing board structures are indeed ineffective and enable the CEO to pursue her own interests rather than shareholders' interests, stock prices should react positively to the announcement of the law. If board structures are effective and push the CEO to act in the best interest of shareholders, stock prices should react negatively to the announcement of the law (see also Larcker, Ormazabal, and Taylor (2011)). For some of the provisions included in the law, there exists empirical evidence consistent with both views. Provisions are beneficial for firms with weak corporate governance, but costly for firms with strong corporate governance. For other provisions, the literature provides at least theoretical arguments for potential costs and benefits.

In Albrecht (2014) I find that stock prices react positively to mandatory increases in pay disclosures. Abnormal returns are decreasing in institutional ownership and become negative for large institutional ownership. This result suggests that mandatory pension disclosures are beneficial for poorly governed firms and may be costly for well-governed firms.

For a sample of large US firms, Cai and Walkling (2011) find that weakly governed firms with inefficient compensation designs had positive abnormal returns when the House

[58] Bebchuk and Fried (2004) support pension disclosures, say-on-pay, payouts for long-term performance, clawback provisions, and rules for board independence, among others. Lucian A. Bebchuk lists his advisory services for politicians on his website at http://www.law.harvard.edu/faculty/bebchuk/policy.shtml.

passed the Say-on-Pay Bill. They also find that say-on-pay is costly for other firms because they get targeted by groups for reasons other than the maximization of shareholder value.

For a sample of Canadian firms, Lin et al. (2013) find that executives that are covered by D&O insurances make value-increasing investments in well-governed firms and value-destroying investments in poorly governed firms. The majority of these D&O insurances do not require personal deductibles (see Lin, Officer, and Zou (2011) and Core (2000)). The results suggest that a mandatory personal deductible is beneficial in poorly governed firms because deductibles mitigate moral hazard and reduce costly overinvestments by uncontrolled CEOs. In well-governed firms, however, a mandatory personal deductible is costly because the company must compensate the CEO for the additional risk of litigation costs. Otherwise, the risk-averse CEO may forgo risky investment projects with a positive net present value (see Core (1997)).

A similar reasoning can be applied to the norms that the board should follow for the design of compensation designs. The introduction of caps for extremely good states and clawback provisions for extremely bad states makes the relation between payouts and performance more concave at the upper and lower tails of the payout distribution. Hence, caps and clawback provisions may mitigate excessive risk-taking in poorly governed firms, but may result in insufficient risk-taking in well-governed firms.[59] Similarly, tying pay to long-term performance mitigates myopic behavior or gives the CEO excessive equity incentives, which she cannot unwind (see Core and Guay (2010)).

The introduction of cooling-off periods can make board monitoring more or less effective. Cooling-off periods can be beneficial because personal connections between current and former executives can create conflicts of interest, for example, when current executives would like to revoke wrong strategic decisions of their former colleagues. Cooling-off

[59] See Dittmann, Maug, and Zhang (2011) for caps, and Babenko et al. (2012) for clawback provisions.

periods can be costly because current executives can benefit from the advice of former executives who have acquired firm-specific human capital during their tenure (see Andres, Fernau, and Theissen (2013)).

If the disclosure policy for pensions indicates the effectiveness of boards and the efficiency of compensation designs, I expect that the benefits of the provisions outweigh the costs in firms with hidden pensions, while the costs outweigh the benefits in firms with observable pensions:

Hypothesis 5: *For firms with hidden pensions, stock prices react positively to the announcement of the law.*

Hypothesis 6: *For firms with observable pensions, stock prices react negatively to the announcement of the law.*

Hypotheses 5 and 6 take into account the benefits and costs of the law for each company in isolation. However, proponents of legislative intervention often point to negative externalities as the main source for welfare increases (see, e.g., Hermalin and Weisbach (2006)). Under this view, the law creates positive spill-over effects because it mitigates negative externalities, which poorly governed firms impose on well-governed firms. For example, a negative externality could arise if poorly and well-governed firms compete for managerial talent in the labor market. Excess pay for CEOs of poorly governed firms increases the value of outside options for CEOs of well-governed firms. The law may benefit well-governed firms because any pay reductions in poorly governed firms simultaneously reduce the participation constraint of CEOs of well-governed firms. Such positive spill-over effects arise in models, in which corporate governance and executive compensation are substitutes (see Acharya and Volpin (2010) and Dicks (2012)).

Positive spill-over effects imply that stock prices of well-governed firms react positively to the announcement of the law. This implication is at odds with Hypothesis 6, which predicts a negative stock price reaction. To reconcile Hypothesis 6 with the notion of spill-over effects, I assume that the law also creates negative spill-over effects. Negative effects could arise if the law mitigates inefficiencies in compensation designs of poorly governed firms. Assume, for example, that poorly and well-governed firms compete in product markets. If more efficient compensation increases the competitiveness of poorly governed firms, the performance margins of well-governed firms may diminish. It is therefore not clear that the law creates positive spill-over effects in total. Note that negative spill-over effects do not arise in models, in which corporate governance and executive compensation are substitutes. In these models, it is efficient for poorly governed firms to compensate the CEO with more pay for performance. In contrast, I assume that poorly governed firms have inefficient compensation designs consistent with the managerial power view.

4 Data

4.1 Sample construction and data sources

I identify 248 firms, which were included in the four main German stock market indexes, DAX, MDAX, SDAX, and TecDAX, at any point in time between March 24, 2003 and December 31, 2009. On March 24, 2003, Deutsche Börse launched its new index structure with these main indexes. The indexes include the largest 160 firms with stocks traded on the Frankfurt Stock Exchange. The sample period ends in 2009 because the corporate governance reform from 2009 mandates the disclosure of pension costs for later fiscal years. From the initial sample I exclude four firms with a special legal form and 22 firms with a foreign headquarter. These firms do not have to comply with the disclosure law. I exclude 39 firms from the financial industry (SIC codes from 6000 to 6999) because some

financial characteristics, such as leverage, are not comparable between financial and non-financial firms (see Fama and French (1992)). Finally, I exclude 45 firms whose shareholders exploited the loophole of the disclosure law and voted against pay disclosures for individual executives. I exclude these firms because my interest is in those cases, in which the CEO decides about the transparency of pay disclosures. The final sample includes 138 non-financial firms, which have to disclose pay for individual executives under the disclosure law.[60]

The exclusion of firms whose shareholders vote against pay disclosures induces a selection bias. The final sample is arguably biased towards firms with smaller blockholders and, thus, more agency problems Firms should be more likely to receive a three-quarters majority against pay disclosures if large blockholders are present. Agency costs are lower in firms with large blockholders because large blockholders are more effective monitors (see Shleifer and Vishny (1986)). For this reason, Bebchuk and Fried (2004) assume the Jensen and Meckling (1976) type of company with dispersed ownership for the most part of the discussion of the managerial power view.

I collect data from several sources. Data on the disclosure policy and executive compensation come from annual reports, company financials and stock returns from Computat Global, data on ownership structure from Hoppenstedt company profiles (a periodical comparable to Moody's manuals), data on firm age from company websites, data on CEO age from BoardEx, Hoppenstedt company profiles, and annual reports, data on mergers and acquisitions from the Securities Data Corporation's database (SDC), daily risk factors for Germany from Richard Stehle's website, monthly risk factors for Germany

[60] The final sample includes ten companies, which delisted before 2006. It is not observable whether their shareholders are against pay disclosures for individual executives. The results are robust to the exclusion of these companies.

from the Centre for Financial Research in Cologne, and index returns from Datastream.[61] Table III.1 outlines the construction and the source of all variables. Tables III.2 to III.5 report descriptive statistics.

4.2 Disclosure policy and pension costs

I identify 97 firms, which voluntarily disclose pension costs at some time during the sample period: 71 firms disclose allocations to pension provisions, three firms disclose allocations to pension funds, and 23 firms do not have any pension costs because they do not grant pensions. The disclosure of allocations to pension provisions is not uniform: 75% disclose total allocations, 18% disclose only service costs, and 7% disclose service costs and interest costs.

Panel A of Table III.2 shows the number of firms that start disclosing pension costs in each year. The number of firms with initial disclosures sharply increases in 2006, which is the year when the sample firms have to comply with the disclosure law for the first time, and when the Corporate Governance Code recommends disclosures of pension costs for the first time. The Code recommendation seems to be quite effective. Among the 97 firms, 55 firms voluntarily disclosed compensation components for individual executives before 2006, but only ten of those firms additionally disclosed pension costs. Among the 41 firms that did not voluntarily disclose pension costs during the sample period, 19 firms voluntarily disclosed other compensation components for individual executives before 2006.

[61] Daily risk factors are available at http://www.wiwi.hu-berlin.de/professuren/bwl/bb/data/fama-french-factors-germany. I use daily risk factors calculated from the "top segment". The top segment includes only stocks that are traded on markets regulated by federal law. See Brückner et al. (2014) for details on the construction of daily risk factors. Monthly risk factors are available at http://www.cfr-cologne.de. See Artmann et al. (2012) for details.

To gain some insight into the magnitude of pension costs I collect data on executive compensation for fiscal year 2006 for all but four firms, which initially disclosed pension costs in 2008. For these four firms I collect compensation data for 2007, which is disclosed in the annual reports from 2008, and normalize them to 2006 Euros.[62] To qualify for inclusion in the compensation sample, executives must serve for the full fiscal year. Panel B of Table III.2 shows descriptive statistics for compensation variables. Executives receive mean (median) total compensation of € 1.4 million (€ 1 million). The mean (median) fraction of short-term incentives is 40% (41%), and the mean (median) fraction of long-term incentives is 15% (4%). Total compensation excludes pension costs. For firms that disclose pension costs, the mean (median) costs per executive amount to € 215 thousand (€ 73 thousand). Pension costs increase total compensation by 15% for the mean executive and by 7% for the median executive. The fraction of pension costs is quite similar in the US. For a subsample of firms from the S&P 500, Sundaram and Yermack (2007) find that total pension costs for CEOs amount to 11% of total compensation including service costs, on average.

The right columns in Panel B of Table III.2 show mean values of compensation variables for firms that do and do not disclose pension costs. Total compensation and the fraction of short-term and long-term incentives are significantly lower in firms with hidden pensions. In these firms, executives receive mean total compensation of € 0.8 million, with 35% in the form of short-term incentives and 10% in the form of long-term incentives. In firms with observable pensions, executives receive mean total compensation of € 1.5 million, with 41% in the form of short-term incentives and 17% in the form of long-term incentives.

[62] For 16 companies, which disclosed pension costs for the first time in 2007, I use compensation data for 2006 from the 2007 annual reports.

4.3 Descriptive statistics

Table III.3 shows the industry distribution of the sample, classified by Fama-French 12 industry groups. Firms from the manufacturing (25%) and business equipment (20%) industries are overrepresented. Energy firms are not included, and financial firms are missing by construction. The industry distribution is quite similar between firms with observable and hidden pensions. Two exceptions are the business equipment industry and the chemicals and allied products industry. Firms in the business equipment industry tend to hide pensions while firms in the chemicals and allied products industry tend to disclose pensions.

Table III.4 reports descriptive statistics for all variables used in the regression analysis. Panel A of Table III.4 shows descriptive statistics for firm and executive characteristics. The variables cover the fiscal years 2002 to 2009. I add observations for 2002 because some of the variables enter the regressions with a lag of one year. The main independent variable in most of the analysis is the dummy variable *Pension disclosure*$_{i,t}$, which equals one if company *i* discloses pension costs for individual executives in year *t*. The dummy has a mean value of 0.37, which indicates that pension costs are observable for 37% of all firm-year observations. The sample firms have mean (median) market value of equity of € 4.82 billion (€ 0.54 billion), mean (median) total assets of € 11.14 billion (€ 0.74 billion), and mean (median) sales of € 7.48 billion (€ 0.77 billion). Sales are normalized to 2002 Euros with the consumer price index from the Federal Statistical Office of Germany.

For the analysis of performance differences I use Tobin's Q, return on assets (ROA), and operating profit margin (OPM) to proxy for firm value and operating performance. Tobin's Q is the market value of total assets scaled by the book value of total assets. The market value of total assets equals the book value of total assets minus the book value of common equity and deferred taxes plus the market value of common equity (see, e.g., Kaplan and

Zingales (1997)). ROA and OPM are calculated as operating income before depreciation divided by total assets and sales, respectively (see, e.g., Core, Guay, and Rusticus (2006)). The sample firms have mean (median) Tobin's Q of 1.52 (1.25), mean (median) ROA of 9.4% (10.6%), and mean (median) OPM of -7.4% (10.4%).

For the analysis of wage differences I calculate the average employee wage as staff expenses divided by the number of employees (*Wages*). Staff expenses include salaries, wages, profit sharing, incentive compensation, pension costs, other benefit plans, and payroll taxes, and are normalized to 2002 Euros. The mean (median) company pays employees € 45 thousand (€ 46 thousand) per year.

For the analysis of acquisition activities I construct an acquisition sample from SDC. I identify 358 acquisitions made by 91 firms that meet three selection rules (see, e.g., Masulis, Wang, and Xie (2007)). First, the sample firms are bidders and completed the acquisition between March 25, 2003 and December 31, 2009 (met by 533 acquisitions). Second, the bidder owns less than 50% of the target's shares before the announcement and owns 100%, when the deal is completed (met by 380 acquisitions). Third, bidder characteristics are available in Compustat Global, and deal characteristics are available in SDC. I do not exclude cross-border deals and deals below a certain threshold value to maintain sample size. Almost two thirds (234) of all deals are cross-border acquisitions, and SDC does not report the deal value for around 70% of the acquisitions.[63]

Panel B of Table III.4 shows descriptive statistics for the acquisition sample. Proxies for acquisitiveness are the variables *Acquisition count* and *Acquisition likelihood* (see, e.g., Giroud and Mueller (2011)). *Acquisition count* indicates all acquisitions that a company made during the fiscal year. *Acquisition likelihood* is a dummy and equals one if a

[63] These additional selection rules are quite common in studies of mergers and acquisitions in the US. Typical thresholds for deal values are $ 1 million and 1% of the bidder's market value (see Netter, Stegemoller, and Wintoki (2011)).

company makes at least one acquisition during the fiscal year. Their mean values of 0.37 and 0.23 suggest that the average company makes 0.37 acquisitions per year, and that the likelihood for making at least one acquisition per year amounts to 23%. My proxy for the quality of acquisitions is the variable *CAR(-2, +2)*, which measures the cumulative abnormal return for the bidder in the 5-day event window around the acquisition announcement (see, e.g., Masulis, Wang, and Xie (2007)). Abnormal returns are residuals from the market model. To estimate the parameters of the market model, I regress the bidder's daily returns on CDAX returns during the estimation period from day -211 to day -11 before the announcement. The CDAX index represents a value weighted portfolio that includes all German firms listed on the Frankfurt Stock Exchange. The mean (median) cumulative abnormal return is 0.2% (-0.1%).

Panel C of Table III.4 shows descriptive statistics for stock returns. For the event study of the corporate governance reform from 2009, I use daily excess and daily market-adjusted returns from October 1, 2008 to July 31, 2009. Excess returns are stock returns minus the risk-free rate. Market-adjusted returns are stock returns minus the return on the CDAX index. The mean and median daily excess return is zero. The mean and median daily market-adjusted return is 0.1% and -0.1%.

The right columns of Table III.4 show mean values of the variables for subsamples separated by *Pension Disclosure*. Simple *t*-tests indicate several significant differences. Firms with hidden pensions are smaller, have higher book-to-market ratios, more fixed assets (*PPE/Total assets*), lower capital expenditures (*CAPEX/PPE*), invest more in research and development (*R&D/Sales*), have lower sales per employee (*Labor productivity*), are younger (*Firm age*), and their executives hold a larger fraction of common stock (*Executive ownership*). Differences in performance are partly evident. While Tobin's Q and ROA are not significantly lower, the difference in OPM is striking.

The average OPM is -16% for firms with hidden pensions and 7.2% for firms with observable pensions. Firms with hidden pensions pay higher wages. Activities in the market for corporate control and daily returns are similar between the subsamples.

The exclusion of firms whose shareholders vote against pay disclosures for individual executives induces a selection bias. Table III.5 reports mean values of selected variables for the sample firms and excluded firms. The *t*-tests indicate several significant differences. The sample firms are much larger. Their average market value of equity is more than three times higher, total assets are more than six times higher, and sales are almost four times higher. External blockholders hold a significantly lower fraction of common stock in the sample firms. Finally, the sample firms perform significantly worse. Tobin's Q, ROA, and OPM are significantly lower. The differences are consistent with the view that the final sample is biased towards firms with more agency problems.

5 Empirical analysis

5.1 Pension disclosures and firm performance

5.1.1 Pension disclosures and firm value

I use the following regression model to analyze the association between pension disclosures and firm value:

$$Q_{i,t} = a + b \times P_{i,t} + c' \times C_{i,t} + d \times Q_{i,t-1} + e_j + f_t + \varepsilon_{i,t} \quad \text{(III.1)}$$

The dependent variable, $Q_{i,t}$, is the logarithm of Tobin's Q for company i in year t (t = *2003,...,2009*), $P_{i,t}$ is the dummy variable *Pension disclosure*, $C_{i,t}$ is a vector of time-varying controls, $Q_{i,t-1}$ is the logarithm of lagged Tobin's Q, e_j are industry fixed effects

based on the Fama-French 48 industry classification, and f_t are year fixed effects. I do not adjust $Q_{i,t}$ by industry means or medians consistent with studies about Tobin's Q and managerial ownership (see the influential work by Morck, Shleifer, and Vishny (1988)), but inconsistent with studies about Tobin's Q and shareholder rights (see the influential work by Gompers, Ishii, and Metrick (2003)). Gormley and Matsa (2014) show that industry adjustments of dependent variables are likely to produce inconsistent estimates.[64] The vector $C_{i,t}$ includes control variables that have a significant association with Tobin's Q in studies for the US (see Himmelberg, Hubbard, and Palia (1999) and Kim and Lu (2011)). The first set of controls proxies for the scope for managerial discretion and, thus, may also be related to *Pension disclosure*. I include the logarithm of sales and its square because larger firms may be more difficult to monitor for the supervisory board up to the point where external monitors, such as rating agencies, provide additional monitoring services. I include fixed assets scaled by sales (*PPE/Sales*) and its square because operations with fixed assets are easier to monitor for the board, capital expenditures scaled by fixed assets (*CAPEX/PPE*) to control for the scope for discretionary investments in tangible assets, R&D expenditures scaled by sales (*R&D/Sales*) to control for the scope for discretionary investments in intangible assets, and the standard error of residuals from the market model (*Sigma*) because higher idiosyncratic firm risk may be associated with more managerial discretion (see Demsetz and Lehn (1985)). To maintain sample size, I set *R&D/Sales* and *Sigma* to zero if they are missing, and include two dummy variables for missing observations.[65] The second set of controls includes *Executive ownership* and its square to control for incentive and entrenchment effects from holding stock, the logarithm

[64] The bias comes from an omitted variable problem. Regressions with industry-adjusted dependent variables typically fail to control for industry means or medians of the independent variables.

[65] I do not control for advertising expenditures because Compustat Global does not cover them. Himmelberg, Hubbard, and Palia (1999) use advertising expenditures in addition to R&D expenditures to control for the scope for discretionary investments in intangible assets.

of CEO age because older CEOs may be more entrenched (see Cronqvist et al. (2009)), and the logarithm of firm age because firm age may be related to board structure (see Linck, Netter, and Yang (2008)). All variables are winsorized at the 5% and 95% levels to mitigate the influence of outliers.

The inclusion of lagged *Q* mitigates concerns that unobserved factors, which have a similar effect on current and lagged *Q*, strongly drive the results because Tobin's Q is highly persistent (see, e.g., Dittmann, Maug, and Schneider (2010) and Bebchuk, Cremers, and Peyer (2011)). The specification with lagged *Q* and industry fixed effects explores within-firm and between-firm variation in the disclosure policy for pensions. I do not estimate the model with firm fixed effects, which would explore within-firm variation only (see Arellano and Bond (1991)). Within-firm identification is consistent with the view that the majority of firms voluntarily disclosed pension costs once they were well governed. This view, however, seems to be too strict. The clustering of initial disclosures in 2006 would imply that almost all firms in the sample were poorly governed before 2006. In contrast, the regression without firm fixed effects may identify differences in *Q* even if many firms were well governed before their initial disclosure year.

Column 1 of Table III.6 shows the estimated coefficients with *t*-statistics, which are based on standard errors clustered at the company level. The regression identifies a significant difference in *Q* between firms with observable and hidden pensions. The *Pension disclosure* dummy has a coefficient of 0.033 with a *t*-statistic, which is significant at the 10% level. The estimate indicates that firms with hidden pensions have a 3.3% lower *Q* than firms with observable pensions.

Most control variables are not significant. Notable exceptions are lagged *Q* and *Executive ownership*. For lagged *Q*, the significant coefficient of 0.699 confirms that Tobin's Q is highly persistent. For *Executive ownership*, the signs of the coefficients indicate a hump-

shaped association as in Kim and Lu (2011). However, the coefficient on the square term is not significantly different from zero.

5.1.2Pension disclosures and operating performance

To analyze the association between pension disclosures and operating performance, I estimate regressions with the same vector of time-varying controls as in equation (III.1). The dependent variable is now either ROA or OPM. The regressions include lags of the dependent variables, industry fixed effects, and year fixed effects. All variables are winsorized at the 5% and 95% levels to mitigate the influence of outliers. Standard errors are clustered at the company level.

The middle and the right column of Table III.6 show the estimated coefficients. The estimates provide some evidence that firms with hidden pensions have a lower operating performance. In column 2, which shows results from the ROA regression, the disclosure dummy has a coefficient of 0.007. The estimate indicates that firms with hidden pensions have a 0.7 percentage point lower return on assets than firms with observable pensions. However, the economic significance is quite low given a sample mean of 9.4%, and the *t*-statistic misses significance (p-value of 14%). These results suggest that return on assets does not significantly differ between firms with hidden and observable pensions.

Column 3 shows results from the OPM regression. The disclosure dummy has a coefficient of 0.012 with a *t*-statistic significant at the 10% level. The estimate indicates that firms with hidden pensions have a 1.2 percentage point lower operating profit margin than firms with observable pensions. The economic significance is also quite large given a sample mean of -7.4%.

Among the control variables, the statistical and economic significance of the lagged dependent variables is again striking. Lagged ROA has a coefficient of 0.606 with a *t*-

statistic significant at the 1% level. Lagged OPM has a coefficient of 0.667, which is also significant at the 1% level. The estimates imply that both dependent variables are highly persistent.

5.2 Pension disclosures and agency costs

The results so far indicate that firms with hidden pensions are sold at a discount and have lower operating profit margins. To gain some insight into the underlying drivers of these differences, I present results from my analysis of wage policies and acquisition activity. Prior literature has identified these polices as sources for agency costs (see, e.g., Bertrand and Mullainathan (1999, 2003) and Gompers, Ishii, and Metrick (2003)).

5.2.1 Pension disclosures and employee wages

To analyze the association between pension disclosures and wage policy, I estimate regressions with the logarithm of *Wages* as the dependent variable. Time-varying control variables are drawn from prior literature about wage determinants. I include the logarithm of firm age because Brown and Medoff (2003) find that older firms pay higher wages. I include the logarithm of sales because Oi and Idson (1999) find that larger firms pay higher wages. I also control for leverage and capital intensity. Berk, Stanton, and Zechner (2010) argue that firms with higher leverage and capital-intensive firms pay higher wages to compensate employees for the increased risk of wage cuts or layoffs in the case of financial distress. *Leverage* is the book value of short-term and long-term debt divided by the market value of total assets. I define capital intensity as the ratio of fixed assets to total assets (*PPE/Total assets*). To control for growth opportunities and risk characteristics, I include R&D expenditures scaled by sales (*R&D/Sales*). I set *R&D/Sales* to zero if it is missing, and include a dummy for missing observations to maintain sample size (see, e.g.,

Kim and Ouimet (2014)). I also include the logarithm of current and lagged *Labor productivity*. The effect of lagged *Labor productivity* is ambiguous. High past productivity can have a positive effect on wages because high productivity allows unions to bargain more aggressively with the CEO. The effect can be negative if HR professionals respond to high productivity by increasing the benchmark for 100% target achievement in bonus plans.[66] Finally, I add three corporate governance variables. Cronqvist et al. (2009) find that wages in Sweden are increasing in CEO's voting rights and decreasing in CEO's cash flow rights and in external blockholdings. I therefore include the fraction of shares held by the management board and by all external blockholders (*Executive ownership* and *External blockholders*).[67] Cronqvist et al. (2009) also test, but find no evidence that CEO age is positively associated with higher wages. They hypothesize that older CEOs are more entrenched and have lower incentives to resist demands for higher wages. I test their hypothesis for the German case and include the logarithm of CEO age.

Bertrand and Mullainathan (1999) also use wage data from Compustat in their study of wage changes around the passage of antitakeover laws in the US.[68] They point out that these data are very spotty. While some firms do not report wages at all, others report wages only from time to time. Moreover, Bertrand and Mullainathan (1999) observe some unreasonably high growth rates in wages and exclude firms with such outliers from their sample. A closer inspection of my wage data for Germany suggests that Bertrand and Mullainathan's (1999) concerns are also valid in my sample. I therefore apply their thresholds for outliers and exclude consecutive observations, for which the ratio of wages

[66] There is some evidence that CEO compensation is negatively related to past performance (see Core, Guay, and Larcker (2008)).

[67] Accordingly, I only test whether the entrenchment effect from the voting right of common stock or the incentive effect from the cash flow right of common stock dominates the association between executive ownership and wages.

[68] Other studies that use wage data from Compustat for the US include Hanka (1998), Giroud and Mueller (2011), and Chemmanur, Cheng, and Zhang (2013).

exceeds 7/4 or falls below 4/7. These thresholds are equivalent to a positive wage change of +75% and a negative wage change of -44%. All variables are winsorized at the 5% and 95% levels to mitigate the influence of outliers. Standard errors are clustered at the company level.

The results, presented in Table III.7, are consistent with the view that CEOs enjoy the quiet life in firms with hidden pensions. Column 1 of Table III.7 shows coefficient estimates from the regression that excludes the corporate governance variables as controls. The disclosure dummy has a coefficient of -0.088 with a *t*-statistic significant at the 5% level. The estimate indicates that firms with hidden pensions pay their employees an 8.8% higher wage than firms with observable pensions.

Most control variables have coefficients with the expected signs. Employees receive higher wages in older firms and in firms with more R&D expenditures. Wages are also increasing in current labor productivity consistent with findings for Sweden and the US (see Cronqvist et al. (2009) and Chemmanur, Cheng, and Zhang (2013)). There is only weak evidence that past productivity ratchets up current performance benchmarks. The coefficient on lagged *Labor productivity* is negative but insignificant. Surprisingly, sales are negatively associated with wages. For German wage data at the establishment level, Kim, Maug, and Schneider (2014) find a negative association between establishment size and wages. The coefficient on leverage is positive, as expected, but the *t*-statistic is not significant. Chemmanur, Cheng, and Zhang (2013) find a significantly positive association between wages and leverage. The ratio of fixed assets to total assets is not significantly associated with wages consistent with findings for the US (see Chemmanur, Cheng, and Zhang (2013)).

Column 2 of Table III.7 shows that the results are robust to the inclusion of corporate governance variables. The coefficient on the disclosure dummy is virtually identical to the

first specification, and the coefficients on the other variables only change slightly. The associations between the corporate governance variables and wages differ from findings for Sweden (see Cronqvist et al. (2009)). The ownership variables are not significantly associated with wages. Instead, there is a positive and significant association between CEO age and wages.

In untabulated analysis, I use other thresholds than 7/4 and 4/7 to define outliers in the distribution of wage changes. I find similar results for thresholds of 6/4 (wage change of +50%), 5/4 (+25%), 4.4/4 (+10%), and their respective reciprocal. The results do also hold if I apply Bertrand and Mullainathan's (1999) selection rule and exclude all firms for which there exists at least one outlier based on thresholds of 7/4 and 4/7.

5.2.2Pension disclosures and acquisition activity

To analyze the association between pension disclosures and acquisition activity, I use the acquisition sample compiled from SDC. Firms with hidden pensions make 190 (53%) of all acquisitions. This fact suggests that firms with hidden pensions are not significantly more acquisitive than firms with observable pensions. To provide a more formal test, I run a poisson and a logit regression. In the poisson regression, the dependent variable is *Acquisition count*. In the logit regression, the dependent variable is *Acquisition likelihood*. Since both regressions estimate the likelihood for making large investments, I include standard controls from the investment literature starting with Fazzari, Hubbard, and Petersen (1988). I include the logarithm of lagged total assets to control for firm size, lagged Tobin's Q to control for investment opportunities, and a proxy for cash flow to control for internal funds available for investment. I measure cash flow as earnings before extraordinary items plus depreciation and amortization scaled by lagged total assets.

Control variables are winsorized at the 5% and 95% levels to mitigate the influence of outliers. Standard errors are clustered at the company level.

The estimation results, presented in Table III.8, confirm that firms with hidden pensions are not more acquisitive than firms with observable pensions. The coefficient estimates for *Pension disclosure* are negative but not statistically significant at conventional levels. Coefficient estimates for the control variables indicate that larger firms and firms with higher cash flow make more acquisitions consistent with existing research for the US (see, e.g., Harford (1999)). Tobin's Q has a significantly negative association with *Acquisition likelihood.* Endogenous investment opportunities seem to substitute for exogenous growth through acquisitions (see also Malmendier and Tate (2008)).

What ultimately matters for shareholders is not the number but the quality of acquisitions. If CEOs of firms with hidden pensions make acquisitions to build empires for their own best interest and not in the interest of shareholders, we should observe that firms with hidden pensions make less valuable acquisitions. To test this prediction, I analyze how stock prices react to acquisition announcements. In the baseline regression, the dependent variable is the cumulative abnormal return from day -2 to day +2 around the announcement day (*CAR(-2, +2)*). Control variables are bidder and deal characteristics. Bidder characteristics are the logarithm of total assets, Tobin's Q, free cash flow, and leverage. Their values are measured at fiscal year-ends prior to the announcement day. I include total assets to control for bidder size because Moeller, Schlingemann, and Stulz (2004) find that larger bidders have lower announcement returns. I include Tobin's Q because there is some evidence that firms with higher Tobin's Q make better acquisitions (see Servaes (1991)). I control for free cash flow because Jensen (1986) argues that firms with excess cash may engage in empire building. An alternative view is that free cash flow proxies for talented CEOs who make better acquisitions (see Masulis, Wang, and Xie (2007)). For tender

offers, Lang, Stulz, and Walkling (1991) find that bidder returns are decreasing in free cash flow. Masulis, Wang, and Xie (2007) find the opposite effect in some specifications. I control for leverage because Maloney, McCormick, and Mitchell (1993) find that bidder returns are increasing in leverage consistent with the disciplining effect of debt (see Jensen (1986)).

Deal characteristics are measured with five dummy variables. Fuller, Netter, and Stegemoller (2002) find that bidder returns are negative if the target is a public company and positive if the target is a private or subsidiary company. I therefore include three dummies to control for public, private, and subsidiary targets. Morck, Shleifer, and Vishny (1990) find that bidder returns are lower if the target operates in a different industry than the bidder. I therefore include a dummy for diversifying acquisitions. The dummy equals one if the bidder and the target operate in different Fama-French industries. Moeller and Schlingemann (2005) find that bidder returns are lower in cross-border acquisitions than in domestic acquisitions. I therefore include a dummy for cross-border acquisitions.[69] Continuous variables are winsorized at the 5% and 95% levels to mitigate the influence of outliers. Standard errors are clustered at the company level.

The estimation results, presented in Table III.9, suggest that firms with hidden pensions make less valuable acquisitions. The left column of Table III.9 shows coefficient estimates for the baseline regression. The disclosure dummy has a coefficient of 0.019 with a *t*-statistic significant at the 5% level. The estimate indicates that firms with hidden pensions have a 1.91 percentage point lower cumulative abnormal return than firms with observable pensions. The economic significance is substantial relative to the sample mean of 0.2%.

[69] Announcement returns are associated with other deal characteristics, such as relative deal values (see Asquith, Bruner, and Mullins (1983)) and the method of payment (see Travlos (1987)). I do not control for these characteristics because their coverage in SDC is poor. Deal values are missing for around 70% of the deals, and the method of payment is missing for around 90% of the deals.

Coefficient estimates for the control variables are only partly in line with findings for the US. I find a significantly negative coefficient for bidder size consistent with findings by Moeller, Schlingemann, and Stulz (2004). The coefficient on Tobin's Q is also significantly negative, which is again consistent with Moeller, Schlingemann, and Stulz (2004) but inconsistent with Servaes (1991). The coefficient on free cash flow is significantly positive consistent with some results in Masulis, Wang, and Xie (2007). The coefficients on leverage and all deal characteristics are not significant.

The other columns of Table III.9 show coefficient estimates for robustness tests. In column 2, I estimate the regression with variables that are not winsorized. The economic significance increases. The disclosure dummy has a coefficient estimate of 3.1%. In column 3, the dependent variable is the cumulative abnormal return for an event window of three days. The coefficient estimate of 1.3% remains statistically significant and is economically meaningful. In Column 4, I estimate a logit regression for the likelihood that stock prices react positively to the acquisition announcements (see, e.g., Bebchuk, Cremers, and Peyer (2011)). The dependent variable equals one if the 5-day cumulative abnormal return is positive. The estimates indicate that firms with hidden pensions are less likely to make acquisitions that benefit shareholders. The coefficient on *Pension disclosure* is positive and statistically significant at the 5% level. The coefficient is also economically meaningful. The coefficient equates to an average marginal effect of 0.17. The likelihood that the company makes a valuable acquisition increases by 17 percentage points when the disclosure dummy switches from zero to one.

5.3 The market reaction to the corporate governance reform

The empirical relationship between pension disclosures, firm performance, and agency costs does not imply a causal role by boards and executive compensation. The disclosure

dummy may proxy for other unobserved factors that are related to firm performance and agency costs. To facilitate the interpretation of the results, I analyze how stock prices react to the announcement of the corporate governance reform from 2009. The reform is a compelling instrument for identification because the provisions address concerns about ineffective boards and inefficient compensation designs. If the disclosure dummy proxies for the quality of board decision-making and the efficiency of compensation designs, we should observe positive abnormal returns for firms with hidden pensions (Hypotheses 5) and negative abnormal returns for firms with observable pensions (Hypothesis 6).

5.3.1Identification of events

In summer 2008, the German government appointed the task force "Executive compensation". The task force should develop suggestions for provisions that would improve compensation practice. The suggestions provided the basis for the law on the "Adequacy of management board compensation", which the German parliament approved in summer 2009. For the identification of events related to the law, I use three sources. First, I search the website of the German parliament for legal documents. Second, I search LexisNexis for newspaper articles that contain the keywords "Angemessenheit" (adequacy) or "Arbeitsgruppe" (task force) in combination with "Vorstandsvergütung" (executive compensation). Third, I download official press releases of the task force. I keep all documents that provide news about the content of the law or describe political milestones that increase the likelihood for law enactment. I identify eleven events that meet these criteria.

Table III.10 summarizes the events. On January 22, 2009, the task force announces preliminary suggestions for a draft bill. The task force underlines the responsibilities of the supervisory board for setting executive compensation, supports clawback provisions, and

suggests vesting periods of four years for equity plans. On January 29, the task force officially presents these suggestions. In addition, the task force supports higher transparency standards for pension disclosures. On March 5, the press reports that political leaders have decided to draft a bill, which will be based on the suggestions made by the task force. Some politicians call for say-on-pay at annual meetings of shareholders. On March 11, the government outlines the main content of the upcoming draft bill. The draft bill specifies the suggestions made by the task force, and details criteria for adequate compensation levels and for the adequate duration of executive compensation. On March 17, the government officially presents the draft bill. On March 20, politicians discuss the draft bill in parliament. Political leaders are confident that the task force will agree on additional provisions, such as say-on-pay. On April 23 and on May 7, the task force announces further suggestions. D&O insurances shall include deductibles and the appointment to the supervisory board shall require a cooling-off period. On May 25, politicians discuss the content of the draft bill with experts. On May 29, the press reports final adjustments to the draft bill. The deductible in D&O insurances amounts to 150% of fixed compensation, compensation agreements shall include caps, shareholders get a say-on-pay vote, and the cooling-off period is not binding if the proposal for appointment achieves a 25% quorum. On June 18, the German parliament approves the draft bill.

5.3.2Event study evidence

To estimate the impact of the law on shareholder value, I add dummy variables to Carhart's (1997) four factor model:

$$\begin{aligned} Excess\ return_{i,t} = \alpha \ &+ \beta_1 \times Pension\ disclosure_{i,t} + \beta_2 \times Events_t \\ &+ \beta_3 \times Pension\ disclosure_{i,t} \times Events_t \\ &+ \beta_4 \times RMRF_t + \beta_5 \times SMB_t + \beta_6 \times HML_t + \beta_7 \times WML_t + \varepsilon_{i,t} \end{aligned} \quad \text{(III.2)}$$

The dependent variable, $Excess\ return_{i,t}$, is the stock return for company i on day t minus the risk free rate, $Pension\ disclosure_{i,t}$ is a dummy variable and equals one if the company disclosed pension costs for individual executives in the prior fiscal year, $Events_t$ is a dummy variable and equals one on the eleven event days, $RMRF_t$, SMB_t, and HML_t are the Fama and French (1993) factors, and WML_t is Carhart's (1997) momentum factor. $RMRF_t$ is the return on the market portfolio minus the risk free rate, SMB_t is the size factor and measures the return difference between small stocks and big stocks, HML_t is the book-to-market factor and measures the return difference between high and low book-to-market stocks, and WML_t measures the return difference between past winners and past losers.

The regression pools all observations from firms with observable and hidden pensions to increase the power of the statistical tests. Pooling all observations gives a statistical model, which is used in differences-in-differences (diff-in-diff) analysis. In a typical diff-in-diff regression, the coefficient on the interaction term, β_3, measures the average effect of the law (see, e.g., Angrist and Pischke (2009)). The economic interpretation, however, does not follow the diff-in-diff logic here because *Pension disclosure* does not separate a treatment group from a control group. The coefficient β_3 measures the difference in average abnormal returns between firms with observable and hidden pensions, both of which are treated by the law. The coefficient β_2 measures the average effect of the law on firms with hidden pensions, and the sum of β_2 and β_3 measures the average effect on firms with observable pensions. This interpretation assumes that any confounding effects average out across the eleven event days.

The sample period covers 210 trading days from October 1, 2008 to July 31, 2009. The sample period starts around two weeks after Lehman Brothers filed for bankruptcy to allow for the possibility that market betas changed around the announcement of the bankruptcy (see also Fernando, May, and Megginson (2012)). Stocks with prices below one Euro are excluded because they tend to be less liquid and are less likely to reflect public information efficiently (see, e.g., Chhaochharia and Grinstein (2007)). The final sample includes 122 firms. By the time the law was approved, 29 firms had not disclosed their pension costs. Standard errors are clustered by day to account for cross-sectional correlation and by company to account for time-series correlation (see Petersen (2009)).

The left column of Table III.11 shows the estimated coefficients. The estimates suggest that firms with hidden pensions benefit from the law. The *Events* dummy has a coefficient of 0.0045 with a *t*-statistic significant at the 10% level. The estimate indicates that firms with hidden pensions have average abnormal returns of 0.45% per day when shareholders receive news about the law. The cumulative abnormal return amounts to 4.95% (0.45% times eleven event days). An increase in the stock price by 4.95% is worth around € 170 million given that the average company with hidden pensions has a market capitalization of more than € 3.4 billion at the beginning of 2009. The economic significance is substantial relative to observable pay levels. The management board of the average company with hidden pensions receives around € 2.2 million in 2006. Although this sum excludes pension costs, it is unrealistic that gains of € 170 million can come from expected decreases in pay levels alone. The magnitude of the effect seems more consistent with the view that the provisions of the law lead to compensation structures with a better incentive alignment between executives and shareholders (see also Bebchuk and Fried (2004)).

The economic significance is also substantial relative to estimated gains from the passage of specific corporate governance provisions. For example, Cai and Walkling (2011)

analyze how stock prices react to the passage of the Say-on-Pay Bill in the US. They find that the average company with excess compensation gains $ 54 million or around € 40 million in value. In Albrecht (2014) I analyze how stock prices react to the announcement of the disclosure law. Firms that are most affected gain € 33 million in value. Given these estimates, expected gains of € 170 million indicate that the different corporate governance provisions of the law complement each other.

The results further suggest that abnormal returns are significantly higher for firms with hidden pensions than for firms with observable pensions. The interaction dummy, *Pension disclosure* times *Events*, has a coefficient of -0.0044 with a *t*-statistic significant at the 10% level. The estimate implies that the difference in average abnormal returns amounts to 0.44% between firms with hidden and observable pensions. In total, the law does not have a significant effect on firms with observable pensions. The average abnormal return is 0.01% (0.45% minus 0.44%). The bottom of Table III.11 shows that the *F*-statistic from a Wald test is not statistically different from zero. This result is inconsistent with Hypothesis 6, which predicts a negative stock price reaction for firms with observable pensions. There are least two potential explanations. First, some of the provisions are beneficial because boards are not fully effective in firms with observable pensions. Second, the law generates positive spill-over effects. While I cannot disentangle these explanations, the positive abnormal returns for firms with hidden pensions support the assumption that hidden pensions indicate weak boards and inefficient compensation designs.

The middle and the right column of Table III.11 show results from two alternative model specifications. The dependent variable is the daily market-adjusted return. In the middle column, the control variables are firm-specific characteristics to account for size, book-to-market, and momentum effects (see, e.g., Larcker, Ormazabal, and Taylor (2011)). Size is the logarithm of lagged daily market value of equity, book-to-market is the logarithm of

last year's book value of equity divided by lagged daily market value of equity, and momentum is the market-adjusted return over the past six months. Coefficient estimates are economically stronger than those reported in the left column. Abnormal returns for firms with hidden pensions increase to 0.65% per day with a *t*-statistic significant at the 5% level. Abnormal returns for firms with observable pensions increase to 0.22% per day, but the effect remains insignificant. The difference in abnormal returns amounts to 0.43%, and the *t*-statistic just misses significance (p-value of 11%). In the right column, the regression additionally includes industry fixed effects because there is some evidence that returns have an industry-specific component after controlling for size, book-to-market, and momentum (see, e.g., Hou and Robinson (2006)). The inclusion of industry fixed effects does not change the coefficients of interest. The specifications confirm that abnormal returns are positive and significant for firms with hidden pensions, and positive and insignificant for firms with observable pensions.

5.4 Alternative explanations

The event study results are consistent with the assumption that hidden pensions are associated with weak boards and inefficient compensation designs. This association can explain differences in firm performance, wage policy, and acquisition activity between firms with observable and hidden pensions. However, such differences could also arise under the alternative assumption that firms hide pensions to prevent deviations from efficient compensation designs. Under this view, CEOs are just more willing to disclose pensions because they perform better. Murphy (1996) derives such a hypothesis under three assumptions. First, high perceived compensation attracts public scrutiny. Second, public scrutiny imposes political costs on executives. Third, political costs are decreasing in firm performance because high firm performance insulates executives from public

criticism. The first and the second assumption imply that executives have an incentive to lower the perceived level of compensation. The third assumption implies that this incentive is lower if the company performs well.

The first and the second assumption are similar to the assumptions under the managerial power view. Murphy (1996), however, does not assume that CEOs are uncontrolled. The CEO camouflages efficient compensation designs to protect her privacy. Camouflage activities do not distort efficient compensation designs. The third assumption is crucial because it leads to the hypothesis that CEOs from better-performing firms are more willing to disclose compensation. Empirical evidence for this assumption and the hypothesis is at best mixed. Core, Guay, and Larcker (2008) find that negative press coverage about CEO compensation is lower for both high performing and low performing firms. Murphy (1996) analyzes disclosures of option values. He does not find any evidence that firms with high past performance are more willing to disclose actual grant values. He hypothesizes that the disclosure policy may be related to future performance: CEOs are more willing to disclose compensation if they forecast good performance.[70]

To test this hypothesis I analyze the profits from a trading strategy that buys stocks from firms with observable pensions and sells stocks from firms with hidden pensions. If the disclosure policy for pensions indicates CEO's inside information about the future performance of the company, trading on differences in the disclosure policy should earn abnormal profits. I construct two portfolios. The portfolio of firms with observable pensions includes monthly stock returns after the third month of a fiscal-year end, for which the company discloses pension costs. I use returns after the third month to ensure

[70] The hypothesis that companies with high past performance are more likely to disclose pension costs would bias my results against finding any performance differences. The disclosure dummy is time-varying and equals one once the company discloses pension costs. Murphy's (1996) hypothesis about the association between pay disclosures and future performance is therefore more relevant for my analysis. Gompers, Ishii, and Metrick (2003) develop a similar hypothesis about the adoption of antitakeover provisions and future performance.

that information about the disclosure decision is publicly available. Most firms publish their annual reports within three months after the fiscal-year end. The portfolio of firms with hidden pensions includes monthly stock returns for all other months. The difference in monthly returns between these portfolios is then regressed on the common risk factors. The intercept (*alpha)* indicates the abnormal return to a hedge portfolio that is long in firms with observable pensions and short in firms with hidden pensions. The sample period is the pre-event period from April 2004 to December 2008. Stock price observations below one Euro are excluded from the calculations. Standard errors are robust to heteroscedasticity.

The left column of Table III.12 shows the estimated coefficients. The *alpha* coefficient has an estimate of -0.003 with a *t*-statistic, which is not statistically significant at conventional levels. The estimate implies that a trading strategy based on the disclosure policy for pensions does not earn abnormal returns. The second and third column of Table III.12 show coefficient estimates from regressions that use monthly excess returns on the individual portfolios as the dependent variables. The *alpha* coefficients are positive, but not statistically different from zero. The estimates imply that neither an investment in the portfolio of firms with observable pensions nor an investment in the portfolio of firms with hidden pensions earns abnormal returns.

Since only a few firms disclose pension costs before March 2007, their stock returns have an undue influence on the regression estimates. I therefore add a dummy for the time period from April 2007 to December 2008. The coefficient on the dummy indicates differential abnormal returns between the period before and after April 2007. The results, presented in the last three columns of Table III.12, remain stable. The *alpha* coefficients, which indicate monthly abnormal returns until March 2007, are insignificant. Monthly abnormal returns are not significantly higher in the period afterwards. Wald tests at the

bottom of Table III.12 confirm that abnormal returns are not statistically different from zero for the whole sample period.

Firms with observable pensions could only temporarily outperform firms with hidden pensions. In this case, we should observe a pattern of positive abnormal returns around the year, for which pension costs are initially disclosed. To test this prediction, I run a pooled cross-sectional time-series regression. The dependent variable is the monthly excess return for company *i* in month *m*. The main independent variables are eleven dummy variables. Each dummy indicates the year relative to the initial disclosure year, which is denoted by "*t = 0*". Control variables are the four risk factors. The sample period is the pre-event period from April 2003 to December 2008. Stock prices below one Euro are excluded from the calculations. Standard errors are clustered by month and firm.[71]

Figure III.1 shows coefficient estimates for the year dummies with *t*-statistics in parentheses. I focus on the three years before and after the initial disclosure year because the sample period covers earlier and later years for only a few firms. Figure III.1 does not reveal a clear pattern. In the initial disclosure year, average monthly abnormal returns are close to zero. In the three years after, abnormal returns are positive but insignificant. In the three years before, abnormal returns are also insignificant. The estimates provide additional evidence that the disclosure dummy does not indicate asymmetric information.

The finding that trading on differences in the disclosure policy for pensions does not earn abnormal profits has two more important implications. First, the disclosure dummy is not strongly correlated with an omitted risk factor. Such a risk factor could influence not only returns, but also other performance measures, such as Tobin's Q. Second, shareholders appreciate the differences in performance and agency costs between firms with observable and hidden pensions. Otherwise, stock prices would not incorporate these differences. This

[71] Yermack (2006) uses a similar approach to analyze the return pattern around the initial disclosures of personal CEO aircraft use.

implication gives confidence in the interpretation of the results from the event study. The event study assumes that abnormal returns reflect expected efficiency changes that shareholders infer from expected changes in the corporate governance structure as required by the law. The assumption requires that shareholders appreciate the differences in performance and agency costs between firms with observable and hidden pensions. Otherwise, the estimated efficiency gains would be bad estimates at best and not related to enactment of the law at worst.[72]

6 Conclusion

The notion of camouflage is the key concept of the managerial power view. Camouflage activities distort incentives and thereby weaken firm performance. I find consistent evidence for this association. Firms that hide costs of executive pensions are valued at a discount and have lower operating profit margins. I explore two potential sources for agency costs. Firms that hide pensions pay their employees higher wages and make worse acquisitions. I also find evidence that hidden pensions are associated with weak boards and inefficient compensation designs. Stock prices of firms with hidden pensions react positively to the announcement of a corporate governance reform that addresses the compensation practice in German board rooms.

The results have important policy implications. The positive market reaction to the reform suggests that policy efforts were successful in Germany. However, the results must be interpreted with some caution. First, German rules effectively give large blockholders the

[72] Bebchuk, Cohen, and Wang (2013) find that the association between returns and the corporate governance index from Gompers, Ishii, and Metrick (2003) existed only during the 1990s and disappeared during the 2000s. They attribute the disappearance to shareholders' learning to appreciate the performance implications of differences in corporate governance. Consistent with the learning hypothesis, they find that market players have paid much more attention to corporate governance since the early 2000s. Attention to corporate governance sharply increased in Germany around the same time. The first Corporate Governance Code was published in Germany in February 2002. Since my sample period includes the years after 2002, it seems likely that shareholders appreciated the differences between companies with observable and hidden pensions.

opportunity to hide the compensation for individual executives. The sample is therefore biased towards firms with more agency problems. This selection bias mitigates the external validity of the results. Second, the positive market reaction may reflect a wealth transfer from executives, employees, and bondholders to shareholders and does not imply an overall increase in social welfare.

The analysis of camouflage activities is a fruitful area of further research. On the theoretical side, research should be devoted to the development of models that relate the notion of camouflage to efficiency losses. On the empirical side, research should analyze the implications of camouflage activities in other countries where boards operate in a different institutional environment. The results for the German case give rise to many open questions. One area is the association between camouflage activities and say-on-pay: Do say-on-pay voting outcomes differ between firms with observable and hidden pensions? Do shareholders raise concerns about pensions? How do stock and bond prices react to the voting outcomes? Do boards respond differently to the voting outcomes? Another area is the association between camouflage activities and board characteristics: How do board characteristics differ between firms with hidden and observable pensions? Are there differences in the composition of compensation committees? A third area is the analysis of policy interventions: Has the corporate governance reform alleviated the performance gap between the subsamples? Have employee wages and the composition and level of executive compensation changed? Research about these questions will increase our understanding of the association between camouflage activities, firm performance, and agency costs.

Tables

Table III.1: Variable definitions

The table defines all variables used in the analysis and reports their sources. Panel A defines firm and executive characteristics, Panel B defines M&A characteristics, and Panel C defines stock market data. Richard Stehle provides daily risk factors for Germany at http://www.wiwi.hu-berlin.de/professuren/bwl/bb/data/fama-french-factors-germany. The Centre for Financial Research Cologne (CFR) provides monthly risk factors for Germany at http://www.cfr-cologne.de.

Panel A: Firm and executive characteristics

Variables	Description	Source
Pension disclosure	A dummy variable equal to one if the firm discloses pension costs for individual executives in a given fiscal year, and zero otherwise	Annual reports
Market value (yearly) (bn €)	Market value of common equity at fiscal year-end (prccd × cshoc)	Compustat Global
Total assets (bn €)	Total assets (at)	Compustat Global
Sales (bn €)	Sales (sale) in 2002 Euros	Compustat Global
Tobin's Q	Total assets (at) plus the market value of common equity (prccd × cshoc) minus the book value of common equity (ceq) minus deferred taxes (txdb) divided by total assets (at)	Compustat Global
Book-to-market (yearly)	The book value of common equity (ceq) divided by the market value of common equity at fiscal year-end (prccd × cshoc)	Compustat Global
ROA	Operating income before depreciation (oibdp) divided by total assets (at)	Compustat Global
OPM	Operating income before depreciation (oibdp) divided by sales (sale)	Compustat Global
Free cash flow	Operating income before depreciation (oibdp) minus interest and related expense (xint) minus income taxes (txt) minus capital expenditures (capx) divided by total assets (at)	Compustat Global
Cash flow available for investments	Income before extraordinary items (ib) plus depreciation and amortization (dp) divided by lagged total assets (at)	Compustat Global
Leverage	Debt in current liabilities (dlc) plus long-term debt (dltt) divided by the market value of total assets. The market value of total assets is the book value of total assets (at) minus the book value of common equity (ceq) plus the market value of common equity (prccd × cshoc).	Compustat Global
PPE/Sales	Property, plant and equipment (ppent) divided by sales (sale)	Compustat Global
PPE/Total assets	Property, plant and equipment (ppent) divided by total assets (at)	Compustat Global
CAPEX/PPE	Capital expenditures (capx) divided by property, plant and equipment (ppent)	Compustat Global
R&D/Sales	Research and development expense (xrd) divided by sales (sale). It is zero if research and development expense is missing but sales are reported.	Compustat Global
R&D missing	A dummy variable equal to one if research and development expense (xrd) is missing but sales (sale) are reported, and zero otherwise.	Compustat Global
Sigma	The standard error of the residuals from a market model regression of daily stock returns on CDAX returns. It is zero if less than 200 stock returns are available during the fiscal year.	Compustat Global, Datastream
Sigma missing	A dummy variable equal to one if the data to calculate sigma is not available, and zero otherwise	Compustat Global, Datastream

Panel A continued

Variables	Description	Source
Wages (k €)	Staff expense (xlr) in 2002 Euros divided by the number of employees (emp)	Compustat Global
Labor productivity (k €)	Sales (sale) in 2002 Euros divided by the number of employees (emp)	Compustat Global
Firm age	Current year minus the year of incorporation plus one	Company websites
External blockholders	Sum of the percentage shareholdings of all blockholders excluding shareholdings of the management board and the supervisory board	Hoppenstedt company profiles
Executive ownership	Percentage shareholdings of the management board	Hoppenstedt company profiles
CEO age	Age of the incumbent CEO	BoardEx, Hoppenstedt company profiles, annual reports
Total compensation (mm €)	Sum of salary, short-term incentives, long-term incentives, and perquisites	Annual reports
Pension costs (mm €)	Pension costs for individual executives	Annual reports
Short-term incentives / Total compensation	Short-term incentives divided by total compensation	Annual reports
Long-term incentives / Total compensation	Long-term incentives divided by total compensation	Annual reports
Pension costs / Total compensation	Pension costs divided by total compensation	Annual reports

Panel B: M&A characteristics

Variables	Description	Source
Acquisition count	The number of acquisitions made by a firm during the fiscal year	SDC
Acquisition likelihood	A dummy variable equal to one if the firm makes at least one acquisition during the fiscal year, and zero otherwise	SDC
CAR(-2, +2)	Cumulative abnormal return for the five days around an acquisition announcement. Abnormal returns are residuals from a market model regression of daily stock returns on CDAX returns. Market model parameters are estimated from day -210 to day -11 before the announcement date. Abnormal returns are set to missing if less than 200 stock returns are available during the estimation window.	SDC, Compustat Global, Datastream
CAR(-2, +2) > 0	A dummy variable equal to one if CAR(-2, +2) is positive, and zero otherwise	SDC, Compustat Global, Datastream
CAR(-1, +1)	Cumulative abnormal return for the three days around an acquisiton announcement. See CAR(-2, +2) above for further details.	SDC, Compustat Global, Datastream
Public target	A dummy variable equal to one for public targets, and zero otherwise	SDC
Private target	A dummy variable equal to one for private targets, and zero otherwise	SDC
Subsidiary target	A dummy variable equal to one for subsidiary targets, and zero otherwise	SDC
Diversifying acquisition	A dummy variable equal to one if the bidder and the target do not operate in the same industry according to the Fama-French 48 industry classification, and zero otherwise	SDC
Cross border	A dummy variable equal to one for a foreign target, and zero otherwise	SDC

Panel C: Stock market data

Variables	Description	Source
Daily excess returns	Daily stock return minus the daily risk-free rate, which is derived from the one-month money market rate	Compustat Global, Stehle's website
Daily market-adjusted returns	Daily stock return minus the daily return on the CDAX index	Compustat Global, Datastream
Return past 6 months	Market-adjusted return over the prior 130 trading days	Compustat Global, Datastream
Market value (daily) (bn €)	Market value of common equity on a given day (prccd × cshoc)	Compustat Global
Book-to-market (daily)	The book value of common equity (ceq) for the last fiscal year divided by the market value of common equity on a given day (prccd × cshoc)	Compustat Global
RMRF (daily)	The daily return on the market portfolio minus the daily risk-free rate, which is derived from the one-month money market rate	Stehle's website
SMB (daily)	Daily size factor: difference in daily returns between small stocks and big stocks	Stehle's website
HML (daily)	Daily book-to-market factor: difference in daily returns between high and low book-to-market stocks	Stehle's website
WML (daily)	Daily momentum factor: difference in daily returns between past winners and past losers	Stehle's website
Events	A dummy variable equal to one on eleven event days, and zero otherwise	LexisNexis, Internet research
Monthly excess returns	Monthly stock return minus the risk-free rate (one-month money market rate)	Compustat Global, CFR
Portfolio returns: Observable pensions	Monthly return on the portfolio of firms, for which pension costs for individual executives are observable in a given month, minus the risk-free rate (one-month money market rate)	Compustat Global, CFR
Portfolio returns: Hidden pensions	Monthly return on the portfolio of firms, for which pension costs for individual executives are not observable in a given month, minus the risk-free rate (one-month money market rate)	Compustat Global, CFR
Hedge portfolio	The monthly return on the portfolio of firms with observable pensions minus the monthly return on the portfolio of firms with hidden pensions	Compustat Global
RMRF (monthly)	The monthly return on the market portfolio minus the risk-free rate (one-month money market rate)	CFR
SMB (monthly)	Monthly size factor: difference in monthly returns between small stocks and big stocks	CFR
HML (monthly)	Monthly book-to-market factor: difference in monthly returns between high and low book-to-market stocks	CFR
WML (monthly)	Monthly momentum factor: difference in monthly returns between past winners and past losers	CFR

Table III.2: Disclosure policy and pension costs

Panel A of the table shows the number of firms that start disclosing pension costs in each year. Panel B of the table presents descriptive statistics for executive compensation in fiscal year 2006. Compensation data are for executives that served for the full fiscal year. Total compensation excludes pension costs. The last two columns report mean values for firms that do and do not disclose pension costs. ***, **, and * denote statistically significant differences in mean values at the 1%, 5%, and 10% level according to *t*-tests.

Panel A: Number of firms with initial disclosure of pension costs by year

Year of initial disclosure	Number of firms
2003	3
2004	1
2005	6
2006	67
2007	16
2008	4
2009	0
Total	97

Panel B: Executive compensation in fiscal year 2006

Variables	Descriptive statistics						Pension costs		
	Obs.	Mean	Std. Dev.	5th Perc.	Median	95th Perc.	Hidden	Observable	
Total compensation (mm €)	423	1.398	1.234	0.232	0.992	3.659	0.835	1.528	***
Short-term incentives / Total comp.	421	0.402	0.193	0	0.408	0.691	0.353	0.413	**
Long-term incentives / Total comp.	423	0.154	0.197	0	0.038	0.527	0.101	0.166	***
Pension costs (mm €)	344	0.215	0.373	0	0.073	0.774	N/A	0.215	
Pension costs / Total comp.	344	0.154	0.535	0	0.074	0.435	N/A	0.154	

Table III.3: Industry distribution

The table shows the industry distribution of the sample firms across Fama-French 12 industry groups. The left column shows the industry distribution for all firms. The middle and the right column show the industry distribution for the subsamples of firms that do and do not disclose pension costs at some time during the sample period from March 2003 to December 2009.

			Pension costs	
	Fama-French industry groups	Sample	Hidden	Observable
1	Business Equipment	20%	29%	15%
2	Chemicals and Allied Products	9%	2%	11%
3	Consumer Durables	7%	5%	7%
4	Consumer NonDurables	4%	7%	2%
5	Energy	0%	0%	0%
6	Finance	0%	0%	0%
7	Healthcare, Medical Equipment, and Drugs	9%	7%	10%
8	Manufacturing	25%	27%	25%
9	Telephone and Television Transmission	4%	5%	4%
10	Utilities	1%	0%	2%
11	Wholesale, Retail, Laundries, Repair Shops	7%	7%	7%
12	Other	14%	10%	15%
	Observations	138	41	97

Table III.4: Descriptive statistics

The table presents descriptive statistics for all variables used in the analysis. Panel A shows firm and executive characteristics measured for fiscal years 2002 to 2009. Panel B shows deal characteristics for mergers and acquisitions that the sample firms completed between March 2003 and December 2009. Panel C shows stock market data. Daily returns are measured from October 2008 to July 2009. Table III.1 defines all variables. The right columns show mean values of the variables for the subsamples of firm-years in which pension costs are hidden and observable. ***, **, and * denote statistically significant differences in mean values at the 1%, 5%, and 10% level according to *t*-tests.

Variables	Descriptive statistics						Pension costs		
	Obs.	Mean	Std. Dev.	5th Perc.	Median	95th Perc.	Hidden	Observable	
Panel A: Firm and executive characteristics									
Pension disclosure	1,010	0.367	0.482	0	0	1			
Market value (yearly) (bn €)	967	4.818	12.086	0.035	0.536	31.078	3.762	6.514	***
Total assets (bn €)	1,008	11.140	32.341	0.050	0.744	91.555	9.483	13.996	**
Sales (bn €)	1,010	7.484	18.810	0.024	0.767	49.666	6.648	8.923	*
Tobin's Q	960	1.520	0.875	0.804	1.250	3.258	1.503	1.547	
Book-to-market (yearly)	960	0.715	0.599	0.164	0.554	1.795	0.759	0.644	***
ROA	1,007	0.094	0.147	-0.100	0.106	0.263	0.092	0.097	
OPM	1,004	-0.074	1.929	-0.121	0.104	0.261	-0.160	0.072	*
Free cash flow	987	0.010	0.141	-0.154	0.029	0.133	0.009	0.011	
Cash flow available for investments	861	0.074	0.116	-0.107	0.080	0.234	0.075	0.072	
Leverage	960	0.164	0.142	0.000	0.136	0.430	0.165	0.160	
PPE/Sales	1,004	0.297	1.237	0.021	0.166	0.777	0.335	0.230	
PPE/Total assets	1,008	0.212	0.155	0.018	0.183	0.526	0.221	0.196	**
CAPEX/PPE	999	0.350	0.682	0.078	0.222	0.855	0.312	0.414	**
R&D/Sales	1,006	0.173	1.519	0	0.004	0.208	0.234	0.069	*
R&D missing	1,010	0.448	0.498	0	0	1	0.518	0.326	***
Sigma	1,010	0.025	0.017	0	0.022	0.050	0.024	0.026	
Sigma missing	1,010	0.059	0.237	0	0	1	0.085	0.016	***
Wages (k €)	706	45.464	29.529	2.019	46.444	72.362	47.811	41.851	***
Labor productivity (k €)	792	292.337	381.348	63.677	200.920	662.880	274.129	321.880	*
Firm age	1,010	69.368	54.404	8	57	157	64.405	77.916	***
External blockholders	954	0.307	0.251	0	0.253	0.820	0.308	0.306	
Executive ownership	954	0.069	0.155	0	0	0.489	0.078	0.056	**
CEO age	968	52.305	7.508	39	53	63	51.689	53.295	***
Panel B: M&A characteristics									
Acquisition count	886	0.370	0.874	0.000	0.000	2.000	0.390	0.342	
Acquisition likelihood	886	0.234	0.423	0.000	0.000	1.000	0.243	0.221	
CAR(-2, +2)	358	0.002	0.056	-0.087	-0.001	0.103	0.001	0.002	
CAR(-2, +2) > 0	358	0.497	0.501	0	0	1	0.526	0.464	
CAR(-1, +1)	358	0.004	0.047	-0.058	0.001	0.069	0.001	0.007	
Public target	358	0.059	0.235	0	0	1	0.074	0.042	
Private target	358	0.489	0.501	0	0	1	0.484	0.494	
Subsidiary target	358	0.439	0.497	0	0	1	0.426	0.452	
Diversifying acquisition	358	0.475	0.500	0	0	1	0.505	0.441	
Cross border	358	0.654	0.477	0	1	1	0.595	0.720	**

Table III.4 continued

Variables	Descriptive statistics						Pension costs		
	Obs.	Mean	Std. Dev.	5th Perc.	Median	95th Perc.	Hidden	Observable	
Panel C: Stock market data									
Daily excess returns	24,387	0.000	0.047	-0.068	0.000	0.071	0.000	0.000	
Daily market-adjusted returns	24,387	0.001	0.041	-0.058	-0.001	0.061	0.000	0.001	
Return past 6 months	24,232	0.025	0.289	-0.363	-0.012	0.494	0.021	0.026	
Market value (daily) (bn €)	24,442	4.477	11.711	0.039	0.620	31.472	3.518	4.764	***
Book-to-market (daily)	24,284	1.014	0.811	0.229	0.757	2.810	1.094	0.990	***
RMRF (daily)	210	0.000	0.024	-0.037	0.001	0.039			
SMB (daily)	210	-0.001	0.018	-0.034	0.002	0.026			
HML (daily)	210	0.000	0.009	-0.017	0.001	0.014			
WML (daily)	210	0.001	0.028	-0.040	0.000	0.035			
Events	24,442	0.051	0.221	0	0	1	0.048	0.052	
Monthly excess returns	8,357	0.013	0.125	-0.174	0.008	0.210	0.024	-0.004	***
Portfolio returns: Observable pensions	57	0.003	0.074	-0.147	0.011	0.113			
Portfolio returns: Hidden pensions	57	0.004	0.060	-0.148	0.018	0.065			
Hedge portfolio	57	0.000	0.049	-0.097	-0.005	0.128			
RMRF (monthly)	69	0.008	0.052	-0.096	0.019	0.064			
SMB (monthly)	69	-0.001	0.035	-0.050	-0.005	0.069			
HML (monthly)	69	0.006	0.027	-0.031	0.002	0.056			
WML (monthly)	69	0.008	0.040	-0.048	0.013	0.054			

Table III.5: Sample bias

The table presents mean values of selected variables. The left columns include the sample firms. Their shareholders do not vote against pay disclosures for individual executives. The right columns include firms that are excluded from the sample. Shareholders of these firms vote against pay disclosures for individual executives. ***, **, and * denote statistically significant differences in mean values at the 1%, 5%, and 10% level according to *t*-tests.

	Pay disclosures for individual executives:				
	Yes (final sample)		No		
Variables	Obs.	Mean	Obs.	Mean	
Market value (yearly) (bn €)	967	4.818	258	1.476	***
Total assets (bn €)	1,008	11.14	334	1.85	***
Sales (bn €)	1,010	7.484	334	1.996	***
External blockholders	954	0.307	295	0.393	***
Tobin's Q	960	1.52	257	1.673	**
ROA	1,007	0.094	334	0.135	***
OPM	1,004	-0.074	334	0.119	*

Table III.6: Pension disclosures and firm performance

The table presents results from OLS regressions for the association between pension disclosures and firm performance. The dependent variable is the logarithm of *Tobin's Q* in column 1, return on assets (*ROA*) in column 2, and operating profit margin (*OPM*) in column 3. The main independent variable, *Pension disclosure*, is a dummy variable and equals one if the firm discloses pension costs for individual executives in a given year. All variables are described in Table III.1. The dependent variables are measured from 2003 to 2009. All variables are winsorized at the 5% and 95% levels. *t*-statistics appear in parentheses. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Variables	log(Tobin's Q) (1)	ROA (2)	OPM (3)
Pension disclosure	0.033 *	0.007	0.012 *
	(1.68)	(1.49)	(1.72)
log(Sales)	0.004	0.004	0.005 *
	(0.37)	(1.38)	(1.89)
$(\log(\text{Sales}))^2$	-0.002	-0.002 **	-0.001 *
	(-1.02)	(-2.57)	(-1.81)
PPE/Sales	0.045	0.002	-0.020
	(0.25)	(0.05)	(-0.37)
$(\text{PPE/Sales})^2$	-0.213	-0.012	0.062
	(-1.00)	(-0.24)	(0.89)
CAPEX/PPE	0.012	-0.020	-0.020
	(0.22)	(-1.64)	(-1.48)
R&D/Sales	0.081	-0.172 **	-0.092
	(0.31)	(-2.41)	(-1.11)
R&D missing	-0.016	-0.009	-0.007
	(-0.70)	(-1.48)	(-1.09)
Sigma	-1.177	-0.683 *	-0.569 *
	(-0.73)	(-1.97)	(-1.85)
Sigma missing	-0.175 ***	-0.007	0.001
	(-3.74)	(-0.46)	(0.06)
Executive ownership	0.511 *	0.096	0.116
	(1.69)	(1.08)	(1.43)
$(\text{Executive ownership})^2$	-0.818	-0.176	-0.253
	(-1.18)	(-0.91)	(-1.48)
log(CEO age)	0.047	-0.030 **	-0.045 **
	(0.75)	(-2.02)	(-2.58)
log(Firm age)	-0.010	0.001	0.003
	(-0.58)	(0.25)	(0.56)
$\log(\text{Tobin's Q})_{t-1}$	0.699 ***		
	(18.62)		
ROA_{t-1}		0.606 ***	
		(12.76)	
OPM_{t-1}			0.667 ***
			(12.69)
Intercept	0.028	0.152 **	0.202 **
	(0.11)	(2.17)	(2.55)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Adjusted R^2	0.661	0.632	0.655
Observations	809	829	827

Table III.7: Pension disclosures and wages

The table presents results from OLS regressions with the logarithm of *Wages* as the dependent variable. The main independent variable, *Pension disclosure*, is a dummy variable and equals one if the firm discloses pension costs for individual executives in a given year. All variables are described in Table III.1. The dependent variable is measured from 2003 to 2009. Consecutive observations, for which the growth rate in *Wages* is above +75% or below -44%, are excluded. All variables are winsorized at the 5% and 95% levels. *t*-statistics appear in parentheses. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Variables	log(Wages)		log(Wages)	
	(1)		(2)	
Pension disclosure	-0.088	**	-0.088	**
	(-1.99)		(-2.06)	
log(Firm age)	0.086	**	0.092	***
	(2.44)		(2.64)	
log(Sales)	-0.027	*	-0.038	**
	(-1.66)		(-2.32)	
Leverage	0.028		0.047	
	(0.19)		(0.33)	
PPE/Total assets	-0.111		-0.104	
	(-0.65)		(-0.59)	
R&D/Sales	1.804	***	1.748	**
	(2.71)		(2.54)	
R&D missing	-0.092	**	-0.089	*
	(-1.98)		(-1.92)	
log(Labor productivity)	0.338	***	0.353	***
	(5.49)		(5.94)	
$\log(\text{Labor productivity})_{t-1}$	-0.056		-0.064	
	(-0.89)		(-1.07)	
Executive ownership			-0.229	
			(-1.52)	
External blockholders			-0.041	
			(-0.58)	
log(CEO age)			0.314	**
			(2.13)	
Intercept	2.145	***	0.831	
	(6.00)		(1.18)	
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Adjusted R^2	0.530		0.543	
Observations	432		432	

Table III.8: Pension disclosures and acquisitiveness

The table presents results from a poisson regression in the left column and from a logit regression in the right column. The dependent variable in the poisson regression is *Acquisition count*. The dependent variable in the logit regression is *Acquisition likelihood*. The main independent variable, *Pension disclosure*, is a dummy variable and equals one if the firm discloses pension costs for individual executives in a given year. All variables are described in Table III.1. Control variables are winsorized at the 5% and 95% levels. *z*-statistics appear in parentheses. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Variables	Acquisition count		Acquisition likelihood	
	(1)		(2)	
Pension disclosure	-0.135		-0.199	
	(-0.53)		(-0.63)	
log(Total assets)$_{t-1}$	0.290	***	0.270	***
	(3.64)		(3.16)	
Tobin's Q$_{t-1}$	-0.132		-0.468	**
	(-0.64)		(-2.03)	
Cash flow available for investments	4.645	***	5.595	***
	(3.29)		(3.38)	
Intercept	-32.634	***	-18.126	***
	(-8.36)		(-13.45)	
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Pseudo R^2	0.231		0.195	
Observations	813		780	

Table III.9: Pension disclosures and acquirer returns

The table presents results from OLS regressions in columns 1 to 3 and from a logit regression in column 4. The dependent variable is the 5-day cumulative abnormal return around the acquisition announcement in the first and the second column, the 3-day cumulative abnormal return in the third column, and a dummy that indicates positive 5-day cumulative abnormal returns in the last column. The main independent variable, *Pension disclosure*, is a dummy variable and equals one if the firm discloses pension costs for individual executives in a given year. All variables are described in Table III.1. Continuous variables are winsorized at the 5% and 95% levels in columns 1, 3, and 4. *t*-statistics from OLS regressions and *z*-statistics from the logit regression appear in parentheses. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Variables	CAR(-2, +2)	CAR(-2, +2)	CAR(-1, +1)	CAR(-2, +2) > 0
	(1)	(2)	(3)	(4)
Pension disclosure	0.019 **	0.031 **	0.013 **	0.891 **
	(2.49)	(2.59)	(2.39)	(2.56)
log(Total assets)$_{t-1}$	-0.006 ***	-0.006 ***	-0.004 ***	-0.275 ***
	(-4.00)	(-2.93)	(-4.16)	(-3.44)
Tobin's Q$_{t-1}$	-0.010 **	-0.005	-0.006 **	-0.472 **
	(-2.22)	(-1.09)	(-2.04)	(-2.35)
Free cash flow$_{t-1}$	0.300 ***	0.045	0.169 ***	17.710 ***
	(4.40)	(0.59)	(3.30)	(4.54)
Leverage$_{t-1}$	0.004	-0.008	-0.011	1.303
	(0.12)	(-0.24)	(-0.47)	(0.79)
Public target	0.015	0.061	0.011	0.615
	(0.66)	(1.32)	(0.59)	(0.48)
Private target	0.028	0.071	0.018	1.431
	(1.38)	(1.65)	(1.12)	(1.34)
Subsidiary target	0.034	0.083 *	0.022	1.234
	(1.60)	(1.88)	(1.33)	(1.15)
Diversifying acquisition	-0.006	-0.011 *	0.000	-0.301
	(-1.00)	(-1.68)	(-0.02)	(-1.12)
Cross border	0.001	0.000	0.000	-0.335
	(0.13)	(-0.04)	(0.01)	(-1.05)
Intercept	0.005	-0.048	-0.014	0.361
	(0.09)	(-0.52)	(-0.63)	(0.20)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Adjusted/Pseudo R^2	0.191	0.180	0.113	0.145
Observations	358	358	358	335

Table III.10: Timeline of events

The table presents events related to enactment of the law on the "Adequacy of management board compensation", which the German parliament approved in summer 2009. Events are days when shareholders received news about the content of the law or about political milestones related to enactment of the law. The list of events is compiled from three sources. Legal documents come from the website of the German parliament. Newspaper articles come from LexisNexis and contain the keywords "Angemessenheit" (adequacy) or "Arbeitsgruppe" (task force) in combination with "Vorstandsvergütung" (executive compensation). Official press releases related to the law come from the website of the task force "Executive compensation", which the German parliament appointed in summer 2008.

Date	Event
January 22, 2009	The task force announces preliminary suggestions for a draft bill.
January 29, 2009	The task force officially presents some suggestions.
March 5, 2009	Politicial leaders decide to draft a bill, which will be based on the suggestions made by the task force.
March 11, 2009	The government outlines the main content of the upcoming draft bill.
March 17, 2009	The government officially presents the draft bill.
March 20, 2009	Politicians discuss the draft bill in parliament.
April 23, 2009	The task force outlines additional suggestions.
May 7, 2009	The task force officially presents additional suggestions.
May 25, 2009	Politicians discuss the content of the draft bill with experts.
May 29, 2009	The press reports final adjustments to the draft bill.
June 18, 2009	The German parliament approves the draft bill.

Table III.11: Market reaction to the corporate governance reform

The table presents results from OLS regressions with *Daily excess returns* as the dependent variable in the left column, and with *Daily market-adjusted returns* as the dependent variable in the middle and the right column. All regressions include the dummy variable *Pension disclosure*, the dummy *Events*, and the interaction term between *Pension disclosure* and *Events*. *Pension disclosure* equals one if the company disclosed pension costs for individual executives in the prior fiscal year. The *Events* dummy equals one on eleven event days. Control variables are described in Table III.1. Results from Wald tests are presented at the bottom. The sample period is from October 1, 2008 to July 31, 2009. *t*-statistics and *F*-statistics from Wald tests appear in parentheses. Standard errors are clustered by day and firm. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Variables	Daily excess returns	Daily market-adjusted returns	
	(1)	(2)	(3)
Pension disclosure	0.0005	0.0006	0.0005
	(0.903)	(1.074)	(0.923)
Events	0.0045 *	0.0065 **	0.0065 **
	(1.699)	(2.326)	(2.309)
Pension disclosure × Events	-0.0044 *	-0.0043	-0.0043
	(-1.735)	(-1.599)	(-1.586)
RMRF (daily)	0.8173 ***		
	(11.929)		
SMB (daily)	0.2187 ***		
	(2.737)		
HML (daily)	0.0941		
	(1.466)		
WML (daily)	-0.4057 ***		
	(-9.130)		
log(Market value) (daily)$_{t-1}$		0	-0.0001
		(-0.086)	(-0.458)
log(Book-to-market) (daily)$_{t-1}$		0.0003	0.0006
		(0.734)	(1.126)
Return past 6 months$_{t-1}$		-0.003	-0.0037
		(-1.081)	(-1.276)
Intercept	0.0002	0.0001	0.0032 **
	(0.266)	(0.075)	(2.164)
Industry fixed effects	No	No	Yes
Adjusted R^2	0.247	0.0007	0.0003
Observations	24,387	23,956	23,956
Wald test			
H_0: Events +	0.0001	0.0022	0.0022
Pension disclosure × Events = 0	(0.002)	(1.966)	(1.940)

Table III.12: Trading strategies

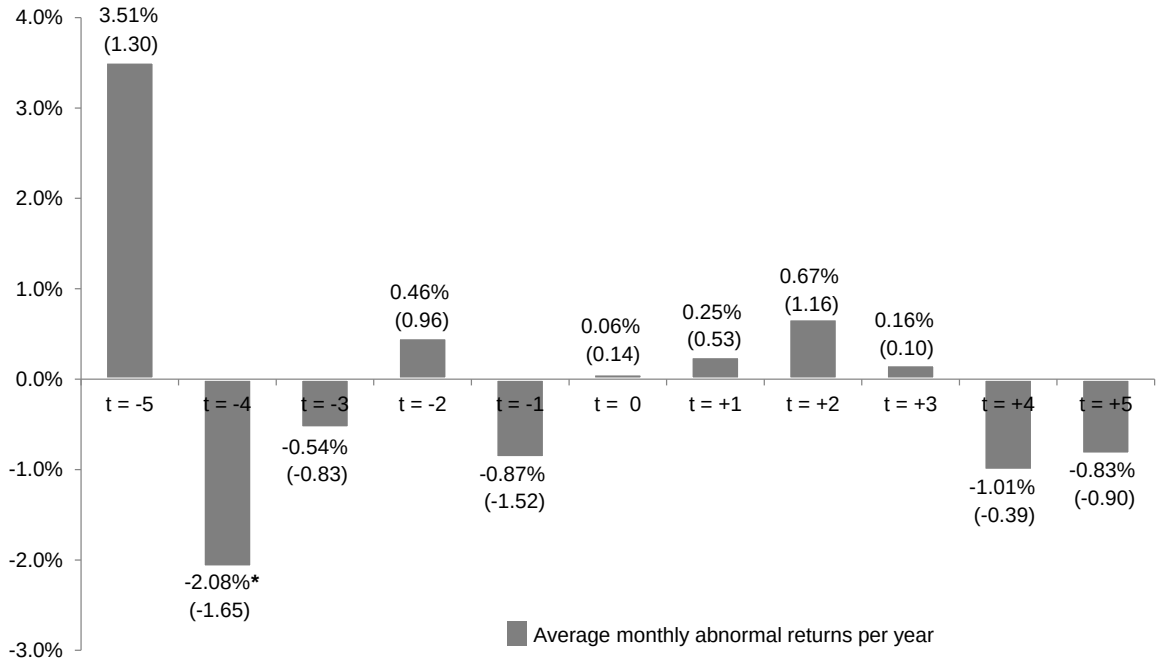
The table presents results from OLS regressions with monthly portfolio returns as the dependent variables. In columns 1 and 4, the dependent variable is the return on a hedge portfolio that is long in firms with observable pensions and short in firms with hidden pensions. In columns 2 and 5, the dependent variable is the monthly excess return on the portfolio of firms with observable pensions. In columns 3 and 6, the dependent variable is the monthly excess return on the portfolio of firms with hidden pensions. Control variables are the market factor *RMRF*, the size factor *SMB*, the book-to-market factor *HML*, and the momentum factor *WML*. Columns 4 to 6 additionally include a dummy variable that indicates the time period from April 2007 to December 2008. Results from Wald tests are presented at the bottom. The sample period is from April 2004 to December 2008. *t*-statistics and *F*-statistics from Wald tests appear in parentheses. Standard errors are robust to heteroskedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Variables	Monthly portfolio returns					
	Hedge	Observable pensions	Hidden pensions	Hedge	Observable pensions	Hidden pensions
	(1)	(2)	(3)	(4)	(5)	(6)
alpha	-0.0030	0.0019	0.0049	-0.0046	-0.0004	0.0042
	(-0.376)	(0.229)	(1.489)	(-0.406)	(-0.036)	(1.367)
April 2007 to December 2008				0.0046	0.0063	0.0017
				(0.348)	(0.485)	(0.290)
RMRF (monthly)	-0.0469	1.0381 ***	1.0850 ***	-0.0297	1.0618 ***	1.0916 ***
	(-0.533)	(11.011)	(21.347)	(-0.275)	(9.467)	(21.452)
SMB (monthly)	0.4925 **	1.0509 ***	0.5585 ***	0.5067 **	1.0705 ***	0.5639 ***
	(2.035)	(4.349)	(6.682)	(2.102)	(4.434)	(7.209)
HML (monthly)	0.2071	0.4679 *	0.2607 ***	0.2115	0.4739 *	0.2624 ***
	(0.827)	(1.819)	(2.715)	(0.830)	(1.829)	(2.719)
WML (monthly)	0.3187 *	0.2442	-0.0745	0.3215 *	0.2481	-0.0734
	(1.919)	(1.173)	(-0.671)	(1.930)	(1.226)	(-0.684)
Adjusted R^2	0.0356	0.5522	0.8958	0.0185	0.545	0.8939
Observations	57	57	57	57	57	57
Wald test						
H_0: alpha + April 2007 to December 2008 = 0				-0.0001	0.0059	0.0059
				(0.000)	(0.604)	(1.017)

Figures

Figure III.1: Abnormal return pattern around the initial disclosure year

The figure shows average monthly abnormal returns in years around the initial disclosure year (*t = 0*). Abnormal returns are coefficient estimates on dummy variables from a pooled cross-sectional time-series regression. The dependent variable is the monthly excess stock return. Independent variables are eleven dummy variables that indicate the year relative to the initial disclosure year, the market factor *RMRF*, the size factor *SMB*, the book-to-market factor *HML*, and the momentum factor *WML*. The sample period is from April 2003 to December 2008. *t*-statistics appear in parentheses. Standard errors are clustered by month and firm. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.



Chapter IV

Inside Debt and Corporate Risk-Taking

1 Introduction

Pension benefits and deferred compensation make CEOs to creditors of their own firms. Similar to other creditors, the CEO who has accumulated pensions or deferred compensation has a claim on fixed payoffs in the future as long as the firm is solvent. In insolvency, the CEO stands in line with other unsecured creditors because pensions and deferrals represent unfunded and unsecured claims. For these reasons, pensions and deferrals are forms of "inside debt" (see Jensen and Meckling (1976)). Inside debt gives the CEO an incentive to manage the firm conservatively to safeguard the claims on fixed payoffs. Consistent with the notion of debt-like incentives I find that firms pursue more conservative investment and financing policies when their CEOs have accumulated more wealth in the form of pensions and deferrals.

The empirical results support Jensen and Meckling's (1976) claims about the role of inside debt in executive compensation. In their seminal article, the authors argue that inside debt could mitigate the agency costs of debt. Agency costs of debt arise because the CEO who holds only equity in a levered firm may inefficiently increase firm risk to increase the value of her equity stake at the expense of debt holders. Jensen and Meckling (1976) speculate that such risk-shifting problems vanish if the CEO holds inside debt and inside equity in the same fractions as the firm has debt and equity outstanding. In this case, any gains to her equity stake from risk-shifting activities are offset by losses to her inside debt

holdings. Edmans and Liu (2011) develop a model that incorporates the ideas of Jensen and Meckling (1976). The main variable in their model is the relative debt-equity ratio *k*, which they define as CEO's debt-equity ratio divided by the firm's debt-equity ratio. The model predicts, among others, that an increase in the relative-debt equity ratio leads to more conservative project selection.

Hypotheses about debt-like incentives and their potential to reduce firm-risk contribute to public debates about the role of executive compensation in the recent financial crisis. Policy makers and commentators of the crisis commonly assume that pay packages encouraged excessive risk-taking and therefore contributed to the financial meltdown. In the aftermath of the crisis, several governments passed laws to regulate executive compensation and to decrease risk-taking incentives (see Hill (2010) and Conyon et al. (2011)). The public debate and regulatory intervention typically focus on bonus payments and equity incentives but neglect the role of pensions and compensation deferrals. These forms of compensation directly provide incentives to reduce firm risk.

The role of inside debt has also attracted little attention by academics. Research about inside debt was hampered for around thirty years after Jensen and Meckling (1976) brought the issue on the agenda because the disclosure requirements were too limited. The transparency of inside debt disclosures greatly increased when the Securities and Exchange Commission (SEC) changed its disclosure requirements in 2006. For fiscal years after 2005, the SEC requires firms to disclose the present value of pension benefits and the aggregate balance in deferred compensation (see also Wei and Yermack (2011)).

I use these new data to analyze the association between CEOs' inside debt holdings and the riskiness of corporate policies. The sample includes non-financial firms covered in the ExecuComp database from 2006 to 2009. The main variable in the analysis is the relative debt-equity ratio as discussed by Jensen and Meckling (1976) and theoretically justified by

Edmans and Liu (2011). I construct this variable using data on pensions and accumulated deferrals to proxy for inside debt, and CEO's stock and option holdings to proxy for inside equity. Consistent with Edman and Liu's (2011) prediction, I find evidence that the relative debt-equity ratio is associated with conservative corporate policies. Firms make fewer investments in research and development, are more diversified, and have lower book leverage if CEO's debt-equity mix increases relative to the firm's debt-equity mix. CEOs with higher relative debt-equity ratios seem to reduce firm risk through other channels as well. I find that higher relative debt-equity ratios are associated with lower equity volatility after controlling for R&D investments, firm diversification, and book leverage. All results hold after controlling for risk-taking incentives from options and several CEO characteristics that proxy for CEO risk aversion.[73]

This paper contributes to the growing literature about incentives from inside debt. Sundaram and Yermack (2007) find that firms have a lower default probability if the CEO's debt-equity ratio exceeds the firm's debt-equity ratio. Wei and Yermack (2011) find that bond prices rise and equity prices fall for firms that disclose large inside debt holdings after SEC's disclosure reform. In both articles, the authors interpret their results as consistent with low-risk corporate policies that are implemented by CEOs with debt-like incentives. Other papers show that debt-like incentives are negatively related to yield spreads and the number of covenants in loan contracts (see Chava, Kumar, and Warga (2010), Kabir, Li, and Veld-Merkoulova (2013), and Anantharaman, Fang, and Gong (2014)). My paper complements these articles because I identify some channels through which the CEO with debt-like incentives decreases firm-risk. Closely related are studies that analyze other channels. There is empirical evidence that debt-like incentives are

[73] The negative association between book leverage and the relative debt-equity ratio must be interpreted with caution. Book leverage does not fully resolve the negative mechanical relation between leverage and the relative debt-equity ratio, which uses the firm's debt-equity mix in the denominator.

negatively related to dividend payouts (see Eisdorfer, Giaccotto, and White (2013)), positively related to corporate cash holdings (see Liu, Mauer, and Zhang (2014)), and positively related to the incidence that the firm makes diversifying acquisitions (see Phan (2013)). Another stream of research shows that debt-like incentives are related to lower risk and reduced risk-taking in finance firms (see Bolton, Mehran, and Shapiro (2011), Tung and Wang (2012), Srivastav, Armitage, and Hagendorff (2014), and Bekkum (2013)).[74]

The paper's results are the mirror image of the results in Coles, Daniel, and Naveen (2006) who analyze the association between incentives from inside equity and corporate risk-taking. These authors show that the sensitivity of option values to equity volatility (option vega) is positively related to investments in R&D, leverage, and equity volatility, and negatively related to firm diversification. Guay (1999), Rajgopal and Shevlin (2002), Low (2009), Chava and Purnanandam (2010), and Gormley, Matsa, and Milbourn (2013) provide further evidence that more convex payoffs encourage the CEO to increase firm risk.[75] My findings show the reversed pattern. Larger inside debt holdings encourage the CEO to decrease firm risk.

The paper proceeds as follows: In Section 2 I develop hypotheses about the association between inside debt and corporate risk-taking. Section 3 describes the sample, data, and the research design. I report empirical results in Section 4. Section 5 concludes.

[74] During the writing process for this chapter, a paper was accepted for publication in the Journal of Financial Economics. See Cassell et al. (2012). Cassell et al. (2012) also analyze the association between inside debt and the riskiness of corporate policies. Their findings are consistent with the results presented here. I outline some differences in the sample design and in the analysis at the end of this chapter.

[75] Hayes, Lemmon, and Qiu (2012) do not find evidence for a causal relationship between option holdings and risk-taking.

2 Hypothesis development

2.1 Theory

In their seminal article, Jensen and Meckling (1976) argue that debt-financing causes risk-shifting problems. The CEO who holds only equity in a levered firm can increase the value of her equity stake at the expense of debt holders if she substitutes high-risk projects for low risk-projects. If the high-risk project has a lower net present value than the low-risk project, total firm value decreases. The decrease in total firm value represents a deadweight loss, which Jensen and Meckling (1976) label the agency costs of debt.

The theory of option pricing illustrates the basic idea. Consider a firm that is only financed by equity and debt. Equity is a call option on the firm's cash flows with a strike price equal to the face value of debt (see Black and Scholes (1973) and Merton (1974)). It is straightforward to show that the first derivative of this option with respect to asset volatility is strictly positive. Hence, the CEO who holds only equity has an incentive to select high-risk projects that increase the volatility of the firm's cash flows. If the increase in volatility is sufficiently large, the CEO may gain from selecting a project with a negative net present value. Such a project increases the value of equity, although total firm value declines.[76]

Jensen and Meckling (1976) speculate that debt holdings by the CEO can eliminate the agency costs of debt. In particular, the CEO does not gain from redistributions of wealth from debt holders to equity holders if she holds debt and equity in the same proportions as the firm has debt and equity outstanding. However, excessive debt holdings could create additional problems. If the CEO's debt-equity ratio exceeds the firm's debt-equity ratio,

[76] I use the theory of option pricing only for illustrative purposes. The Black and Scholes (1973) model cannot explain the decrease in total firm value because firm value and other option parameters, such as volatility, are exogenous. In particular, investment decisions and firm value do not depend on leverage (see also Modigliani and Miller (1958)). Under these assumptions, any gains to equity holders just balance the losses to debt holders, and total firm value does not change. In contrast, Jensen and Meckling (1976) assume that investment decisions and firm value depend on leverage (see also Smith and Warner (1979)).

the CEO has an incentive to select low-risk projects to redistribute wealth from equity holders to bond holders.

Edmans and Liu (2011) analyze this idea more formally. In their model, a risk-neutral manager selects between a high-risk and a low-risk-project. The key variable in their analysis is the relative debt-equity ratio *k*, which is CEO's debt-equity ratio divided by the firm's debt-equity ratio:[77]

$$k = (D_{CEO} / D_{Firm}) / (E_{CEO} / E_{Firm}) \quad = (D_{CEO} / E_{CEO}) / (D_{Firm} / E_{Firm}) \qquad \text{(IV.1)}$$

The variables D_{CEO} and E_{CEO} represent inside debt and inside equity, i.e. the dollar holdings of debt and equity by the CEO. The variables D_{Firm} and E_{Firm} represent the firm's total debt and equity. Edmans and Liu (2011) derive, among others, three results. First, if *k* equals one, project selection is optimal (see their equations (9) and (10)). Second, an increase in *k* increases the likelihood that the CEO selects the low-risk project (see equation (10)). Third, an increase in *k* increases the value of debt and decreases the value of equity (see Proposition 3.vii).[78]

2.2 Empirical predictions

There is some empirical evidence consistent with the arguments by Jensen and Meckling (1976) and the predictions derived by Edmans and Liu (2011). Sundaram and Yermack (2007) find that the distance-to-default is larger for firms whose CEOs have a relative debt-

[77] The term "relative debt-equity ratio" comes from Wei and Yermack (2011).

[78] Edmans and Liu (2011) allow the CEO to select the project and to decide about her effort. The optimal debt-equity mix is then determined by the trade-off between the effects of debt and equity on project selection and effort levels. While k = 1 optimizes project selection, an equity bias (k < 1) or a debt bias (k > 1) can be optimal after taking the effort decision into account. An equity bias can be optimal because inside equity induces effort in good states, in which equity holders control the assets of the firm. A debt bias can be optimal because inside debt induces effort in bad states, in which debt holders control the assets of the firm. Incorporating such effects is beyond the scope of this paper.

equity ratio above the critical value of one. Wei and Yermack (2011) find that bond prices rise and equity prices fall for firms that disclose large holdings of inside debt. For these firms, debt and equity volatility significantly decreases after the disclosure day. The results suggest that investors expect CEOs with large holdings of inside debt to pursue low-risk firm policies that decrease the volatility of cash flows, decrease the probability of default, and make debt safer.

It is, however, and open question which firm policies CEOs with inside debt holdings actually pursue (see Sundaram and Yermack (2007)). I hypothesize that the relative debt-equity ratio is related to research and development (R&D) expenditures, firm diversification, leverage, and equity volatility. R&D expenditures are a main component of the firm's investment policy and commonly considered as riskier investments than capital expenditures (see Bhagat and Welch (1995)). Investments in R&D are riskier for at least two reasons (see Hall (2002)). First, R&D investments produce a more volatile cash-flow pattern because they represent real options on future growth opportunities. Coles, Daniel, and Naveen (2006) find that equity volatility is positively related to R&D expenditures. Kothari, Laguerre, and Leone (2002) find that R&D expenditures contribute around three times more to future earnings volatility than capital expenditures. Second, R&D investments represent intangible assets with a significant part of the value tied to high-skilled employees. Since intangible assets are more difficult to value than tangible assets and are positively related to indirect costs of financial distress, R&D-intensive firms face higher distress costs than capital-intensive firms (see, e.g., Frank and Goyal (2009) and Opler and Titman (1994)). Therefore, I predict that CEOs with larger inside debt holdings invest less in R&D to reduce the volatility of cash flows and to safeguard the value of their debt holdings.

Hypothesis 1: *The relative debt-equity ratio is negatively related to R&D expenditures.*

Diversified firms have less volatile cash flows than focused firms if the cash flows of different business segments are not perfectly correlated. Moreover, combining such segments creates a co-insurance effect that decreases the probability of default (see Lewellen (1971), Higgins and Schall (1975), and Kim and McConnell (1977)). There is empirical evidence that CEOs with large amounts of inside debt pursue a diversification strategy in the market for corporate control. Phan (2013) finds that firms whose CEOs have debt-equity ratios above the firm's debt-equity ratio are more likely to engage in diversifying acquisitions. Therefore, I predict that CEOs with larger holdings of inside debt run more diversified firms.

Hypothesis 2: *The relative debt-equity ratio is positively related to firm diversification.*

The association between leverage and the relative debt-equity ratio is not clear ex ante. We may observe a positive association because inside debt mitigates risk-shifting problems. Debt-financing should be cheaper and, consequently, leverage should be higher for firms whose CEOs hold larger amounts of inside debt. Consistent with this view, Anantharaman, Fang, and Gong (2014) and Kabir, Li, and Veld-Merkoulova (2013) find that yield spreads are decreasing in the relative debt-equity ratio. Sundaram and Yermack (2007) find that CEO's debt-equity ratio is positively related to book leverage. However, we may observe a negative association because the CEO can directly reduce the probability of bankruptcy if she unlevers the capital structure (see Sundaram and Yermack (2007)). To test these contradicting predictions, I use the firm's book leverage instead of market leverage to

mitigate the mechanical negative relation between leverage and the relative debt-equity ratio.

Hypothesis 3: *The relative debt-equity ratio is negatively (positively) related to book leverage.*

I use equity volatility to proxy for the firm's overall cash-flow risk. If the CEO uses other channels through which she reduces firm risk, we should observe a negative relation between the relative debt-equity ratio and equity volatility after controlling for R&D, firm diversification, and leverage.

Hypothesis 4: *The relative debt-equity ratio is negatively related to equity volatility after controlling for R&D, firm diversification, and leverage.*

The associations should be particularly strong if the CEO's debt-equity ratio exceeds the firm's debt-equity ratio. Therefore, I additionally test all hypotheses using a dummy variable that equals one for relative debt-equity ratios above the critical value of one.

3 Sample, data, and research design

3.1 Sample and data

I consider all firms included in ExecuComp over the four-year period 2006 to 2009. The initial sample covers 7,436 firm-year observations based on 2,065 individual firms and 2,678 individual CEOs. Following Coles, Daniel, and Naveen (2006) I exclude 1,293 observations from finance firms (SIC codes between 6000 and 6999) and 362 observations from utility firms (SIC codes between 4900 and 4999). To construct the final data set I add

data on firm characteristics and business segments from Compustat, data on stock returns from the Center for Research in Security Prices (CRSP), and data on CEO's non-firm wealth from Dittmann and Maug (2007).[79] I lose 923 observations because the relative debt-equity ratio is not defined for firms with no debt or for CEOs with no equity holdings. I lose another 524 observations for which variables to construct the relative debt-equity ratio are missing. The final sample includes a maximum number of 4,334 observations based on 1,366 individual firms and 1,697 individual CEOs. Table IV.1 outlines the construction and the source of all variables used in the analysis.

Table IV.2 reports descriptive statistics for CEO characteristics in the upper part and for firm characteristics in the lower part. All variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. The sample firms have mean (median) market capitalization of $ 7.6 billion ($ 1.7 billion), mean (median) total assets of $ 7.3 billion ($ 1.9 billion), and mean (median) sales of $ 6.6 billion ($ 1.8 billion). The typical CEO is 55 years old and has a mean (median) tenure of more than seven years (five years).

For the estimation of CEO's inside debt and equity I follow prior studies about debt-like incentives (see, e.g., Sundaram and Yermack (2007) and Wei and Yermack (2011)). CEO's inside debt is the present value of accumulated pension benefits plus the aggregate balance in deferred compensation. In virtually all firms, pensions and compensation deferrals represent unsecured and unfunded claims in the event of bankruptcy and, thus, expose the CEO to the same default risks as other creditors (see Sundaram and Yermack (2007)). CEO's inside equity is the value of her stock and option portfolio. The value of the stock portfolio is the number of her shares times the share price at fiscal-year end. I

[79] Dittmann and Maug (2007) make their estimates of CEO's non-firm wealth publicly available at http://people.few.eur.nl/dittmann/data.htm.

apply the Black and Scholes (1973) formula to each tranche of options and sum up the tranche values to estimate the value of the option portfolio.[80]

The calculation of inside debt uses the total amount of deferred compensation. The inclusion of the total amount may bias the actual debt-like incentives because many firms allow the CEO to invest part of the deferred amount in phantom stocks. Such deferrals provide equity-like incentives to the CEO (see also Wei and Yermack (2011)). In untabulated analysis I find that the results are similar when I only take the present value of pensions to calculate inside debt, or when I add the aggregate balance in deferred compensation to inside equity.

The upper part of Table IV.2 shows that more than two thirds of the CEOs in the sample hold some form of inside debt. Around 12% have only accumulated pension benefits, around 26% have only deferred compensation, and more than 30% hold both forms of inside debt. CEOs have mean (median) inside debt holdings of $ 4.9 million ($ 0.8 million), with similar amounts invested in pensions and deferrals. The value of inside equity is much larger. CEOs hold a mean (median) of $ 57.9 million ($ 15.5 million) of inside equity, with the majority in the form of stock. The mean (median) ratio of inside debt to inside equity is 28% (5%).

CEO's relative debt-equity ratio is defined as the ratio of inside debt to inside equity divided by the ratio of firm's debt to firm's equity. Firm's debt is the sum of short-term and long-term debt. Firm's equity is the number of shares outstanding times the share price at fiscal year-end. The relative debt-equity ratio is heavily skewed with a mean of 3.1 and a median of 0.21. The mean value, which is above the theoretical benchmark of one, indicates that the average firm in the sample gives the CEO excessive incentives from inside debt. The median value, which is below the theoretical benchmark on one, indicates

[80] I follow Guay (1999) and Edmans, Gabaix, and Landier (2009) for the empirical implementation of the Black and Scholes (1973) formula. See the Appendix at the end of this chapter for details.

that the median firm gives the CEO excessive incentives from inside equity. In the analysis I use the logarithm of one plus the relative debt-equity ratio to mitigate the skewness of the distribution of the relative debt-equity ratio. I add one to the ratio to preserve the sample size because almost one third of the CEOs do not hold inside debt. The *log(Relative debt-equity ratio + 1)* has a mean (median) value of 0.57 (0.19) and a standard deviation of 0.883. The dummy variable for relative debt-equity ratios above one has a mean value of 28%. This value implies that CEOs have excessive incentives from inside debt for 28% of the firm-year observations.

I follow prior literature to construct the policy variables. Following the innovation literature I use R&D scaled by lagged total assets (*R&D/Lagged total assets*) to proxy for investment risk (see, e.g., Brown, Fazzari, and Petersen (2009)). R&D is set to zero if it is missing (see, e.g., Coles, Daniel, and Naveen (2006)). Following the diversification literature I use the *sales-based Herfindahl index* and the logarithm of the number of business segments, *log(Business segments)*, to proxy for firm diversification. The Herfindahl index measures sales concentration and is calculated as the sum of squares of segment sales divided by the square of firm sales. The Herfindahl index is lower for more diversified firms (see, e.g., Lang and Stulz (1994)). Following the literature on capital structure I define *Book leverage* as the sum of short-term and long-term debt scaled by total assets to proxy for financing risk (see, e.g., Frank and Goyal (2009)). Following the literature on the association between inside equity and firm risk I calculate *Equity volatility* as the annualized standard deviation of daily logarithmic stock returns over the fiscal year (see, e.g., Guay (1999)).

The lower part of Table IV.2 shows that the sample firms have mean (median) R&D expenditures of 2.6% (0%) relative to lagged total assets. The typical firm has a sales-

based Herfindahl index of more than 70%, three business segments, and book leverage of less than 25%. The mean (median) equity volatility amounts to 50% (44%).

The results presented in Table IV.3 provide some preliminary evidence that larger inside debt holdings are associated with lower corporate-risk-taking and lower firm risk. The left column reports Pearson correlations between the policy variables and the logarithmic transformation of the relative debt-equity ratio. The correlation coefficients are consistent with the predicted associations. The relative debt-equity ratio has a positive and significant correlation with the number of business segments and a negative and significant correlation with the Herfindahl index and equity volatility. The relative debt-equity ratio is negatively correlated with R&D expenditures, as predicted, but the correlation is not statistically significant. The correlation with book leverage is negative and significant.

The right columns of Table IV.3 report mean values of the policy variables for the subsamples of firm-years, in which the relative debt-equity ratio does and does not exceed one. The differences in mean values are consistent with the hypothesis that ratios above one strongly align the interests of the CEO with those of debt holders. Firms make fewer investments in R&D, have lower sales concentrated within a few segments, operate in more business segments, have lower book leverage, and have lower equity volatility if the CEO's debt-equity ratio exceeds the firm's debt-equity ratio.

3.2 Research design

I run cross-sectional time-series regressions to estimate the association between inside debt and corporate risk-taking. The regression model has the following general form:

$$P_{i,t} = \gamma_0 + \gamma_1 \times D_{i,t-1} + \gamma_2 \times C_{i,t-1} + \gamma_3 \times F_{i,t-1} + a_j + b_t + \varepsilon_{i,t} \qquad \text{(IV.2)}$$

The dependent variable, $P_{i,t}$, is either *R&D/Lagged total assets*, the *sales-based Herfindahl index, log(Business segments)*, *Book leverage*, or *Equity volatility* for company *i* in year *t*. The main variable of interest, $D_{i,t-1}$, is either the logarithm of one plus the relative debt-equity ratio or a dummy that equals one if the relative debt-equity ratio exceeds one. The vectors $C_{i,t-1}$ and $F_{i,t-1}$ include control variables for CEO and firm characteristics, a_j denotes industry fixed effects based on 2-digit SIC codes, and b_t are year fixed effects. All independent variables are lagged to mitigate endogeneity concerns since investment, financing, and compensation policies are jointly determined in equilibrium. Standard errors are clustered at the firm level. The sample period is from 2006 to 2009.

The vector $C_{i,t-1}$ includes proxies for risk-taking incentives from options and for CEO's risk aversion. I include the logarithm of one plus vega to control for risk-taking incentives from options. Vega measures the change in value of the option portfolio for a 0.01 change in the annualized volatility of stock returns (see the Appendix for the calculation of option vega). Coles, Daniel, and Naveen (2006) find that vega is positively related to R&D, book leverage, and equity volatility, and negatively related to firm diversification. The relative debt-equity ratio does not capture such risk-taking incentives because the ratio is based on levels of debt and equity and not on their sensitivities to changes in volatility.[81]

Four variables proxy for CEO's risk aversion: the logarithm of one plus delta, the logarithm of one plus CEO's non-firm wealth, the logarithm of CEO tenure, and the logarithm of CEO age. Delta measures the change in the value of CEO's stock and option holdings for a one percent change in stock price (see the Appendix for the calculation of

[81] Another limitation of the relative debt-equity ratio is that it does not capture the sensitivities of debt and equity to changes in the stock price. Wei and Yermack (2011) construct a "relative incentive ratio" to take these sensitivities into account. For empirical applications, however, the difference between the relative debt-equity ratio and the relative incentive ratio is minor because the two ratios are almost perfectly correlated (see Anderson and Core (2014)). It seems more promising to construct a statistic that takes into account the sensitivities of debt and equity to changes in asset volatility. Anderson and Core (2014) provide a first step in this direction.

option delta)). Higher values of delta indicate that the CEO is less diversified and, thus more risk-averse (see Guay (1999)). Chava and Purnanandam (2010) find that delta is associated with low-risk corporate policies.

CEO's non-firm wealth is a proxy for CEO's outside wealth. Larger amounts of outside wealth indicate that the CEO is more diversified and, thus, less risk-averse (see Guay (1999)). The estimates for CEO's non-firm wealth come from Dittmann and Maug (2007). Based on data from ExecuComp, they calculate non-firm wealth as the difference between accumulated cash inflows and accumulated cash outflows. Dittmann and Maug (2007) assume (1) that the CEO enters ExecuComp with no wealth, (2) that she does not consume non-firm wealth, but uses cash to exercise her options and to meet her tax liabilities, and (3) that she invests non-firm wealth at the risk-free rate. I set non-firm wealth to zero if the estimate is negative or missing, and include a dummy for these observations to preserve sample size. Non-firm wealth is not available for around 15% of the observations.

Following Guay (1999) I include CEO tenure as a second proxy for outside wealth. The inclusion of CEO tenure avoids spurious correlations between the relative debt-equity ratio and each of the dependent variables. Inside debt is mechanically related to CEO tenure because pension values are a positive function of the years of service. Sundaram and Yermack (2007) find that CEO's debt-equity ratio, which is the numerator of the relative debt-equity ratio, increases in CEO tenure.

I include CEO age to control for increases in risk aversion over the life cycle (see also Malmendier and Nagel (2011)), and to avoid spurious correlations. Serfling (2014) finds that firms invest less in R&D, are more diversified, and have lower equity volatility if their CEOs are older. Sundaram and Yermack (2007) find that CEO's debt-equity ratio increases in CEO age.

The vector $F_{i,t-1}$ includes the logarithm of firm age and other firm-specific control variables that are common in regressions of each of the dependent variables. I include firm age to avoid spurious correlations. Prior studies find that older firms invest less in R&D (see Brown, Fazzari, and Petersen (2009)), are more diversified (see Denis, Denis, and Sarin (1997)), have higher leverage (see Frank and Goyal (2009)), and have lower equity volatility (see Pastor and Veronesi (2003)). Sundaram and Yermack (2007) find that CEO's debt-equity ratio increases in firm age. I introduce other control variables, many of which are regression-specific, in the following sections.

4 Empirical results

4.1 Investment policy and inside debt

I use R&D expenditures scaled by lagged total assets (*R&D/Lagged total assets*) as the dependent variable to estimate the association between investment risk and inside debt. The vector $F_{i,t-1}$ includes the logarithm of sales to control for firm size, a proxy for cash flow to control for internal funds available for R&D expenditures, Tobin's Q to control for investment opportunities, and book leverage to control for the riskiness of financial policies. The proxy for cash flow is income before extraordinary items plus depreciation and amortization plus R&D expenditures minus capital expenditures divided by lagged total assets. I add R&D expenditures because R&D is an item on the income statement (see also Brown, Fazzari, and Petersen (2009)). I subtract capital expenditures because my interest is in the funds available for R&D. Tobin's Q is the market value of common equity plus the book value of total liabilities divided by the book value of total assets (see, e.g., Kim and Lu (2011)).

Sales and cash flow are standard controls in the innovation literature that considers R&D as an input factor for innovation. This literature remains inconclusive on whether firm size

is positively related to R&D, but has produced consistent evidence for a positive relation between R&D and cash flow (see Cohen (2010) for a survey). Tobin's Q is a standard control variable in the literature on capital expenditures. This literature has produced consistent evidence that capital expenditures are positively related to Tobin's Q (see Fazzari, Hubbard, and Petersen (1988)). Since R&D is the risky component of the overall investment policy, I expect a positive relation between R&D expenditures and Tobin's Q.[82] I expect a negative relation between R&D and book leverage because growth opportunities from R&D cannot be collateralized (see, e.g., Frank and Goyal (2009)).

Table IV.4 shows the estimated coefficients. The results indicate that firms whose CEOs have larger inside debt holdings pursue a more conservative investment policy. In the left column, the logarithm of the relative debt-equity ratio has a coefficient estimate of -0.005 with a *t*-statistic, which is significant at the 1% level. The estimate indicates that an increase in this variable by one standard deviation is associated with a 0.44 percentage point decrease in R&D (0.883 times -0.005). In the right column, the dummy variable for relative debt-equity ratios above one has a coefficient estimate of -0.008 with a *t*-statistic, which is also significant at the 1% level. The estimate indicates that R&D decreases by 0.8 percentage points when CEO's debt-equity ratio is larger than the firm's debt-equity ratio. The effects are quite substantial given that the average sample firm invests 2.6% in R&D relative to lagged total assets.

Control variables have the expected association with R&D. R&D investments are higher in firms whose CEOs have higher vega and more outside wealth, and lower in firms whose CEOs are older and have higher delta. Older firms tend to invest less in R&D. Larger firms invest less in R&D consistent with findings by Brown, Fazzari, and Petersen (2009). Firms with higher cash flows and higher Tobin's Q invest more in R&D consistent with

[82] Tobin's Q is not a common control variable in the innovation literature. One exception is Himmelberg and Petersen (1994) who find a positive association R&D and Tobin's Q.

Himmelberg and Petersen (1994). As expected, the coefficient on book leverage is negative and significant.

4.2 Firm diversification and inside debt

I use the sales-based Herfindahl index and the logarithm of the number of business segments as the dependent variables to estimate the association between firm diversification and inside debt. The vector $F_{i,t-1}$ includes the logarithm of sales because Denis, Denis, and Sarin (1997) find that larger firms are more diversified. I include book leverage to control for the riskiness of financial policies. Coles, Daniel, and Naveen (2006) find that more diversified firms have higher book leverage consistent with the co-insurance effect of diversification. I include Tobin's Q because there is some evidence that more diversified firms are associated with lower Tobin's Q (see Lang and Stulz (1994)).[83]

The left columns of Table IV.5 show coefficient estimates from regressions with the sales-based Herfindahl index as the dependent variable. The results provide some evidence that CEOs with more inside debt run more diversified firms. In the first column, the logarithm of the relative debt-equity ratio has a coefficient estimate of -0.0132. The estimate indicates that an increase in this variable by one standard deviation reduces the sales-based Herfindahl index by 1.2 percentage points (0.883 times -0.0132). The *t*-statistic, however, misses significance, and the economic effect is quite low. The average firm in the sample has a sales-based Herfindahl index of 72%.

In the second column, the dummy variable for relative debt-equity ratios above one has a coefficient estimate of -0.0359 with a *t*-statistic, which is significant at the 5% level. The

[83] Later studies, such as Campa and Kedia (2002) and Villalonga (2004), do not find a diversification discount, but a premium in some specifications after controlling for the self-selection of diversifying firms. Campa and Kedia (2002) include many variables in their first-stage regression to determine the probability of a firm to be diversified. They point out that the diversification decision is effectively driven by industry characteristics and not by firm characteristics. I control for industry fixed effects in the regressions.

estimate implies that the sales-based Herfindahl index decreases by 3.59% percentage points when CEO's debt-equity ratio is above the firm's debt-equity ratio.

Most coefficient estimates on control variables have the expected signs. CEOs with higher vega and more outside wealth run less diversified firms while CEOs with higher delta and older CEOs run more diversified firms. Older and larger firms are more diversified consistent with Denis, Denis, and Sarin (1997). Firm diversification is associated with lower Tobin's Q consistent with Lang and Stulz (1994). Surprisingly, book leverage has a positive coefficient, but the *t*-statistic is not significant.

The right columns of Table IV.5 show coefficient estimates from regressions with the logarithm of the number of business segments as the dependent variable. The results confirm the positive association between inside debt and firm diversification. In the third column, the logarithm of the relative debt-equity ratio has a positive coefficient, which is statistically significant at the 10% level. In the last column, the dummy variable for relative debt-equity ratios above one also has a positive coefficient with a *t*-statistic, which is again significant at the 10% level. The estimates indicate that CEOs with larger inside debt holdings run firms with more business segments. The conclusions for the association between each of the control variables and firm diversification remain unchanged.

4.3 Debt policy and inside debt

I use book leverage as the dependent variable to estimate the association between debt policy and inside debt. The vector $F_{i,t-1}$ includes standard controls from the literature on capital structure. This literature suggests that leverage is positively associated with firm size, asset tangibility, and tax rates, and negatively associated with growth opportunities

and profitability.[84] I include the logarithm of sales to control for firm size. Larger firms should have higher leverage because they are more diversified and are less likely to go bankrupt. I include the ratio of fixed assets to total assets (*PPE/Total assets*) to control for asset tangibility. Firms with more fixed assets should have higher leverage because they can issue collateralized debt. Collateralized debt retains value in the event of liquidation and reduces risk-shifting problems between equity holders and debt holders. I include the firm's marginal tax rate before interest expense estimated by Blouin, Core, and Guay (2010) to control for tax effects. Firms with higher marginal tax rates should have higher debt because debt has a beneficial tax treatment. I include R&D scaled by total assets to control for growth opportunities. Fast growing firms should have lower leverage because growth opportunities cannot be collateralized. I do not use market-to-book. Market-to-book includes the book value of debt in the nominator and is therefore mechanically related to book leverage (see also Chava and Purnanandam (2010)). I include return on assets (*ROA*) to control for profitability. More profitable firms should have lower leverage because they can use retained earnings to finance the investments.

Table IV.6 shows the estimated coefficients. The results indicate that firms whose CEOs have larger inside debt holdings pursue a less risky debt policy. In the left column, the logarithm of the relative debt-equity ratio has a coefficient estimate of -0.0507 with a *t*-statistic, which is significant at the 1% level. The estimate indicates that an increase in this variable by one standard deviation reduces book leverage by 4.5 percentage points (0.883 times -0.0507). In the right column, the dummy variable for relative debt-equity ratios above one has a coefficient estimate of -0.077 with a *t*-statistic, which is also significant at the 1% level. The estimate implies that book leverage decreases by 7.7 percentage points when CEO's debt-equity ratio exceeds the firm's debt-equity ratio. The estimates are

[84] See Harris and Raviv (1991), Titman and Wessels (1988), Frank and Goyal (2009) for an overview of capital structure theories and empirical findings.

economically meaningful given that the sample mean for book leverage amounts to 24.5%. The results, however, must be interpreted with caution. Book leverage and the relative debt-equity ratio, which uses firm's debt-equity ratio in the denominator, have a mechanical negative association.

Coefficient estimates on control variables have the predicted signs. Book leverage is higher for firms whose CEOs have higher vega and more outside wealth, and lower for firms whose CEOs have higher delta. Firms with older CEOs have lower leverage, but the association is not statistically significant. Older firms, larger firms, and firms with more fixed assets have higher book leverage while firms with more growth opportunities have lower book leverage. The coefficients for ROA and the marginal tax rate have the predicted signs, but their *t*-statistics are not significant.

4.4 Equity volatility and inside debt

I use equity volatility as the dependent variable to estimate the association between firm risk and inside debt. The vector $F_{i,t-1}$ includes the logarithm of sales to control for firm size and the policy variables *R&D/Total assets*, the *sales-based Herfindahl index*, and *Book leverage*. These variables represent channels through which inside debt holdings affect equity volatility. If CEOs with inside debt holdings use other channels, we should observe a negative association between the relative debt-equity ratio and equity volatility.

Table IV.7 shows the estimated coefficients. The results indicate that the relative debt-equity ratio is associated with lower equity volatility. In the first column, the logarithm of the relative debt-equity ratio has a coefficient estimate of -0.0197 with a *t*-statistic, which is significant at the 1% level. The estimate indicates that an increase in this variable by one standard deviation is associated with a 1.7% percentage point decrease in equity volatility (0.883 times -0.0197). In the second column, the dummy variable for relative debt-equity

ratios above one has a coefficient estimate of -0.0441 with a *t*-statistic, which is also significant at the 1% level. The estimate implies that equity volatility decreases by 4.4 percentage points when CEO's debt-equity ratio exceeds the firm's debt- equity ratio. This decrease is economically meaningful for the average sample firm, which has equity volatility of 50%.

Among the control variables, vega has an unexpected negative coefficient. Coles, Daniel, and Naveen (2006) find a positive association between vega and equity volatility for the time period from 1992 to 2002. Anderson and Core (2014) find a negative association for the time period from 2006 and 2010. The different results suggest that the association between vega and risk-taking changes over time.[85] Coefficient estimates on other control variables have the expected signs, but only the coefficients on CEO tenure and book leverage are statistically significant. Since the association between the relative debt-equity ratio and equity volatility is significant after controlling for R&D, firm diversification, and leverage, there must be other channels through which CEOs with inside debt holdings reduce firm risk.

5 Conclusion

In this paper, I find that firms invest more in R&D, have lower sales concentrated within a few business segments, report more business segments, have lower leverage and lower equity volatility when CEO's relative debt-equity ratio increases. The results are consistent

[85] One potential explanation is that managerial risk aversion increased during the financial crisis. Theoretically, CEO's preference toward equity volatility increases in the wealth effect of vega and decreases in her risk aversion, and both effects are correlated (see, ,e.g., Guay (1999)). Options reduce risk-taking incentives if the risk aversion effect dominates the wealth effect (see, e.g., Lewellen (2006)). Given that my proxies for risk aversion do not fully capture the risk aversion effect, the negative coefficient on vega for the time period after 2005 is consistent with a sharp increase in managerial risk aversion. Guiso, Sapienza, and Zingales (2014) provide evidence that risk aversion increased during the financial crisis. The positive association of vega with R&D and book leverage and the negative association with firm diversification during the sample period then suggests that the CEO cannot change these corporate policies in the short-run.

with Jensen and Meckling's (1976) claim that debt-like incentives could mitigate the agency costs of debt.

The results are of interest for policy makers who seek to reduce risk-taking incentives in executive compensation. Recent reforms typically addressed incentives from equity holdings but not from debt holdings. Interestingly, in some countries, such as Germany, executive pensions are secured claims in the event of bankruptcy. Such a securitization reduces the board's flexibility to balance equity-like incentives with debt-like incentives. While deferrals could provide debt-like incentives in such a regulatory environment, new laws that require executives to defer compensation in the form of equity further reduce the potential of debt-like incentives (see Hill (2010)).

The results must be interpreted with caution. Compensation, investment and financing policies are determined endogenously in equilibrium. While my research design mitigates endogeneity concerns, it remains an open question whether inside debt causes low-risk corporate policies. Another limitation is that the relative debt-equity ratio is based on levels of debt and equity. The ratio does not capture the value changes of inside debt and equity to changes in asset volatility. Anderson and Core (2014) develop a statistic that takes these sensitivities into account.

My results for the association between the relative debt-equity ratio and equity volatility indicate that there are other channels through which debt-like incentives reduce firm risk. For example, inside debt may influence the firm's hedging decisions (see Knopf, Nam, and Thornton (2002)). The analysis about the association between inside debt and book leverage does only provide preliminary evidence for the impact of inside debt holdings on financing polices because the relative debt-equity ratio is mechanically related to leverage.

It seems fruitful to analyze whether firms are less likely to issue debt than equity when the CEO holds larger amounts of inside debt.[86]

[86] The analysis is close to Cassell et al. (2012). In addition to my results, they find that the relative debt-equity ratio is positively related to working capital. They further confirm that all results hold for the "relative incentive ratio" as suggested by Wei and Yermack (2011) and for a "cash-adjusted" relative incentive ratio that accounts for expected salary and bonus payments. Note that the relative debt-equity ratio as suggested by Edmans and Liu (2011) and the relative incentive ratio are almost perfectly correlated. Table 2 in Cassell et al. (2012) reports a correlation coefficient of 0.96. Note further that bonus payments provide short-term incentives and are not claims on fixed payments in the future.
As a robustness check, Cassell et al. (2012) show that the results hold for a 2-stage least squares regression. They carefully point out that these regressions cannot fully address endogeneity concerns. Instruments are several CEO and firm characteristics. They use CEO age, among others. In the last paragraph (4.3.3), they raise concerns that the relative debt-equity ratio may capture horizon effects and run regressions with "age-adjusted" dependent variables to rule out this explanation. I use CEO age as a direct control variable to capture any life-cycle effects on risk aversion. I find that firms with older CEOs invest significantly less in R&D and are significantly more diversified. The results suggest that CEO age proxies for risk aversion and, thus, impacts corporate policies. CEO age is not a valid instrument for the relative debt-equity ratio.
The papers also differ in the sample construction. Cassell et al. (2012) exclude firms that do not grant inside debt. I do not exclude these firms. Since younger and smaller firms are less likely to grant pensions (see Sundaram and Yermack (2007)), Cassell et al.'s (2012) sample is biased toward older and larger firms. Cassell et al. (2012) do not exclude finance firms. I exclude finance firms because some variables, such as leverage, have a different meaning for finance and non-finance firms (see Fama and French (1992)).

Tables

Table IV.1: Variable definitions

The table defines all variables used in the analysis and reports their sources. The upper part defines CEO characteristics. The lower part defines firm characteristics. Dittmann and Maug (2007) make their estimates of CEO's non-firm wealth available at http://people.few.eur.nl/dittmann/data.htm.

Variables	Description and source
CEO characteristics	
CEO age	Age of the incumbent CEO (ExecuComp)
CEO tenure	Number of years the CEO has this position in the firm (ExecuComp)
Only pensions (1/0)	A dummy variable equal to one if the CEO has only accumulated pension benefits (ExecuComp)
Only deferred comp. (1/0)	A dummy variable equal to one if the CEO has only deferred compensation (ExecuComp)
Pensions & deferred comp. (1/0)	A dummy variable equal to one if the CEO has accumulated pension benefits and deferred compensation (ExecuComp)
Inside debt (1/0)	A dummy variable equal to one if the CEO has either accumulated pension benefits, deferred compensation, or both (ExecuComp)
Pension value (mm)	The present value of accumulated pension benefits (ExecuComp)
Deferred comp. value (mm)	Value of the aggregate balance in deferred compensation (ExecuComp)
Inside debt (mm)	Pension value plus deferred compensation value (ExecuComp)
Stock value (mm)	Shares held by the CEO times the share price at fiscal year-end (ExecuComp)
Option value (mm)	Total value of CEO's option portfolio (ExecuComp)
Inside equity (mm)	Stock value plus option value (ExecuComp)
CEO's debt-equity ratio	Inside debt divided by inside equity (ExecuComp)
Relative debt-equity ratio	CEO's debt-equity ratio divided by firm's debt-equit ratio. Firm's debt is short-term debt plus long-term debt. Firm's equity is the number of common shares outstanding times the share price at fiscal year-end (ExecuComp, Compustat)
Relative debt-equity ratio > 1	A dummy variable equal to one if the relative debt-equity ratio is above one (ExecuComp, Compustat)
log(Relative debt-equity ratio + 1)	The logarithm of the relative debt-equity ratio plus one (ExecuComp, Compustat)

Table IV.1 continued

Variables	Description and source
CEO characteristics	
Vega (000s)	Sensitivity of CEO's option portfolio with respect to a 0.01 change in stock return volatility (ExecuComp)
Delta (000s)	Sensitivity of CEO's equity portfolio with respect to a 1% change in stock price (ExecuComp)
Non-firm wealth (mm)	CEO's accumulated cash inflows minus cash outflows. Negative values and missing observations are set to zero. (Dittmann and Maug (2007))
Non-firm wealth missing	A dummy variable equal to one if non-firm wealth is negative or missing (Dittmann and Maug (2007))
Firm characteristics	
Market cap (bn)	The number of common shares outstanding times the share price at fiscal year-end (Compustat)
Total assets (bn)	Book value of total assets (Compustat)
Sales (bn)	Firm sales (Compustat)
Firm age	Difference between the current year and the first year the firm appears in CRSP (CRSP)
R&D/Lagged total assets	Research and development expenditures divided by lagged total assets (Compustat)
Business segments	Number of reported business segments (Compustat)
Sales-based Herfindahl index	Sum of squares of segment sales divided by the square of firm sales (Compustat)
Book leverage	Short-term and long-term debt divided by the book value of total assets (Compustat)
Equity volatility	Annualized standard deviation of daily logarithmic stock returns (CRSP)
Cash flow	Income before extraordinary items plus depreciation and amortization plus R&D expenditures minus capital expenditures divided by lagged total assets (Compustat)
Marginal tax rate	Marginal tax rate before interest expense estimated by Blouin, Core, and Guay (2010) (Compustat)
R&D/Total assets	Research and development expenditures divided by total assets (Compustat)
PPE/Total assets	Property, plant and equipment divided by total assets (Compustat)
ROA	Operating income before depreciation divided by total assets (Compustat)
Tobin's Q	The market value of common equity plus the book value of total liabilities divided by the book value of total assets (Compustat)

Table IV.2: Descriptive statistics

The table presents descriptive statistics for all variables used in the analysis. The upper part shows CEO characteristics. The lower part shows firm characteristics. Table IV.1 defines all variables. All variables are winsorized at the 1% and 99% levels. The sample period is from 2006 to 2009.

Variables	Obs	Mean	Std. Dev.	5th Perc.	Median	95th Perc.
CEO characteristics						
CEO age	4,248	55.151	6.744	44	55	67
CEO tenure	4,270	7.372	6.64	0.863	5.418	22.014
Only pensions (1/0)	4,334	0.116	0.32	0	0	1
Only deferred comp. (1/0)	4,334	0.256	0.436	0	0	1
Pensions & deferred comp. (1/0)	4,334	0.307	0.461	0	0	1
Inside debt (1/0)	4,334	0.678	0.467	0	1	1
Pension value (mm)	4,334	2.68	5.89	0	0	14.769
Deferred comp. value (mm)	4,334	2.112	5.699	0	0.153	10.149
Inside debt (mm)	4,334	4.885	9.811	0	0.8	22.558
Stock value (mm)	4,334	43.583	152.795	0.145	6.7	177.979
Option value (mm)	4,334	13.936	23.213	0	5.347	58.789
Inside equity (mm)	4,334	57.898	157.719	1.032	15.531	234.794
CEO's debt-equity ratio	4,334	0.28	0.607	0	0.051	1.243
Relative debt-equity ratio	4,334	3.094	13.312	0	0.207	9.896
Relative debt-equity ratio > 1	4,334	0.282	0.45	0	0	1
log(Relative debt-equity ratio + 1)	4,334	0.574	0.883	0	0.188	2.388
Vega (000s)	4,334	124.295	191.394	0	50.068	511.154
Delta (000s)	4,334	686.172	1627.688	12.494	212.545	2739.789
Non-firm wealth (mm)	4,334	26.19	53.892	0	8.613	109.088
Non-firm wealth missing	4,334	0.151	0.358	0	0	1
Firm characteristics						
Market cap (bn)	4,334	7.638	19.466	0.135	1.714	34.357
Total assets (bn)	4,334	7.315	17.381	0.207	1.918	31.777
Sales (bn)	4,334	6.622	14.594	0.189	1.799	30.423
Firm age	4,310	27.052	20.19	5	20	79
R&D/Lagged total assets	3,113	0.026	0.047	0	0	0.131
Business segments	3,644	2.707	1.679	1	3	6
Sales-based Herfindahl index	3,644	0.716	0.277	0.264	0.745	1
Book leverage	4,334	0.245	0.171	0.005	0.228	0.564
Equity volatility	4,165	0.503	0.259	0.206	0.437	1.026
Cash flow	3,104	0.051	0.122	-0.178	0.061	0.239
Marginal tax rate	4,172	0.312	0.072	0.113	0.342	0.35
R&D/Total assets	4,334	0.025	0.045	0	0	0.127
PPE/Total assets	4,329	0.27	0.222	0.03	0.196	0.753
ROA	4,328	0.132	0.093	-0.016	0.131	0.279
Tobin's Q	4,334	1.722	0.878	0.863	1.476	3.41

Table IV.3: Correlations and differences in means

The left part of the table shows Pearson correlation coefficients for policy variables and the logarithm of the relative debt-equity ratio plus one. The right part of the table shows mean values of policy variables for firm-years, in which the relative debt-equity ratio is and is not above one. All variables are described in Table IV.1. All variables are winsorized at the 1% and 99% levels. The sample period is from 2006 to 2009. ***, **, and * denote statistically significant Pearson correlations and statistically significant differences in mean values based on *t*-tests at the 1%, 5%, and 10% level.

Variables		log(Relative debt-equity ratio + 1)	Relative debt-equity ratio > 1:	
			No	Yes
	Obs	Pearson correlations	Mean values	
R&D/Lagged total assets	3,113	-0.0145	0.0274	0.024 *
Sales-based Herfindahl index	3,644	-0.1313 ***	0.7469	0.6384 ***
log(Business segments)	3,644	0.1373 ***	0.7109	0.9694 ***
Book leverage	4,334	-0.3013 ***	0.2693	0.1836 ***
Equity volatility	4,165	-0.1373 ***	0.5266	0.4413 ***

Table IV.4: Investments in R&D and inside debt

The table presents results from OLS regressions with research and development expenditures divided by lagged total assets as the dependent variable. In the left column, the main independent variable is the logarithm of the relative debt-equity ratio plus one. In the right column, the main independent variable is a dummy variable that equals one if the relative debt-equity ratio is above one. All variables are described in Table IV.1. All variables are winsorized at the 1% and 99% levels. Independent variables are lagged. The sample period is from 2006 to 2009. *t*-statistics appear in parentheses. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Variables	R&D/Lagged total assets	
	(1)	(2)
log(Relative debt-equity ratio + 1)	-0.005 ***	
	(-3.520)	
Relative debt-equity ratio > 1		-0.008 ***
		(-3.719)
log(Vega + 1)	0.0032 ***	0.0032 ***
	(3.597)	(3.582)
log(Delta + 1)	-0.0057 ***	-0.0055 ***
	(-3.965)	(-3.870)
log(Non-firm wealth + 1)	0.0029 ***	0.0028 ***
	(2.680)	(2.638)
Non-firm wealth missing	0.0166 ***	0.0165 ***
	(4.299)	(4.249)
log(CEO tenure)	0.0033 **	0.0033 **
	(2.552)	(2.572)
log(CEO age)	-0.0187 *	-0.0196 **
	(-1.957)	(-2.048)
log(Firm age)	-0.0017	-0.0016
	(-1.272)	(-1.219)
log(Sales)	-0.0045 ***	-0.0046 ***
	(-3.393)	(-3.491)
Cash flow	0.0783 ***	0.0789 ***
	(4.843)	(4.848)
Tobin's Q	0.0085 ***	0.0083 ***
	(3.294)	(3.219)
Book leverage	-0.0199 ***	-0.017 **
	(-2.726)	(-2.436)
Intercept	0.0951 **	0.0976 **
	(2.462)	(2.512)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Adjusted R^2	0.4145	0.4129
Observations	2,810	2,810

Table IV.5: Firm diversification and inside debt

The table presents results from OLS regressions with proxies for firm diversification as the dependent variables. In columns 1 and 2, the dependent variable is the sales-based Herfindahl index. In columns 3 and 4, the dependent variable is the logarithm of the number of business segments. In columns 1 and 3, the main independent variable is the logarithm of the relative debt-equity ratio plus one. In columns 2 and 4, the main independent variable is a dummy variable that equals one if the relative debt-equity ratio is above one. All variables are described in Table IV.1. All variables are winsorized at the 1% and 99% levels. Independent variables are lagged. The sample period is from 2006 to 2009. *t*-statistics appear in parentheses. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Variables	Sales-based Herfindahl index		log(Business segments)	
	(1)	(2)	(3)	(4)
log(Relative debt-equity ratio + 1)	-0.0132		0.0375 *	
	(-1.500)		(1.750)	
Relative debt-equity ratio > 1		-0.0359 **		0.078 *
		(-2.131)		(1.915)
log(Vega + 1)	0.0085 *	0.0088 *	-0.0314 **	-0.0317 **
	(1.661)	(1.711)	(-2.498)	(-2.506)
log(Delta + 1)	-0.0278 ***	-0.0287 ***	0.0715 ***	0.0719 ***
	(-3.656)	(-3.754)	(3.806)	(3.800)
log(Non-firm wealth + 1)	0.0124	0.0129 *	-0.0167	-0.0173
	(1.602)	(1.681)	(-0.900)	(-0.932)
Non-firm wealth missing	0.03	0.0306	-0.0848	-0.0844
	(0.990)	(1.010)	(-1.171)	(-1.167)
log(CEO tenure)	0.0246 ***	0.0247 ***	-0.0677 ***	-0.068 ***
	(2.727)	(2.742)	(-3.124)	(-3.138)
log(CEO age)	-0.1643 **	-0.1619 **	0.4692 ***	0.4714 ***
	(-2.451)	(-2.421)	(2.908)	(2.929)
log(Firm age)	-0.0492 ***	-0.0476 ***	0.1119 ***	0.1094 ***
	(-4.644)	(-4.476)	(4.350)	(4.221)
log(Sales)	-0.0499 ***	-0.0491 ***	0.1244 ***	0.1242 ***
	(-4.247)	(-4.196)	(4.492)	(4.490)
Book leverage	0.0601	0.0586	-0.1197	-0.1314
	(1.218)	(1.221)	(-1.003)	(-1.138)
Tobin's Q	0.0486 ***	0.0492 ***	-0.1269 ***	-0.1267 ***
	(5.610)	(5.739)	(-5.917)	(-5.973)
Intercept	1.312 ***	1.3048 ***	-1.1826 *	-1.1922 *
	(5.034)	(5.027)	(-1.863)	(-1.873)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.2648	0.2661	0.265	0.2652
Observations	2,334	2,334	2,334	2,334

Table IV.6: Book leverage and inside debt

The table presents results from OLS regressions with book leverage as the dependent variable. In the left column, the main independent variable is the logarithm of the relative debt-equity ratio plus one. In the right column, the main independent variable is a dummy variable that equals one if the relative debt-equity ratio is above one. All variables are described in Table IV.1. All variables are winsorized at the 1% and 99% levels. Independent variables are lagged. The sample period is from 2006 to 2009. *t*-statistics appear in parentheses. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Variables	Book leverage	
	(1)	(2)
log(Relative debt-equity ratio + 1)	-0.0507 ***	
	(-12.828)	
Relative debt-equity ratio > 1		-0.077 ***
		(-8.120)
log(Vega + 1)	0.0072 ***	0.007 ***
	(2.717)	(2.665)
log(Delta + 1)	-0.0234 ***	-0.0222 ***
	(-5.389)	(-5.038)
log(Non-firm wealth + 1)	0.006	0.0054
	(1.387)	(1.236)
Non-firm wealth missing	0.0546 ***	0.0543 ***
	(3.307)	(3.229)
log(CEO tenure)	0.0146 ***	0.0153 ***
	(2.879)	(2.978)
log(CEO age)	-0.029	-0.0376
	(-0.766)	(-0.977)
log(Firm age)	0.0113 *	0.0115 *
	(1.957)	(1.917)
log(Sales)	0.0174 ***	0.0165 ***
	(2.949)	(2.738)
PPE/Total assets	0.1223 ***	0.1163 ***
	(3.576)	(3.375)
Marginal tax rate	0.0913	0.0803
	(1.008)	(0.878)
R&D/Total assets	-0.2527 **	-0.2635 **
	(-2.034)	(-2.126)
ROA	-0.0474	-0.0695
	(-0.720)	(-1.047)
Intercept	0.2104	0.2438
	(1.311)	(1.497)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Adjusted R^2	0.2718	0.2526
Observations	2,720	2,720

Table IV.7: Equity volatility and inside debt

The table presents results from OLS regressions with equity volatility as the dependent variable. In the left column, the main independent variable is the logarithm of the relative debt-equity ratio plus one. In the right column, the main independent variable is a dummy variable that equals one if the relative debt-equity ratio is above one. All variables are described in Table IV.1. All variables are winsorized at the 1% and 99% levels. Independent variables are lagged. The sample period is from 2006 to 2009. *t*-statistics appear in parentheses. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Variables	Equity volatility			
	(1)		(2)	
log(Relative debt-equity ratio + 1)	-0.0197	***		
	(-3.281)			
Relative debt-equity ratio > 1			-0.0441	***
			(-3.984)	
log(Vega + 1)	-0.0173	***	-0.0171	***
	(-4.756)		(-4.693)	
log(Delta + 1)	-0.0548	***	-0.0552	***
	(-9.697)		(-9.729)	
log(Non-firm wealth + 1)	0.0021		0.0026	
	(0.401)		(0.506)	
Non-firm wealth missing	0.0312		0.0314	
	(1.534)		(1.546)	
log(CEO tenure)	0.0281	***	0.0282	***
	(4.289)		(4.327)	
log(CEO age)	-0.0388		-0.0383	
	(-0.887)		(-0.878)	
log(Firm age)	-0.0074		-0.006	
	(-0.991)		(-0.803)	
log(Sales)	-0.0105		-0.0103	
	(-1.493)		(-1.471)	
R&D/Total assets	0.1214		0.12	
	(0.864)		(0.850)	
Sales-based Herfindahl index	0.0272		0.0255	
	(1.351)		(1.268)	
Book leverage	0.1273	***	0.1316	***
	(3.590)		(3.813)	
Intercept	1.1593	***	1.1591	***
	(6.679)		(6.680)	
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Adjusted R^2	0.4625		0.4636	
Observations	2,287		2,287	

Appendix

Calculating option value, option vega, and option delta

Calculations of stock option values, option delta, and option vega are based on the Black and Scholes (1973) formula, as adjusted by Merton (1973) to account for dividend payouts. The notation follows Core and Guay (2002). The empirical implementation follows Guay (1999) and Edmans, Gabaix, and Landier (2009).

Calculation of option values

$$Option\ value\ = S\ exp^{-\,d\,T}\ N(Z) - X\ exp^{-\,r\,T}\ N(Z - \sigma\ T^{0.5}), \qquad \text{(IV.3)}$$

where

$$Z = \left[ln(S/X)\ +\ T\left(r - d + \sigma^2/2\right)\right]/\sigma\ T^{0.5} \qquad \text{(IV.4)}$$

N = cumulative probability function for the normal distribution.

S = stock price at fiscal year-end (source: Compustat).

X = exercise price (source: ExecuComp).

σ = annualized standard deviation of daily log returns calculated over the last 120 days of the fiscal year. I replace missing observations with the median value in the sample for the respective year. For each year, stock return volatilities are winsorized at the 5th and 95th percentile (source: CRSP).

T = time to maturity, calculated as the difference between the option expiration date and the fiscal year end date. I assume that CEOs early exercise their options. The exercise date is 70% of the time to maturity (source: ExecuComp, Compustat).

r = logarithm of (1 + risk-free interest rate). The risk-free rate is on US treasury bonds whose maturity matches the time to maturity of the option (source: Compustat).

d = logarithm of (1 + expected dividend yield). The dividend yield is calculated as dividends per share divided by the share price at fiscal year-end. I replace missing observations with the median value in the sample for the respective year. For each year, dividend yields are winsorized at the 95th percentile (source: Compustat).

Option vega: Option vega is the sensitivity of the option value with respect to a 0.01 change in stock return volatility:

$$[\partial(Option\ value)/\partial(\sigma)] \times 0.01 = \exp^{-\mathrm{d\,T}} \mathrm{N'(Z)\,S}\, T^{0.5} \times 0.01, \quad \text{(IV.5)}$$

where N´ is the normal density function.

Option delta: Option delta is the sensitivity of the option value with respect to a 1% change in stock price:

$$[\partial(Option\ value)/\partial(S)] \times (S/100) = exp^{-d\,T}\, N(Z) \times (S/100) \quad \text{(IV.6)}$$

Bibliography

Aboody, David, and Ron Kasznik, 2000, CEO Stock Option Awards and the Timing of Corporate Voluntary Disclosures, *Journal of Accounting and Economics* 29, 73-100.

Aboody, David, and Ron Kasznik, 2009, Executive Compensation and Financial Accounting, *Foundations and Trends in Accounting* 4, 113-198.

Acharya, Viral V., and Paolo F. Volpin, 2010, Corporate Governance Externalities, *Review of Finance* 14, 1-33.

Albrecht, Bernd, 2014, Is Disclosure of Executive Compensation Good or Bad? Evidence from a Natural Experiment, Working paper, University of Mannheim.

Anantharaman, Divya, Vivian W. Fang, and Guojin Gong, 2014, Inside Debt and the Design of Corporate Debt Contracts, *Management Science* 60, 1260-1280.

Anderson, Joshua D., and John E. Core, 2014, Managerial Incentives to Increase Firm Volatility Provided by Debt, Stock, and Options, Working paper, MIT Sloan School of Management.

Andres, Christian, Erik Fernau, and Erik Theissen, 2013, Should I Stay or Should I Go? Former CEOs as Monitors, *Journal of Corporate Finance* 28, 26-47.

Angrist, Joshua D., and Jörn-Steffen Pischke, 2009, *Mostly Harmless Econometrics: An Empiricist's Companion* (Princeton University Press, Princeton, NJ).

Arellano, Manuel, and Stephen Bond, 1991, Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations, *Review of Economic Studies* 58, 277-297.

Artmann, Sabine, Philipp Finter, Alexander Kempf, Stefan Koch, and Erik Theissen, 2012, The Cross-Section of German Stock Returns: New Data and New Evidence, *Schmalenbach Business Review* 64, 20-43.

Asquith, Paul, Robert F. Bruner, and David W. Mullins, Jr., 1983, The Gains to Bidding Firms from Merger, *Journal of Financial Economics* 11, 121-139.

Babenko, Ilona, Benjamin Bennett, John M. Bizjak, and Jeffrey L. Coles, 2012, Clawback Provisions, Working paper, Arizona State University.

Battalio, Robert, Brian Hatch, and Tim Loughran, 2011, Who Benefited from the Disclosure Mandates of the 1964 Securities Acts Amendments?, *Journal of Corporate Finance* 17, 1047-1063.

Bebchuk, Lucian A., and Alma Cohen, 2005, The Costs of Entrenched Boards, *Journal of Financial Economics* 78, 409-433.

Bebchuk, Lucian A., Alma Cohen, and Allen Ferrell, 2009, What Matters in Corporate Governance?, *Review of Financial Studies* 22, 783-827.

Bebchuk, Lucian A., Alma Cohen, and Charles C. Y. Wang, 2013, Learning and the Disappearing Association between Governance and Returns, *Journal of Financial Economics* 108, 323-348.

Bebchuk, Lucian A., K.J. Martijn Cremers, and Urs C. Peyer, 2011, The CEO Pay Slice, *Journal of Financial Economics* 102, 199-221.

Bebchuk, Lucian A., and Jesse M. Fried, 2004, *Pay without Performance: The Unfulfilled Promise of Executive Compensation* (Harvard University Press, Cambridge, MA).

Bebchuk, Lucian A., and Jesse M. Fried, 2005, Pay without Performance: Overview of the Issues, *Journal of Corporation Law* 30, 647-673.

Bebchuk, Lucian A., Jesse M. Fried, and David I. Walker, 2002, Managerial Power and Rent Extraction in the Design of Executive Compensation, *University of Chicago Law Review* 69, 751-846.

Bebchuk, Lucian A., Yaniv Grinstein, and Urs C. Peyer, 2010, Lucky CEOs and Lucky Directors, *Journal of Finance* 65, 2363-2401.

Bebchuk, Lucian A., and Robert J. Jackson, Jr., 2005, Executive Pensions, *Journal of Corporation Law* 30, 823-855.

Becht, Marco, Julian Franks, Colin Mayer, and Stefano Rossi, 2010, Returns to Shareholder Activism: Evidence from a Clinical Study of the Hermes UK Focus Fund, *Review of Financial Studies* 22, 3093-3129.

Bekkum, Sjoerd V., 2013, Inside Debt and Bank Risk, *Journal of Financial and Quantitative Analysis*, forthcoming.

Berk, Jonathan B., Richard Stanton, and Josef Zechner, 2010, Human Capital, Bankruptcy, and Capital Structure, *Journal of Finance* 65, 891-926.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan, 2004, How Much Should We Trust Differences-in-Differences Estimates?, *Quarterly Journal of Economics* 119, 249-275.

Bertrand, Marianne, and Sendhil Mullainathan, 1999, Is There Discretion in Wage Setting? A Test Using Takeover Legislation, *RAND Journal of Economics* 30, 535-554.

Bertrand, Marianne, and Sendhil Mullainathan, 2000, Agents with and without Principals, *American Economic Review* 90, 2003-2008.

Bertrand, Marianne, and Sendhil Mullainathan, 2001, Are CEOs Rewarded for Luck? The Ones without Principals Are, *Quarterly Journal of Economics* 116, 901-932.

Bertrand, Marianne, and Sendhil Mullainathan, 2003, Enjoying the Quiet Life? Corporate Governance and Managerial Preferences, *Journal of Political Economy* 111, 1043-1075.

Bhagat, Sanjai, and Ivo Welch, 1995, Corporate Research & Development Investments: International Comparisons, *Journal of Accounting and Economics* 19, 443-470.

Black, Bernard, and Woochan Kim, 2012, The Effect of Board Structure on Firm Value: A Multiple Identification Strategies Approach Using Korean Data, *Journal of Financial Economics* 104, 203-226.

Black, Fischer, and Myron Scholes, 1973, The Pricing of Options and Corporate Liabilities, *Journal of Political Economy* 81, 637-654.

Blouin, Jennifer, John E. Core, and Wayne Guay, 2010, Have the Tax Benefits of Debt Been Overestimated?, *Journal of Financial Economics* 98, 195-213.

Bolton, Patrick, Hamid Mehran, and Joel Shapiro, 2011, Executive Compensation and Risk Taking, Working paper, Columbia University.

Bolton, Patrick, Jose Scheinkman, and Wei Xiong, 2006, Pay for Short-Term Performance: Executive Compensation in Speculative Markets, NBER working paper 12107, Columbia University.

Brav, Alon, Wei Jiang, Frank Partnoy, and Randall S. Thomas, 2008, Hedge Fund Activism, Corporate Governance, and Firm Performance, *Journal of Finance* 63, 1729-1775.

Brown, Charles, and James L. Medoff, 2003, Firm Age and Wages, *Journal of Labor Economics* 21, 677-697.

Brown, James R., Steven M. Fazzari, and Bruce C. Petersen, 2009, Financing Innovation and Growth: Cash Flow, External Equity, and the 1990s R&D Boom, *Journal of Finance* 64, 151-185.

Brückner, Roman, Patrick Lehmann, Martin H. Schmidt, and Richard Stehle, 2014, Fama/French Factors for Germany: Which Set Is Best?, Working paper, Humboldt University.

Bushee, Brian J., and Christian Leuz, 2005, Economic Consequences of SEC Disclosure Regulation: Evidence from the OTC Bulletin Board, *Journal of Accounting and Economics* 39, 233-264.

Cai, Jie, and Ralph A. Walkling, 2011, Shareholders' Say on Pay: Does It Create Value?, *Journal of Financial and Quantitative Analysis* 46, 299-339.

Campa, Jose Manuel, and Simi Kedia, 2002, Explaining the Diversification Discount, *Journal of Finance* 57, 1731-1762.

Carhart, Mark M., 1997, On Persistence in Mutual Fund Performance, *Journal of Finance* 52, 57-82.

Cassell, Cory A., Shawn X. Huang, Juan Manuel Sanchez, and Michael D. Stuart, 2012, Seeking Safety: The Relation between CEO inside Debt Holdings and the Riskiness of Firm Investment and Financial Policies, *Journal of Financial Economics* 103, 588-610.

Chava, Sudheer, Praveen Kumar, and Arthur Warga, 2010, Managerial Agency and Bond Covenants, *Review of Financial Studies* 23, 1120-1148.

Chava, Sudheer, and Amiyatosh Purnanandam, 2010, CEOs Versus CFOs: Incentives and Corporate Policies, *Journal of Financial Economics* 97, 263-278.

Chemmanur, Thomas J., Yingmei Cheng, and Tianming Zhang, 2013, Human Capital, Capital Structure, and Employee Pay: An Empirical Analysis, *Journal of Financial Economics* 110, 478-502.

Chhaochharia, Vidhi, and Yaniv Grinstein, 2007, Corporate Governance and Firm Value: The Impact of the 2002 Governance Rules, *Journal of Finance* 62, 1789-1825.

Chhaochharia, Vidhi, and Yaniv Grinstein, 2009, CEO Compensation and Board Structure, *Journal of Finance* 64, 231-261.

Cohen, Wesley M., 2010, Fifty Years of Empirical Studies of Innovative Activity and Performance, in Bronwyn H. Hall, and Nathan Rosenberg, eds.: *Handbook of the Economics of Innovation* (Elsevier Science North-Holland, Amsterdam).

Coles, Jeffrey L., Naveen D. Daniel, and Lalitha Naveen, 2006, Managerial Incentives and Risk-Taking, *Journal of Financial Economics* 79, 431-468.

Conyon, Martin J., Nuno Fernandes, Miguel A. Ferreira, Pedro Matos, and Kevin J. Murphy, 2011, The Executive Compensation Controversy: A Transatlantic Analysis, Working paper, University of Pennsylvania.

Core, John E., 1997, On the Corporate Demand for Directors' and Officers' Insurance, *Journal of Risk and Insurance* 64, 63-87.

Core, John E., 2000, The Directors' and Officers' Insurance Premium: An Outside Assessment of the Quality of Corporate Governance, *Journal of Law, Economics, and Organization* 16, 449-477.

Core, John E., and Wayne R. Guay, 2002, Estimating the Value of Employee Stock Option Portfolios and Their Sensitivities to Price and Volatility, *Journal of Accounting Research* 40, 613-630.

Core, John E., and Wayne R. Guay, 2010, Is CEO Pay Too High and Are Incentives Too Low? A Wealth-Based Contracting Framework, *Academy of Management Perspectives* 24, 5-19.

Core, John E., Wayne R. Guay, and David F. Larcker, 2008, The Power of the Pen and Executive Compensation, *Journal of Financial Economics* 88, 1-25.

Core, John E., Wayne R. Guay, and Tjomme O. Rusticus, 2006, Does Weak Governance Cause Weak Stock Returns? An Examination of Firm Operating Performance and Investors' Expectations, *Journal of Finance* 61, 655-687.

Core, John E., Wayne R. Guay, and Randall S. Thomas, 2005, Is U.S. CEO Compensation Inefficient Pay without Performance?, Working paper, University of Pennsylvania.

Core, John E., and David F. Larcker, 2002, Performance Consequences of Mandatory Increases in Executive Stock Ownership, *Journal of Financial Economics* 64, 317-340.

Cremers, K.J. Martijn, and Vinay B. Nair, 2005, Governance Mechanisms and Equity Prices, *Journal of Finance* 60, 2859-2894.

Cronqvist, Henrik, Fredrik Heyman, Mattias Nilsson, Helena Svaleryd, and Jonas Vlachos, 2009, Do Entrenched Managers Pay Their Workers More?, *Journal of Finance* 64, 309-339.

David, Parthiban, Rahul Kochhar, and Edward Levitas, 1998, The Effect of Institutional Investors on the Level and Mix of CEO Compensation, *Academy of Management Journal* 41, 200-208.

DeFusco, Richard A., Robert R. Johnson, and Thomas S. Zorn, 1990, The Effect of Executive Stock Option Plans on Stockholders and Bondholders, *Journal of Finance* 45, 617-627.

Demsetz, Harold, and Kenneth Lehn, 1985, The Structure of Corporate Ownership: Causes and Consequences, *Journal of Political Economy* 93, 1155-1177.

Denis, David J., Diane K. Denis, and Atulya Sarin, 1997, Agency Problems, Equity Ownership, and Corporate Diversification, *Journal of Finance* 52, 135-160.

Dew-Becker, Ian, 2009, How Much Sunlight Does It Take to Disinfect a Boardroom? A Short History of Executive Compensation Regulation in America, *CESifo Economic Studies* 55, 434-457.

Dicks, David L., 2012, Executive Compensation and the Role for Corporate Governance Regulation, *Review of Financial Studies* 25, 1971-2004.

Dittmann, Ingolf, and Ernst Maug, 2007, Lower Salaries and No Options? On the Optimal Structure of Executive Pay, *Journal of Finance* 62, 303-343.

Dittmann, Ingolf, Ernst Maug, and Christoph Schneider, 2010, Bankers on the Boards of German Firms: What They Do, What They Are Worth, and Why They Are (Still) There, *Review of Finance* 14, 35-71.

Dittmann, Ingolf, Ernst Maug, and Dan Zhang, 2011, Restricting CEO Pay, *Journal of Corporate Finance* 17, 1200-1220.

Dyck, Alexander, and Luigi Zingales, 2002, The Corporate Governance Role of the Media, NBER working paper 9309, Harvard Business School.

Edmans, Alex, and Xavier Gabaix, 2009, Is CEO Pay Really Inefficient? A Survey of New Optimal Contracting Theories, *European Financial Management* 15, 486-496.

Edmans, Alex, Xavier Gabaix, and Augustin Landier, 2009, A Multiplicative Model of Optimal CEO Incentives in Market Equilibrium, *Review of Financial Studies* 22, 4881-4917.

Edmans, Alex, and Qi Liu, 2011, Inside Debt, *Review of Finance* 15, 75-102.

Eisdorfer, Assaf, Carmelo Giaccotto, and Reilly White, 2013, Do Corporate Managers Skimp on Shareholders' Dividends to Protect Their Own Retirement Funds?, Working paper, University of Connecticut.

Ertimur, Yonco, Fabrizio Ferri, and David A. Maber, 2012, Reputation Penalties for Poor Monitoring of Executive Pay: Evidence from Option Backdating, *Journal of Financial Economics* 104, 118-144.

Fama, Eugene F., 1980, Agency Problems and the Theory of the Firm, *Journal of Political Economy* 88, 288-307.

Fama, Eugene F., and Kenneth R. French, 1992, The Cross-Section of Expected Stock Returns, *Journal of Finance* 47, 427-465.

Fama, Eugene F., and Kenneth R. French, 1993, Common Risk Factors in the Returns on Stocks and Bonds, *Journal of Financial Economics* 33, 3-56.

Fama, Eugene F., and Kenneth R. French, 1997, Industry Costs of Equity, *Journal of Financial Economics* 43, 153-193.

Fama, Eugene F., and Michael C. Jensen, 1983, Separation of Ownership and Control, *Journal of Law and Economics* 26, 301-325.

Fazzari, Steven M., R. Glenn Hubbard, and Bruce C. Petersen, 1988, Financing Constraints and Corporate Investment, *Brookings Papers on Economic Activity* 1, 141-195.

Fernando, Chitru S., Anthony D. May, and William L. Megginson, 2012, The Value of Investment Banking Relationships: Evidence from the Collapse of Lehman Brothers, *Journal of Finance* 67, 235-270.

Ferrell, Allen, 2007, Mandatory Disclosure and Stock Returns: Evidence from the Over-the-Counter Market, *Journal of Legal Studies* 36, 213-251.

Frank, Murray Z., and Vidhan K. Goyal, 2009, Capital Structure Decisions: Which Factors Are Reliably Important?, *Financial Management* 38, 1-37.

Frydman, Carola, and Dirk Jenter, 2010, CEO Compensation, *Annual Review of Financial Economics* 2, 75-102.

Fuller, Kathleen, Jeffry Netter, and Mike Stegemoller, 2002, What Do Returns to Acquiring Firms Tell Us? Evidence from Firms That Make Many Acquisitions, *Journal of Finance* 57, 1763-1793.

Gerakos, Joseph, 2010, Chief Executive Officers and the Pay-Pension Tradeoff, *Journal of Pension Economics and Finance* 9, 303-319.

Gillan, Stuart L., and Laura T. Starks, 2007, The Evolution of Shareholder Activism in the United States, Working paper, Texas Tech University.

Giroud, Xavier, and Holger M. Mueller, 2011, Corporate Governance, Product Market Competition, and Equity Prices, *Journal of Finance* 66, 563-600.

Gompers, Paul, Joy Ishii, and Andrew Metrick, 2003, Corporate Governance and Equity Prices, *Quarterly Journal of Economics* 118, 107-155.

Gormley, Todd A., and David A. Matsa, 2014, Common Errors: How to (and Not to) Control for Unobserved Heterogeneity, *Review of Financial Studies* 27, 617-661.

Gormley, Todd A., David A. Matsa, and Todd Milbourn, 2013, CEO Compensation and Corporate Risk: Evidence from a Natural Experiment, *Journal of Accounting and Economics* 56, 79-101.

Greenestone, Michael, Paul Oyer, and Annette Vissing-Jorgensen, 2006, Mandated Disclosure, Stock Returns, and the 1964 Securities Acts Amendments, *Quarterly Journal of Economics* 121, 399-460.

Guay, Wayne R., 1999, The Sensitivity of CEO Wealth to Equity Risk: An Analysis of the Magnitude and Determinants, *Journal of Financial Economics* 53, 43-71.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales, 2014, Time Varying Risk Aversion, Working paper, Einaudi Institute for Economics and Finance.

Guthrie, Katherine, Jan Sokolowsky, and Kam-Ming Wan, 2012, CEO Compensation and Board Structure Revisited, *Journal of Finance* 67, 1149-1168.

Hall, Bronwyn H., 2002, The Financing of Research and Development, *Oxford Review of Economic Policy* 18, 35-51.

Hanka, Gordon, 1998, Debt and the Terms of Employment, *Journal of Financial Economics* 48, 245-282.

Harford, Jarrad, 1999, Corporate Cash Reserves and Acquisitions, *Journal of Finance* 54, 1969-1997.

Harris, Milton, and Artur Raviv, 1991, The Theory of Capital Structure, *Journal of Finance* 46, 297-355.

Hartzell, Jay C., and Laura T. Starks, 2003, Institutional Investors and Executive Compensation, *Journal of Finance* 58, 2351-2374.

Hayes, Rachel M., Michael Lemmon, and Mingming Qiu, 2012, Stock Options and Managerial Incentives for Risk Taking: Evidence from FAS 123R, *Journal of Financial Economics* 105, 174-190.

Hayes, Rachel M., and Scott Schaefer, 2009, CEO Pay and the Lake Wobegon Effect, *Journal of Financial Economics* 94, 280-290.

Hermalin, Benjamin E., and Michael S. Weisbach, 2006, A Framework for Assessing Corporate Governance Reform, NBER working paper 12050, University of California.

Higgins, Robert C., and Lawrence D. Schall, 1975, Corporate Bankruptcy and Conglomerate Merger, *Journal of Finance* 30, 93-113.

Hill, Jennifer G., 2010, New Trends in the Regulation of Executive Remuneration, Working paper, University of Sydney.

Himmelberg, Charles P., R. Glenn Hubbard, and Darius Palia, 1999, Understanding the Determinants of Managerial Ownership and the Link between Ownership and Performance, *Journal of Financial Economics* 53, 353-384.

Himmelberg, Charles P., and Bruce C. Petersen, 1994, R&D and Internal Finance: A Panel Study of Small Firms in High-Tech Industries, *Review of Economics and Statistics* 76, 38-51.

Hochberg, Yael V., Paola Sapienza, and Annette Vissing-Jorgensen, 2009, A Lobbying Approach to Evaluating Sarbanes-Oxley Act of 2002, *Journal of Accounting Research* 47, 519-583.

Hou, Kewei, and David T. Robinson, 2006, Industry Concentration and Average Stock Returns, *Journal of Finance* 61, 1927-1956.

Iliev, Peter, 2010, The Effect of SOX Section 404: Costs, Earnings Quality, and Stock Prices, *Journal of Finance* 65, 1163-1196.

Jain, Pankaj K., and Zabihollah Rezaee, 2006, The Sarbanes-Oxley Act of 2002 and Capital-Market Behavior: Early Evidence, *Contemporary Accounting Research* 23, 629-654.

Jensen, Michael C., 1986, Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers, *American Economic Review* 76, 323-329.

Jensen, Michael C., and William H. Meckling, 1976, Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, *Journal of Financial Economics* 3, 305-360.

Jensen, Michael C., and Kevin J. Murphy, 1990, Performance Pay and Top-Management Incentives, *Journal of Political Economy* 98, 225-264.

Johnson, Marilyn F., Karen K. Nelson, and Margaret B. Shackell, 2001, An Empirical Analysis of the SEC's 1992 Proxy Reforms on Executive Compensation, Working paper, Michigan State University.

Kabir, Rezaul, Hao Li, and Yulia V. Veld-Merkoulova, 2013, Executive Compensation and the Cost of Debt, *Journal of Banking & Finance* 37, 2893-2907.

Kaplan, Steven N., and Luigi Zingales, 1997, Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints?, *Quarterly Journal of Economics* 112, 169-215.

Kato, Hideaki K., Michael Lemmon, Mi Luo, and James Schallheim, 2005, An Empirical Examination of the Costs and Benefits of Executive Stock Options: Evidence from Japan, *Journal of Financial Economics* 78, 435-461.

Kim, E. Han, and Yao Lu, 2011, CEO Ownership, External Governance, and Risk-Taking, *Journal of Financial Economics* 102, 272-292.

Kim, E. Han, Ernst Maug, and Christoph Schneider, 2014, Labor Representation in Governance as an Insurance Mechanism, ECGI working paper 411, University of Michigan.

Kim, E. Han, and John J. McConnell, 1977, Corporate Mergers and the Co-Insurance of Corporate Debt, *Journal of Finance* 32, 349-365.

Kim, E. Han, and Paige Ouimet, 2014, Broad-Based Employee Stock Ownership: Motives and Outcomes, *Journal of Finance* 69, 1273-1319.

Knopf, John D., Jouahn Nam, and John H. Thornton, Jr., 2002, The Volatility and Price Sensitivities of Managerial Stock Option Portfolios and Corporate Hedging, *Journal of Finance* 57, 801-813.

Kothari, S. P., Ted E. Laguerre, and Andrew J. Leone, 2002, Capitalization Versus Expensing: Evidence on the Uncertainty of Future Earnings from Capital Expenditures Versus R&D Outlays, *Review of Accounting Studies* 7, 355-382.

Kuhnen, Camelia M., and Alexandra Niessen, 2012, Public Opinion and Executive Compensation, *Management Science* 58, 1249-1272.

Kuhnen, Camelia M., and Jeffrey Zwiebel, 2008, Executive Pay, Hidden Compensation and Managerial Entrenchment, Working paper, Northwestern University.

La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer, 1999, Corporate Ownership around the World, *Journal of Finance* 54, 471-517.

Laksmana, Indrarini, 2008, Corporate Board Governance and Voluntary Disclosure of Executive Compensation Practices, *Contemporary Accounting Research* 25, 1147-1182.

Lang, Larry H. P., and René M. Stulz, 1994, Tobin's Q, Corporate Diversification, and Firm Performance, *Journal of Political Economy* 102, 1248-1280.

Lang, Larry H.P., René M. Stulz, and Ralph A. Walkling, 1991, A Test of the Free Cash Flow Hypothesis: The Case of Bidder Returns, *Journal of Financial Economics* 29, 315-335.

Larcker, David F., Gaizka Ormazabal, and Daniel J. Taylor, 2011, The Market Reaction to Corporate Governance Regulation, *Journal of Financial Economics* 101, 431-448.

Leuz, Christian, 2007, Was the Sarbanes-Oxley Act of 2002 Really This Costly? A Discussion of Evidence from Event Returns and Going-Private Decisions, *Journal of Accounting and Economics* 44, 146-165.

Lewellen, Katharina, 2006, Financing Decisions When Managers Are Risk Averse, *Journal of Financial Economics* 82, 551-589.

Lewellen, Wilbur G., 1971, A Pure Financial Rationale for the Conglomerate Merger, *Journal of Finance* 26, 521-537.

Li, Haidan, Morton Pincus, and Sonja O. Rego, 2008, Market Reaction to Events Surrounding the Sarbanes-Oxley Act of 2002 and Earnings Management, *Journal of Law and Economics* 51, 111-134.

Lin, Chen, Micah S. Officer, Rui Wang, and Hong Zou, 2013, Directors' and Officers' Liability Insurance and Loan Spreads, *Journal of Financial Economics* 110, 37-60.

Lin, Chen, Micah S. Officer, and Hong Zou, 2011, Directors' and Officers' Liability Insurance and Acquisition Outcomes, *Journal of Financial Economics* 102, 507-525.

Linck, James S., Jeffry M. Netter, and Tina Yang, 2008, The Determinants of Board Structure, *Journal of Financial Economics* 87, 308-328.

Liu, Yixin, David C. Mauer, and Yilei Zhang, 2014, Firm Cash Holdings and CEO inside Debt, *Journal of Banking & Finance* 42, 83-100.

Lo, Kin, 2003, Economic Consequences of Regulated Changes in Disclosure: The Case of Executive Compensation, *Journal of Accounting and Economics* 35, 285-314.

Low, Angie, 2009, Managerial Risk-Taking Behavior and Equity-Based Compensation, *Journal of Financial Economics* 92, 470-490.

Malmendier, Ulrike, and Stefan Nagel, 2011, Depression Babies: Do Macroeconomic Experiences Affect Risk Taking?, *Quarterly Journal of Economics* 126, 373-416.

Malmendier, Ulrike, and Geoffrey Tate, 2008, Who Makes Acquisitions? CEO Overconfidence and the Market's Reaction, *Journal of Financial Economics* 89, 20-43.

Maloney, Michael T., Robert E. McCormick, and Mark L. Mitchell, 1993, Managerial Decision Making and Capital Structure, *Journal of Business* 66, 189-217.

Masulis, Ronald W., Cong Wang, and Fei Xie, 2007, Corporate Governance and Acquirer Returns, *Journal of Finance* 62, 1851-1889.

Maug, Ernst, and Bernd Albrecht, 2011, Struktur und Höhe der Vorstandsvergütung: Fakten und Mythen, *Zeitschrift für betriebswirtschaftliche Forschung* 63, 858-881.

McCahery, Joseph A., Zacharias Sautner, and Laura T. Starks, 2010, Behind the Scenes: The Corporate Governance Preferences of Institutional Investors, Working paper, Tilburg University.

Merton, Robert C., 1973, Theory of Rational Option Pricing, *Bell Journal of Economics and Management Science* 4, 141-183.

Merton, Robert C., 1974, On the Pricing of Corporate Debt: The Risk Structure of Interest Rates, *Journal of Finance* 29, 449-470.

Modigliani, Franco, and Merton H. Miller, 1958, The Cost of Capital, Corporation Finance and the Theory of Investment, *American Economic Review* 48, 261-297.

Moeller, Sara B., and Frederik P. Schlingemann, 2005, Global Diversification and Bidder Gains: A Comparison between Cross-Border and Domestic Acquisitions, *Journal of Banking & Finance* 29, 533-564.

Moeller, Sara B., Frederik P. Schlingemann, and René M. Stulz, 2004, Firm Size and the Gains from Acquisitions, *Journal of Financial Economics* 73, 201-228.

Morck, Randall, Andrei Shleifer, and Robert W. Vishny, 1988, Management Ownership and Market Valuation: An Empirical Analysis, *Journal of Financial Economics* 20, 293-315.

Morck, Randall, Andrei Shleifer, and Robert W. Vishny, 1990, Do Managerial Objectives Drive Bad Acquisitions?, *Journal of Finance* 45, 31-48.

Morgan, Angela G., and Annette B. Poulsen, 2001, Linking Pay to Performance: Compensation Proposals in the S&P 500, *Journal of Financial Economics* 62, 489-523.

Murphy, Kevin J., 1996, Reporting Choice and the 1992 Proxy Disclosure Rules, *Journal of Accounting, Auditing and Finance* 11, 497-515.

Murphy, Kevin J., 1999, Executive Compensation, in Orley Ashenfelter, and David E. Card, eds.: *Handbook of Labor Economics* (Elsevier Science North Holland, Amsterdam).

Murphy, Kevin J., 2002, Explaining Executive Compensation: Managerial Power Versus the Perceived Cost of Stock Options, *University of Chicago Law Review* 69, 847-869.

Murphy, Kevin J., 2013, Executive Compensation: Where We Are, and How We Got There, in George M. Constantinides, Milton Harris, and René M. Stulz, eds.: *Handbook of the Economics of Finance* (Elsevier Science North Holland, Amsterdam).

Netter, Jeffry, Mike Stegemoller, and M. Babajide Wintoki, 2011, Implications of Data Screens on Merger and Acquisition Analysis: A Large Sample Study of Mergers and Acquisitions from 1992 to 2009, *Review of Financial Studies* 24, 2316-2357.

Oi, Walter Y., and Todd L. Idson, 1999, Firm Size and Wages, in Orley Ashenfelter, and David E. Card, eds.: *Handbook of Labor Economics* (Elsevier Science North Holland, Amsterdam).

Opler, Tim C., and Sheridan Titman, 1994, Financial Distress and Corporate Performance, *Journal of Finance* 49, 1015-1040.

Park, Yun W., Toni Nelson, and Mark R. Huson, 2001, Executive Pay and the Disclosure Environment: Canadian Evidence, *Journal of Financial Research* 24, 347-365.

Pastor, Lubos, and Pietro Veronesi, 2003, Stock Valuation and Learning About Profitability, *Journal of Finance* 58, 1749-1789.

Petersen, Mitchell A., 2009, Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches, *Review of Financial Studies* 22, 435-480.

Phan, Hieu V., 2013, Inside Debt and Mergers and Acquisitions, *Journal of Financial and Quantitative Analysis*, forthcoming.

Prevost, Andrew K., and John D. Wagster, 1999, Impact of the 1992 Changes in the SEC Proxy Rules and Executive Compensation Reporting Requirements, Working paper, Massey University.

Rajgopal, Shivaram, and Terry Shevlin, 2002, Empirical Evidence on the Relation between Stock Option Compensation and Risk Taking, *Journal of Accounting and Economics* 33, 145-171.

Sautner, Zacharias, and Martin Weber, 2011, Corporate Governance and the Design of Stock Option Contracts, Working paper, University of Amsterdam.

Scholes, Myron S., Mark A. Wolfson, Merle M. Erickson, Michelle L. Hanlon, Edward L. Maydew, and Terrence J. Shevlin, 2014, *Taxes and Business Strategy: A Planning Approach* (Prentice Hall, Upper Saddle River, NJ).

Sefcik, Stephan E., and Rex Thompson, 1986, An Approach to Statistical Inference in Cross-Sectional Models with Security Abnormal Returns as Dependent Variable, *Journal of Accounting Research* 24, 316-334.

Serfling, Matthew A., 2014, CEO Age and the Riskiness of Corporate Policies, *Journal of Corporate Finance* 25, 251-273.

Servaes, Henri, 1991, Tobin's Q and the Gains from Takeovers, *Journal of Finance* 46, 409-419.

Shleifer, Andrei, and Robert W. Vishny, 1986, Large Shareholders and Corporate Control, *Journal of Political Economy* 94, 461-488.

Shleifer, Andrei, and Robert W. Vishny, 1997, A Survey of Corporate Governance, *Journal of Finance* 52, 737-783.

Smith, Clifford W., Jr., and Jerold B. Warner, 1979, On Financial Contracting: An Analysis of Bond Covenants, *Journal of Financial Economics* 7, 117-161.

Srivastav, Abhishek, Seth Armitage, and Jens Hagendorff, 2014, CEO inside Debt Holdings and Risk-Shifting: Evidence from Bank Payout Policies, *Journal of Banking & Finance* 47, 41-53.

Sundaram, Rangarajan K., and David L. Yermack, 2007, Pay Me Later: Inside Debt and Its Role in Managerial Compensation, *Journal of Finance* 62, 1551-1588.

Titman, Sheridan, and Roberto Wessels, 1988, The Determinants of Capital Structure Choice, *Journal of Finance* 43, 1-19.

Travlos, Nickolaos G., 1987, Corporate Takeover Bids, Methods of Payment, and Bidding Firms' Stock Returns, *Journal of Finance* 42, 943-963.

Tung, Frederick, and Xue Wang, 2012, Bank CEOs, inside Debt Compensation, and the Global Financial Crisis, Working paper, Boston University.

Villalonga, Belén, 2004, Does Diversification Cause the "Diversification Discount"?, *Financial Management* 33, 5-27.

Wei, Chenyang, and David Yermack, 2011, Investor Reactions to CEOs' inside Debt Incentives, *Review of Financial Studies* 24, 3813-3840.

Weisbach, Michael S., 2007, Optimal Executive Compensation Versus Managerial Power: A Review of Lucian Bebchuk and Jesse Fried's Pay without Performance: The Unfulfilled Promise of Executive Compensation, *Journal of Economic Literature* 45, 419-428.

Wells, Harwell, 2009, "No Man Can Be Worth $1,000,000 a Year": The Fight over Executive Compensation in 1930s America, *University of Richmond Law Review* 44, 689-769.

Wernicke, Georg, 2014, Executive Compensation, Media Outcry, and Reputation of Outside Directors, Working paper, Copenhagen Business School.

White, Halbert, 1980, A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity, *Econometrica* 48, 817-838.

Yermack, David, 1996, Higher Market Valuation of Companies with a Small Board of Directors, *Journal of Financial Economics* 40, 185-211.

Yermack, David, 1997, Good Timing: CEO Stock Option Awards and Company News Announcements, *Journal of Finance* 52, 449-476.

Yermack, David, 2006, Flights of Fancy: Corporate Jets, CEO Perquisites, and Inferior Shareholder Returns, *Journal of Financial Economics* 80, 211-242.

Yermack, David, 2010, Shareholder Voting and Corporate Governance, *Annual Review of Financial Economics* 2, 103-125.

Zellner, Arnold, 1962, An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests for Aggregation Bias, *Journal of the American Statistical Association* 57, 348-368.

Zhang, Ivy X., 2007, Economic Consequences of the Sarbanes-Oxley Act of 2002, *Journal of Accounting and Economics* 44, 74-115.

Kurzlebenslauf

Bernd Albrecht

Akademischer Werdegang

2008 – 2011	**Universität Mannheim** Wissenschaftlicher Mitarbeiter am Lehrstuhl für Corporate Finance (Professor Ernst Maug, Ph.D.)
2002 – 2008	**Universität Ulm** Diplom Wirtschaftswissenschaften
2006	Edith Cowan University, Australien
2005 – 2006	Universidad de la Laguna, Spanien
2001 – 2002	**Universität Erlangen-Nürnberg** Diplom Internationales Wirtschaftsrecht
2001	**Joseph-Bernhart-Gymnasium Türkheim** Allgemeine Hochschulreife