Managerial Risk Aversion and the Structure of Executive Compensation

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Abstract

We examine whether and, if so, how executives' inherent risk aversion plays a role in shaping the structure of their compensation contracts. In so doing, we estimate managerial risk aversion based on the Big Five personality traits – openness, conscientiousness, extraversion, agreeableness, and neuroticism – inferred using IBM's Watson Personality Insights service. We show that executives' inherent risk aversion is related to their compensation structure. Specifically, we find that more risk-averse CEOs and CFOs receive more cash-based and less equity-based compensation and receive larger pre-contracted severance pay. In addition, the premium for the equity-based compensation component is larger for more risk-averse executives. Our findings suggest that knowledge about executives' inherent risk aversion is important and relevant for designing compensation contracts and help us better understand the interplay between executive personal characteristics and remuneration.

JEL Codes: G41, G30, J33, M12

Keywords: Personality, Risk aversion, Compensation, CEO, CFO

1. Introduction

This paper aims to provide large-sample, systematic evidence on whether and, if so, how the inherent risk aversion of corporate executives, particularly chief executive officers (CEOs) and chief financial officers (CFOs), plays a role in shaping the structure of compensation contracts between executives and firms or firm owners. Financial economics theory considers risk aversion a key determinant of individuals' economic behavior, assuming that risk-averse executives influence a wide range of economic outcomes ranging from principal-agent contracting to asset pricing (Epstein 1998; Jensen and Murphy 1990; Haubrich 1994; Page 2018). However, empirical evidence supporting these theoretical predictions is scarce, particularly because it is difficult to objectively measure inherent risk-aversion traits at the individual executive level.

Prior research approximates executives' risk aversion in several ways. One stream of research uses managerial fixed effects as a 'catch-all' proxy for any personality differences (including risk aversion) among executives (Dyreng et al. 2010; Ge et al. 2011). Although this approach is able to document the impact of general personality differences among executives, it does not allow directional predictions about the impact of specific personality traits such as innate risk aversion characteristics. Another stream of research infers executives' risk aversion from demographic characteristics such as country of origin, education, field of expertise, and ethnicity (Hambrick and Mason 1984; Bamber et al. 2010; Ellahie et al. 2017) or infers executives' appetite for risk based on their actions, such as exercising stock options or having risky hobbies (Malmendier and Tate 2005; 2008; Cain and McKeon 2016; Hribar and Yang 2016; Kim et al. 2016; Sunder et al. 2017). However, such approaches are inevitably coarse and do not allow us to capture specific personality differences within broad categories. Further, risk-averse behaviors may be driven either by a combination of various personality traits (Schmidt and Hunter 2004;

Richardson et al. 2012) or by reasons other than risk aversion (i.e., career changes, financial needs, or stages of life). Moreover, it is difficult to provide sufficiently granular data using this approach, as many proxies for risk aversion are dichotomous. Finally, some papers administer psychometric tests to executives to obtain their underlying psychological traits and attitudes and infer risk aversion from their choices of safe or risky alternatives in hypothetical gambles in a survey (Graham et al. 2013). This approach also has limitations, as survey evidence is clouded by the hypothetical nature of the questions, the lack of incentives to exert effort in producing responses, and the inability to test causation since surveys are conducted at one point in time. In addition, the generalizability of survey-based evidence is questionable due to low response rates (typically approximately 10%), which may not be representative of the entire population. Any self-assessed responses may thus suffer from social desirability bias and inflation (Cycyota and Harrison 2002; Tourangeau and Yan 2007; Mata et al. 2018).

Despite the theoretical prediction that managerial risk aversion is a key factor determining the structure of executives' compensation contracts (Hölmstrom 1979; Dittmann and Maug 2007; Dittmann et al. 2017; Page 2018), we have only limited empirical evidence on whether firms take into consideration the costs of incentivizing executives and adjust the proportion of compensation based on their risk preferences. Thus, we have only limited knowledge about executives' risk preferences in reality. The primary focus of empirical research in this area is on the effects of financial incentives on risk-taking behavior. For example, recent literature mainly investigates how equity-based compensation affects managers' risk-taking behavior (Low 2009; Hayes et al. 2012), how pay-performance sensitivity (i.e., sensitivity of CEO wealth to stock volatility or *Vega*) provides risk-averse CEOs with incentives to increase their firms' risk (Coles et al. 2006;

Armstrong and Vashishtha 2012), or what effect managerial risk-taking incentives have on corporate financial policies (Chava and Purnanandam 2010).

In other words, prior research in this area has paid little attention to the role of executives' personality or personality traits in structuring incentive compensation contracts. As a result, little is known about whether and, if so, how innate executive personality is reflected in compensation structure. Only a handful of studies have investigated the impact of executives' inherent traits, such as overconfidence and optimism, on compensation structure (Humphery-Jenner et al. 2016; Otto 2014). Graham et al. (2013) is the first study to survey CEOs and CFOs and infer their level of risk aversion from their choices of safe or risky alternatives in a hypothetical gamble. Although their paper focuses on how different psychological traits and attitudes relate to corporate decisions and policies at the individual firm level (i.e., mergers and acquisitions and capital structure), the authors also provide the first direct evidence that risk-averse executives are more likely to be compensated by salary and less likely to be compensated with performance-based packages. Given the limitations of a survey approach and the general lack of empirical evidence on how innate executive personality traits relate to compensation structure, we investigate this question using an innovative method that allows an objective assessment of personality in a large sample setting.

Specifically, we utilize a novel and recently validated approach based on a machine-learning technique that estimates the Big Five personality traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism; mnemonic OCEAN) from transcripts of the Q&A sessions of conference calls made by CEOs and CFOs. Specifically, we use the Watson Personality Insights service (Watson PI, developed by IBM) to process executives' answers to questions posed by analysts. Our study focuses on these Big Five (OCEAN) traits, as they portray basic underlying trait dimensions of personality (Goldberg 1990) and are recognized as genetically based, relatively

stable, and cross-culturally generalizable (Costa and McCrae 1997; Cobb-Clark and Schurer 2012). Based on prior research that provides relatively consistent guidance on the relation between the Big Five personality traits and an individual's appetite for risk (Judge and Bono 2000; Clarke and Robertson 2005; Borghans et al. 2009), we follow prior literature (Hrazdil et al. 2019; 2020) and combine the OCEAN personality traits to derive an inherent index of CEO and CFO risk aversion (RA).[2]

In our study, we develop and utilize the inherent risk aversion index for each executive to empirically test whether executive risk preferences are relevant for the outcomes of contracting between executives and firms or firm owners. We base our prediction on the agency theory that models compensation bargaining between a risk-neutral owner and a risk-averse manager (Hölmstrom 1979; Lambert 2001; Bolton and Dewatripont 2005). Due to goal incongruence and information asymmetry between shareholders and managers, firms have incentives to tie a portion of managerial remuneration to firm performance. However, since firm performance is a noisy proxy for managerial effort, the variable component of managerial remuneration imposes risk on a manager, for which she must be compensated (Smith and Stulz 1985). We argue and predict that the more risk averse a manager is, the costlier it is for a firm to impose risk on her by tying her pay to firm performance (i.e., by paying some part of her compensation in the form of restricted equity or stock options). Prior studies further point out that executives who cannot sell or hedge the risk associated with their options do not value them at their market value; instead, they value them subjectively through the lens of their own preferences (Lambert et al. 1991; Carpenter 2000; Ross 2004). Consequently, granting stock options to risk-averse executives may not necessarily increase

[2] Hrazdil et al. (2020) demonstrate that risk aversion based on OCEAN varies with the existing inherent and behavior-based RA proxies (gender, age, pilot license, sensitivity of executive compensation to stock return volatility, and executive unexercised vested options) in predictable ways. We discuss the construction of the RA in section 3.2.

their appetite for risk (Armstrong and Vashishtha 2012). We thus propose that firms make greater use of equity-based compensation in their contracts when it is less costly (i.e., when they are dealing with less risk-averse managers).

Our results are consistent with our predictions. First, we show that more risk-averse executives receive a larger portion of their compensation as a base salary and a smaller portion in restricted stocks and stock options. Second, we find that our risk-aversion measure is *negatively* correlated with the sensitivity of executive compensation to stock return volatility (*Vega*) and the sensitivity of a manager's wealth to changes in stock price (*Delta*). These results hold for both CEOs and CFOs, even after we control for firm and year fixed effects that exploit the differences in risk aversion and compensation variability for managers of the same firm in the same year. Third, we explore severance pay as another aspect of compensation bargaining and find that more risk-averse executives contract for larger severance pay that partly insulates them from the risk of a potential job loss. Finally, in support of the contracting-based mechanism that we envisage, we provide evidence that more risk-averse executives require a larger compensation premium for compensation that is variable rather than fixed. Taken together, these results are consistent with the standard agency theory that predicts that executives' inherent risk aversion is highly relevant for the structure of incentive-compatible compensation contracts. Thus, these results confirm a fundamental trade-off between increasing incentives and risk: firms seem to rationally factor risk aversion into the cost of incentivizing management and use a variable (as opposed to fixed) portion of compensation, to a large degree, to incentivize and reward less risk-averse executives.

Our results make several important contributions to the literature. First, we complement Graham et al. (2013) by extending the measurement of risk preferences to a comprehensive sample of CEOs and CFOs covered in ExecuComp between 2002-2013 and by providing new evidence

on how inherent risk-aversion characteristics affect different components of managerial compensation contracts (e.g., cash versus equity-based components). We thus contribute to the executive compensation literature in economics, finance, and management and provide large-sample, systematic evidence that supports the role of executives' inherent risk preference traits in shaping the structure of their compensation contracts. Second, we contribute to the literature on the determinants of risk taking and pay-performance incentives by providing evidence that rational contracting, rather than pure self-selection or matching, occurs between executives and firms. Accordingly, we provide supporting evidence for the financial contracting hypothesis proposed by Yermack (1995). Third, we contribute to the incentive contracting literature by showing that risk aversion affects the use of different components of equity-based compensation (cash, bonus, stock, and stock options) as optimal incentive devices. Finally, our analysis of severance pay provides supporting evidence for the hypothesis that these contracts exist to provide CEOs with insurance for their human capital. Cadman et al. (2016) point out the possibility that the level of cash compensation a CEO receives could also affect her risk preferences; however, they do not test whether the value of severance payments is related to executives' risk aversion. Overall, our evidence suggests that firms consider specific personality characteristics of individual executives when designing incentive compensation contracts.

The paper proceeds as follows. In section 2, we review prior literature and specify our hypotheses. In section 3, we discuss our methodology, including the sample, data sources, variable measurement and model specification. In section 4, we present our empirical results. The paper concludes in section 5.

2. Relevant literature and hypotheses

2.1 Literature on personality characteristics

Given that existing indirect proxies for executive personality characteristics do not capture specific personality traits and that it is a daunting task to infer executive personality from survey-based approaches, recent studies have begun to take advantage of advances in content analysis techniques to understand executives' personality. For example, one stream of recent research utilizes word count software to identify keywords in texts attributed to CEOs to measure their attributes such as narcissism, hubris, and regulatory and temporal foci (Chatterjee and Hambrick 2007; Tang et al. 2018; Gamache et al. 2015; Nadkarni and Chen 2014). However, rather than employing broader trait frameworks such as the Big Five, these studies focus mainly on discrete or binary attributes of CEOs and do not directly validate individual traits with existing psychometrics-based instruments.

Another stream of research employs the Big Five personality framework, which has emerged as the dominant taxonomy for understanding individuals' personality because it provides a more holistic view of individuals' overall personalities. This stream of research has typically utilized Q&A sessions of conference calls (specifically, CEOs' answers to questions raised by analysts) as inputs for linguistic analysis (Mairesse et al. 2007; Malhotra et al. 2018). Matsumoto et al. (2011) argue that presentation segments are not suitable for assessing CEO personality, as the text used in presentations is likely scripted by others. In contrast, executives are more likely to speak freely in their natural tone, expressing their opinions on questions posed by analysts during Q&A sessions. These questions can be quite difficult for CEOs because analysts' inquiries are often direct and not easily anticipated, and CEOs' answers are consequential, as capital markets respond instantly to information provided in these calls (Price et al. 2012). As a result, text spoken during a Q&A segment is likely unscripted and is more suitable for personality analysis.

Of late, two prior studies have used CEO speech during conference calls to infer and validate the Big Five traits. First, Harrison et al. (2019) develop and validate a language-based tool to measure OCEAN for a sample of more than 3,000 CEOs of S&P 1500 firms and explore the direct and interactive effects of CEOs' personality traits and firm performance on strategic change. The authors apply machine-learning algorithms to train models to estimate OCEAN for a subset of 207 CEOs of S&P 1500 firms by comparing transcripts of their speech to personality scores that were previously derived using a psychometrically validated instrument. Second, Hrazdil et al. (2020) utilize linguistic analytics software developed by IBM (Watson PI service)[3] to infer CEOs' and CFOs' Big Five personality traits, based on which they calculate a proxy for risk tolerance. Hrazdil et al. (2020) provide several validation tests for the Watson PI personality traits based on a large sample of U.S. firms (9,431 firm-year observations for CEOs and 8,701 firm-year observations for CFOs during 2002-2013). Specifically, these authors demonstrate that firm-level CEO personality traits (OCEAN and risk tolerance) are CEO specific and unaffected by firm characteristics or firm performance and that CEO risk tolerance varies with existing inherent and behavior-based measures (gender, age, pilot license, sensitivity of executive compensation to stock return volatility, and executive unexercised vested options) for risk in predictable ways. As the machine-learning software developed and validated by IBM continually evolves and improves over time and is available at low cost to other researchers, we utilize this advanced tool to capture executives' OCEAN traits, based on which we infer their level of risk aversion (following Hrazdil et al. 2020).

[3] IBM validated its software by comparing the survey-based scores of over 1,500 participants responding to traditional psychometric tests to scores derived from their personality software model using the Twitter feeds of those participants. Participants completed the 50-item Big Five standard psychometric test derived from the International Personality Item Pool. Based on these results, the average mean absolute error and average correlation between the inferred and actual scores for the different categories of personality characteristics were 0.12 and 0.33, respectively, placing this service at the cutting edge of personality inference from textual data as indicated by Schwartz et al. (2013) and Plank and Hovy (2015).

2.2 Hypothesis development: Executive risk aversion and incentive compensation

Financial economists hypothesize that managerial risk aversion is a key factor determining the structure of executive compensation contracts (Hölmstrom 1979; Lambert 2001; Bolton and Dewatripont 2005; Dittmann and Maug 2007; Dittmann et al. 2017). Studies with analytical models typically depict contracting between risk-neutral owners and risk-averse managers. Managers may exert costly effort with an expectation to enhance firm value; however, their efforts are not directly observable by owners and therefore are difficult to match with proper incentives and performance evaluation mechanisms. Owners, who want to incentivize managers to exert the optimal level of effort, can make compensation dependent on a proxy for managerial effort, such as firm performance. However, since firm performance is a noisy proxy for managerial effort, tying managerial compensation to firm performance increases managers' participation constraints, for which they must be compensated (Smith and Stulz 1985). As managerial risk aversion makes performance-based incentive pay costly, firms prefer to hire more risk-tolerant agents as managers (Graham et al. 2013). Accordingly, we first postulate that the more risk averse a manager is, the greater the compensation premium she requires and thus the costlier it is for the firm to incentivize her. In other words, risk-averse executives are unlikely to be compensated with higher variable compensation and thus higher total compensation for their services, ceteris paribus. To provide systematic evidence on this under-researched issue, we propose and test the following hypothesis, stated in alternative form:

> **H_1:** *More risk-averse CEOs and CFOs receive lower levels of total compensation and its variable components than less risk-averse executives, all else equal.*

Managers are, on average, more risk averse than owners. Relative to well-diversified owners, managers have an under-diversified position in firm-specific fortune in terms of both their human capital (i.e., adaptation to their current employment) and financial wealth (i.e., equity ownership). They therefore prefer to bear less risk than shareholders on average. As equity compensation exposes CEOs to firm-specific risk, Dittmann et al. (2017) argue that risk-averse CEOs are more likely to reduce firm risk, even if it destroys value. Consistent with this prediction, prior literature provides evidence that managers tend to use their decision-making discretion to reduce firm risk beyond the level that owners deem optimal. For example, they select investment projects with low cash flow volatility (Low 2009; Rajgopal and Shevlin 2002), diversify their firm's business activities (Amihud and Lev 1981), hedge firm exposure to risk (Smith and Stulz 1985; Rajgopal and Shevlin 2002), and lower financial leverage (Garvey and Hanka 1999). In addition, self-interested managers may strive to avoid even the idiosyncratic risk that can be readily diversified away by investors (Armstrong and Vashishtha 2012). Hence, the incongruent risk preferences between owners and managers can be viewed as one of the manifestations of the agency problem (Guay 1999).

Further, due to labor market frictions, a firm does not always attract executives whose inherent risk preferences are perfectly matched with its strategic goals and organizational culture. Managers' inherent risk aversion is only one of many factors that firms consider when choosing from a pool of potential candidates for executive positions. Executives' risk-aversion consideration is often superseded by other important personality characteristics such as drive and adaptability or by firm-specific needs such as managerial expertise, industry connections, and strategic vision. Accordingly, firms may end up appointing executives with inherent risk characteristics that differ from an optimal self-selection match. In such cases, firms must consider the cost of incentivizing

their executives and tailor their compensation contract with respect to their inherent risk-aversion profiles, as more risk-averse executives derive lower personal utility from the variable (as opposed to fixed) component of their remuneration. For example, Dittmann and Maug (2007) develop and calibrate an analytical model that predicts that the number of additional shares required to be held by a CEO decreases with her risk aversion; to an undiversified, risk-averse executive, a typical stock option may be worth only 20 to 40 percent of what it is worth to a well-diversified investor. Furthermore, as managerial risk aversion increases, stocks become progressively better at providing incentives because stocks also pay off for lower stock prices. Although options may be perceived as 'cheap' forms of compensation by companies (providing more incentives for the same dollar outlay as an equivalent investment in stock), they are very risky to executives, as the options may expire and be worthless. Drawing upon the above reasoning, we propose and test our second hypothesis, stated in alternative form below:

> **H_2:** *More risk-averse CEOs and CFOs receive lower equity-based compensation relative to cash-based compensation (e.g., salary and bonuses) than less risk-averse executives do, all else equal.*

Severance pay can be viewed as another aspect of compensation contracting that is affected by differences in risk aversion among executives. Prior research provides evidence that severance pay is consistent with efficient contracting between management and firms as it protects managers from the adverse consequences of potential job loss in situations when firms want to promote greater managerial risk-taking. For example, Rau and Xu (2013) investigate the determinants of the likelihood of severance pay in a contract and find a positive association between this likelihood and firm risk. Others, such as Huang (2011) and Muscarella and Zhao (2011), find that the existence of a severance pay contract is associated with value-decreasing investment choices. However, although severance pay contracts can sometimes be seen as forms of incentives for

executives to invest in risky projects (Cadman et al. 2016), the main purpose of severance pay is to protect executives against the potentially adverse consequences of their dismissal (i.e., financial losses resulting from lost pay or a stigma resulting from being involuntarily dismissed), which limits their future employment opportunities (e.g., Semadeni et al. 2008). As Cadman et al. (2016) point out "merely providing executives with severance pays in their contract is not sufficient to induce them to invest in risky positive-NPV projects" (p. 742). These authors document that the amount of ex post severance payouts to dismissed CEOs tends to be very close to the ex-ante contracted amounts; this suggests that the ex-ante contracted amount of severance pay is a good proxy for the actual insurance provided to a CEO against financial loss resulting from a potential dismissal. Accordingly, we propose and test our third hypothesis, stated in alternative form below:

H_3: *More risk-averse CEOs and CFOs receive a higher ex-ante contracted amount of severance pay than less risk-averse executives, all else equal.*

Our hypotheses presented above suggest that firms that substitute fixed compensation with variable compensation must compensate their executives for the risk that the variable part of compensation contract imposes on them. This intuition is based on prior research that shows that equity-based compensation in general, and stock options in particular, is costly (Dittmann and Maug 2007; Hall and Murphy 2002) and thus that risk-averse employees require a risk premium to accept equity as a form of compensation relative to cash compensation (Core and Guay 2001; Hall and Murphy 2000). In other words, ceteris paribus, executives with a high proportion of equity-based remuneration (relative to cash-based remuneration) are expected to receive a remuneration premium (i.e., higher total remuneration) as compensation for the additional risk they bear. In equilibrium, we expect the remuneration premium to be larger for more risk-averse executives. We argue that the higher remuneration premium required by more risk-averse

executives makes it costlier for owners to use variable compensation in executive compensation contracts. This argument underlies our prediction of less intensive use of variable compensation by more risk-averse executives, as reflected in Hypotheses 1 to 3. Our final hypothesis thus aims to provide a direct test for the envisioned underlying mechanism that motivates the main prediction of our paper. Specifically, we propose and test our last hypothesis below, stated in alternative form:

> **H_4:** *The positive association between the ratio of equity-based to cash-based remuneration and the amount of total remuneration is stronger for more risk-averse executives, all else equal.*

3. Methodology

3.1 Sample and data

Our sample data originate from four sources: (1) information on executive compensation is from ExecuComp, which covers Standard & Poor's (S&P) 1500 constituents; (2) accounting data are from Compustat; (3) stock market data are from CRSP; and (4) Big Five personality traits are estimated using the IBM Watson PI service. Using these sources, we gather our data for the 2002-2013 period and obtain a sample of 6,634 firm-year observations for CEOs and 5,834 firm-year observations for CFOs that satisfy all the data requirements (our sample comprises 2,090 unique CEOs and 2,056 CFOs).

3.2 Dependent and moderating variable estimation

To estimate executive risk aversion (RA), we follow Hrazdil et al. (2020); for each conference call where CEOs and CFOs answer questions from analysts, we obtain a score from Watson PI for each of their Big Five, or OCEAN, personality traits: openness (O), conscientiousness (C), extraversion (E), agreeableness (A) and neuroticism (N). We then use the Big Five OCEAN scores to compute an executive RA index. Prior research provides relatively consistent guidance on the

relation between the Big Five personality traits and an individual's risk aversion. Prior research has found that highly risk-averse individuals are associated with low openness, high conscientiousness, low extraversion, high agreeableness, and high neuroticism (Clarke and Robertson 2005; Judge and Cable, 1997; Nadkarni and Herrmann 2010; Nicholson et al. 2005). Accordingly, Hrazdil et al. (2019; 2020) use reverse coding and compute an *RA* index (Equation 1) based on the sum of the five personality traits, as follows:

$$RA_{CEO,\,CFO} = [(100 - O) + C + (100 - E) + A + N)] / 5 \quad (1)$$

To test whether it is costlier to provide pay-performance incentives to more risk-averse agents, we isolate several components of total compensation as well as several proxies for pay-performance sensitivity. We decompose total executive compensation (ExecuComp variable TDC1) into five components: salary, bonus, stocks, options, and other (including perquisites and other personal benefits, gross-ups and other tax reimbursements, long-term incentive plans, life insurance premiums, contributions to defined contribution plans, discounted share purchases, etc.). We then take the following four steps. First, we identify four components of total pay awarded to CEOs and CFOs: salary (*SAL/Total*), bonus (*BON/Total*), stock-based compensation (*STK/Total*), and option-based compensation (*OPT/Total*).

Second, following Yermack (1995), we define *EQB/SALBON* as the ratio of annual equity-based compensation (stocks and options)[4] to cash-based compensation (salary and bonus). Prior research suggests that the most important driver of incentive-based compensation is the

[4] We define equity-based compensation as the sum of annual restricted stock awards and stock option grants. As ExecuComp changed its reporting format in 2006, we follow Coles et al. (2014). That is, prior to 2006, we use 'rstkgrnt', which shows the value of restricted stocks granted during the year as estimated by ExecuComp assuming July 1 as the grant date. After 2006, we use 'stock_awards_fv', which shows the fair value of restricted stock grants and performance-based pay as estimated by the company as of the grant date. For stock option grants before 2006, we use 'option_awards_blk_value', which shows the value of options granted during a year as estimated by ExecuComp using the Black-Scholes methodology assuming July 1 as the grant date. For stock option grants after 2006, we use 'option_awards_fv', which shows the fair value as estimated by the company of the grant date of option grants and performance-based pay that is yet unearned but will result in option awards in the future.

executive's equity ownership resulting from restricted stock awards and (in particular) from stock options grants (Jensen and Murphy 1990; Hall et al. 1998). Prior research also suggests that even though it can vary nominally, the bonus component of total compensation remains stable over time (Yermack 1995). Similarly, Dittmann and Maug (2007) calculate the fixed salary as the sum of salary and bonus and compensation types other than stock and options. Following this literature, we assume that bonus payments have no relevance for CEO incentives and include bonus in the denominator of our ratio. We define *OPT/SALBON* in a similar fashion, as the ratio of annual stock option grants to cash compensation. Prior literature suggests that options have a particularly strong impact on compensation variability, which motivates us to define *OPT/SALBON* and focus on options only. For example, Hartzell and Starks (2003) argue that employee stock options (ESOs) became the most prominent financial tool to align managers' incentives with owners' interests, and the ESOs' increased popularity in the 1990s made them the largest component of executive compensation.

Third, we define *Vega* and *Delta* as proxies for risk-taking and pay-performance incentives, respectively. We define *Vega* as the change in the value of an executive's option portfolio in response to a 1 percent unit change in the annualized standard deviation of a firm's stock return. We define *Delta* as the change in the value of an executive's stock and options portfolio in response to a 1 percent increase in a firm's stock price (based on Chen et al. 2015). Since *Vega* measures the increase in the value of a manager's portfolio due to an increase in firm risk, we expect the association between risk aversion and *Vega* to be stronger than the one with *Delta*. Since *Vega* measures the increase in the value of the manager's portfolio due to an increase in firm risk, prior studies suggest that higher *Vega* is likely to encourage managerial risk-taking behavior (Coles et al. 2006; Low 2009; Armstrong and Vashishtha 2012). Accordingly, we expect risk-averse

executives to avoid stock price volatility and derive lower utility from a compensation package that increases the value of their portfolio when stock price volatility increases.

Finally, we argue that executive risk aversion is also likely to impact pre-contracted severance pay. We define *SEV/Total* as severance pay from the ExecuComp (variable TERM_PYMT) scaled by a firm's total assets at the beginning of the year. We assume that an executive does not have any pre-contracted severance pay if the observation is missing.

3.3 Model specification and control variables

To test our hypotheses, we regress each of the components of executive pay (*SAL/Total, BON/Total, STK/Total, and OPT/Total*) and each of our five proxies for variable compensation (*STKOPT/SALBON, OPT/SALBON, Vega, Delta, and SEV/Assets*) on the RA measure, a set of control variables, and year and industry fixed effects (i.e., the fixed effects for fiscal years and Fama-French (1997) 49 industries, respectively). Our control variables follow prior literature and are intended to proxy for the inherent riskiness of the business and for the executive position that directly affects the expected level of variable compensation and severance pay. Specifically, we include executive tenure (*Tenure*) because executives with shorter tenure face a more uncertain situation in firms (Cadman et al. 2016); firm age (*FirmAge*), measured by the number of years since the time of the firm's inclusion in the CRSP database; and the ratio of dividends to the market value of equity (*DIV/M*) to proxy for firm maturity (DeAngelo et al. 2004). We also include the ratio of book value of debt to the market value of equity (*DEBT/M*) to proxy for firms' financial risk (i.e., leverage). Furthermore, we use the natural logarithm of the annual growth in net sales (*SGrowth*) and the ratio of the book value to the market value of firm assets (*BTM*) to proxy for historical growth and expected growth potential, respectively. In addition, we control for the

proportion of cash and marketable securities (*Cash*), net property, plant and equipment (*PPE*), and research and development expenditures (*R&D*), all scaled by total assets, to capture firms' tangibility or intangibility. To control for performance, we include lagged return on assets (*ROA*), defined as the net operating income after depreciation normalized for 12 months scaled by total assets, and past year's market-adjusted stock return (*XRET*), defined as the raw return on stock, including dividends, less the return on the S&P 500 index ending at the fiscal year end. Since product market competition may impact firm risk, we control for market concentration captured by the inverse Herfindahl-Hirschman Index of net sales in the firm's 2-digit SIC industry (*negHHI*). Finally, as institutional owners may differ systematically from individual investors in their influence on compensation bargaining, we include the proportion of institutional ownership (*IO*) as an additional control. All continuous variables are winsorized at the 1st and 99th percentiles. We double cluster our standard errors at the executive and year levels following Petersen (2009).

In regressions with the natural logarithm of total executive compensation, we identify and utilize controls from past executive compensation research (i.e., Novak and Bilinski 2018). We use executive tenure at the firm (*Tenure*), as more senior executives earn, on average, higher compensation (Finkelstein and Hambrick 1989). We control for firm size because executives who work for larger and faster growing firms tend to earn higher compensation (Hartzell and Starks 2003). We measure firm size by market capitalization of equity (*MVE*, measured as the natural logarithm of the number of shares outstanding multiplied by the stock price at the end of the fiscal year) and by firm total revenue (*Sales*, calculated as the natural logarithm of net sales for the fiscal year). We also control for firm profitability and return performance, as executives working for better-performing companies earn higher compensation (Hartzell and Starks 2003; Chang et al. 2010). In addition to sales growth (*SGrowth*) and return on assets (*ROA*) as firm operating

performance measures, we use market-adjusted returns (*XRET*) to measure share price performance. Executive remuneration increases with business risk to compensate for (i) higher variability in compensation and (ii) higher likelihood of bankruptcy and employment termination, which increases the risk in executive compensation (Roulstone 2003). We measure business risk by a firm's standard deviation of daily stock returns over the fiscal year t (*STDRet*). Finally, we control for several governance characteristics, such as *ChairCEO* (an indicator variable that equals 1 if the CEO is also chairman of the board and 0 otherwise), *InsideDirs* (the percentage of board directors who are classified by the Institutional Shareholder Services (ISS) database as employee/insider), and *ExecOwn* (the percentage of executive stock ownership). Appendix A provides detailed definitions of all research variables used in this study.

4. Results

Our main proposition is that executives' personal risk aversion matters for the structure of their remuneration. To illustrate the association between the two variables, we compute the mean values of different compensation components separately for CEOs and the CFOs across the risk aversion tertiles.

4.1. Summary statistics

Table 1 shows the descriptive statistics of our sample consisting of 6,634 firm-year observations for CEOs and 5,834 observations for CFOs. With respect to these statistics, the following are noteworthy. First, the mean (median) risk aversion index (RA) is 47.6 (47.4) for CEOs and 48.4 (48.4) for CFOs. This suggests that CFOs are, on average, more risk averse than CEOs, which is different from what Graham et al (2013) document. Second, we find significant variation in the components of executive compensation; a substantial portion of executive remuneration is granted

in the form of restricted stocks (*STK/Total*) and employee stock options (*OPT/Total*). Specifically, base salary, bonus, restricted stock grants, and stock options constitute approximately 25%, 7%, 25%, and 22%, respectively, of our CEO sample in Panel A. The remaining 21% belongs to other compensation. The results in Panel B indicate that relative to CEOs, CFOs receive a larger portion of their total compensation as base salary (32 percent, compared to 25 percent) and a smaller share of bonus, stocks, options, and other compensation. This is consistent with the notion that CEOs' compensation is more closely tied to firm performance and hence more variable than CFOs'.

[Insert Table 1 about here]

Third, Table 1 further shows that the mean (median) CEO stock-based compensation (i.e., restricted equity) and option-based compensation (i.e., stock option grants) is, on average, 32% (24%) and 47% (51%), respectively, of cash-based compensation (i.e., the sum of salary and bonus) for CEOs and 38% (32%) and 42% (44%) for CFOs. This is again consistent with the view that compensation for both CEOs and CFOs is more closely tied to firm performance and thus has more variable components. Finally, for the CEO sample in Panel A, the mean (median) firm age measured since the time of firm inclusion in the CRSP is approximately 24 (20) years, and the mean (median) executive tenure in a firm is nearly 9 (8) years. For the CFO sample in Panel B, the mean (median) values of firm age and executive tenure are approximately 24 (20) and 6 (5) years, respectively.

4.2. Univariate analysis

We then examine mean compensation components in individual risk aversion tertiles to test our first three hypotheses in a univariate setting. Consistent with the prediction in H1, we observe that more risk-averse executives (in the higher RA tertile) receive lower total compensation than less

risk-averse executives (low RA tertile). In contrast, the former executives receive a higher share of salary (*SAL/Total*) and bonus (*BON/Total*) and a smaller share of stock (*STK/Total*) and options (*OPT/Total*) than the latter executives. These results hold for both CEOs (Panel A) and CFOs (Panel B). We do not observe a monotonic increase in severance pay (*SEV/Assets*) across the three tertiles; however, there remains a significant difference in severance pay between risk-averse and risk-tolerant executives, with higher severance pay for risk-averse CEOs and CFOs. These results are further evident in the last two columns; more risk-averse executives (higher RA tertile) receive compensation that provides lower risk-taking incentives (lower *Vega*) and lower pay-performance incentives (lower *Delta*) for both CEOs and CFOs compared to less risk-averse executives (low RA tertile). Though only suggestive of the underlying relation, these results are in line with the prediction in H2, suggesting that more risk-averse executives tend to receive a higher share of their total compensation in the form of base salary and bonus and a lower share in the form of restricted equity and stock options.

[Insert Table 2 about here]

Our findings in Table 2, taken together, are consistent with the survey-based finding of Graham et al. (2013) that risk-averse CEOs are more likely to receive salary and less likely to receive performance-related packages. We extend these findings by providing corroborating evidence using a more comprehensive, larger sample of CEOs and CFOs (N = 6,634). For example, Graham et al. (2013) received only 1,180 responses from CEOs (a response rate of approximately 11%) and 549 responses from US CFOs (a response rate of approximately 6%).

4.3. Baseline regressions

Table 3 reports the results on our main test in the multivariate setting, where we examine whether executives' personal risk aversion affects the structure of their compensation. As shown in Table 3, we find a very consistent pattern across all different components of compensation for both CEOs (Panel A) and CFOs (Panel B). The slope coefficient of RA is negative and highly significant at less than the 1% level for all proxies for equity-based compensation (in columns III to VI) as well as for *Vega* and *Delta* (columns VII and VIII, respectively), while it is positive and highly significant for cash-based compensation such as salary and bonus (columns I and II, respectively). This suggests that even after controlling for firm, industry and year characteristics, more risk-averse executives tend to receive a lower portion of equity-based variable compensation, such as stock appreciation rights and options, while they tend to receive a higher portion of cash-based (relatively fixed) compensation, such as salary and bonus.[5]

Colum IX tests how executive risk aversion affects the severance pay that a firm pre-agrees to pay to an executive when his/her employment is involuntarily terminated. We argue that the analysis of severance pay complements our earlier results on the variability of executive compensation because it also arises from contracting between the firm (ultimately the owners) and the managers (Cadman et al. 2016). As shown in column IX, the coefficient on RA is positive and significant for both CEOs and CFOs, which is consistent with our expectation. This result is in line with the view that the severance pay is another outcome of contracting between executives and firms affected by executives' risk aversion. In particular, more risk-averse executives seem to require higher severance pay that insulates them from the adverse effects of involuntary employment termination.

[5] Though not tabulated for brevity, we obtain similar results when we replace our continuous variable of RA with (i) an indicator variable that equals 1 if RA is above the median and 0 otherwise or (ii) an indicator variable that equals 1 if RA is in the top tertile and 0 if it is in the bottom tertile.

[Insert Table 3 about here]

To obtain further insights, we examine whether and how the structure of compensation is linked to individual Big Five traits. In Panels C and D of Table 3, we replace a composite index of RA with five individual components of OCEAN for CEOs and CFOs, respectively. The analysis of individual components of the composite RA index helps us determine which of the Big Five personality traits is reflected in different compensation components the most. Given that openness (O) and extraversion (E) are negatively associated with risk aversion, we invert them for the purpose of this analysis in order to facilitate the interpretation, denoted by *Neg.O* and *Neg.E*, respectively. As a result, higher individual OCEAN components, that is, *Neg.O, C, Neg.E, A,* and *N*, are all indicative of a higher risk aversion. As stated in our hypotheses, we expect that the coefficient on these five components are all positive in columns I and II, respectively, where the dependent variable is SAL/Total and BON/Total, respectively, while we expect the same coefficients to be negative in all other columns.

We document a very consistent pattern across all different components of compensation for both CEOs (Panel C) and CFOs (Panel D). The results suggest that the salary portion of compensation given to more risk averse executives is driven by extroversion (*Neg.O*) and neuroticism (*N*) for CEOs and by openness (*Neg.O*), extroversion (*Neg.E*), agreeableness (*A*), and neuroticism (*N*) for CFOs. The bonus component of the compensation package is then awarded to a risk-averse executive, who is less open. For the variable portion of the compensation (awarded more to risk tolerant executives), we find different OCEAN coefficients are negative and significant in columns III-IX, suggesting that different personality traits determine different variable components of CEO and CFO compensation package. For instance, the variable portion

of compensation given to more risk averse executives is largely driven by low managerial openness and extroversion, extroversion and neuroticism for CEOs and by openness, extroversion, agreeableness, and a high neuroticism.

4.4. Fixed effect analysis

We collect data on personality traits for both CEOs and CFOs; thus, for most firm-year combinations, we have two observations in our dataset. We explore this unique feature of our sample by replacing our control variables with fixed effects for each combination of a firm and a fiscal year. The fixed effects exploit the variation in risk aversion and compensation variability between CEOs and CFOs within each firm-year 'cell'. Hence, this setup naturally controls for any time-invariant, idiosyncratic (firm-specific), omitted factors as well as time-dependent, common, omitted factors. Omitted factors, if not accounted for, could engender potential endogeneity, particularly reverse causality.

Table 4 presents the estimated results of fixed effect regressions. In Table 4, we regress our four proxies for compensation variability (*STKOPT/SALBON*, *OPT/SALBON*, *Vega*, and *Delta*) on *RA*, *Tenure*, and firm and year fixed effects. In all four models, the estimated coefficient on *RA* is negative and highly significant at less than the 1% level, suggesting that the more risk-averse an executive is relative to his/her peers in a given firm-year, the less variable his/her compensation is. These results are consistent with our baseline findings presented in Table 3, suggesting that our baseline results are unlikely to be driven by correlated omitted factors and the potential reverse causality associated therewith.

[Insert Table 4 about here]

4.5. Conditional premium analysis

As our last test, we examine the underlying mechanism through which executives' risk aversion traits influence the variability of their compensation. Following prior analytical research (Hölmstrom 1979), we maintain that owners, who wish to incentivize executives to exert greater effort, can do so by tying managerial remuneration to firm performance. Nevertheless, as the observable firm performance measures are merely a noisy proxy for managerial effort, managers require compensation in the form of remuneration premiums for the risk they face when their compensation is variable. In this study, we further maintain that the compensation premium required by more risk-averse executives is higher. As such, it is costlier for owners to use variable compensation for risk-averse executives. Under the above maintained assumptions, we hypothesize that in equilibrium, owners use less equity-based (variable) and more cash-based (fixed) compensation when contracting with more risk-averse managers than with less risk-averse managers.

In Table 5, we provide evidence that more risk-averse managers require larger compensation premiums when a portion of their compensation is variable. In so doing, we use a standard model of total executive compensation as the dependent variable (Novak et al. 2018) augmented with proxies for variable compensation (*STKOPT/SALBON* and *OPT/SALBON*), the executive risk aversion index (*RA*), and their interaction (*RA*STKOPT/SALBON* and *RA*OPT/SALBON*). Our results confirm that variable compensation (*STKOPT/SALBON* and *OPT/SALBON*) is positively associated with total compensation. This suggests that, consistent with our expectations, risk-averse executives, on average, require a compensation premium for remuneration variability. We then examine how executives' risk aversion affects this association by focusing on the interaction terms. As shown in Table 5, consistent with our expectations, the

interaction terms between RA and the compensation variability proxies (*RA*STKOPT/SALBON* and *RA*OPT/SALBON*) are all positive and highly significant, which suggests that more risk-averse executives require a larger compensation premium for a unit of variable compensation than less risk-averse executives. This result provides direct insight into the cost of using variable compensation to motivate risk-averse executives.

[Insert Table 5 about here]

4.6. Potential endogeneity

As noted by Graham et al. (2013), it is a daunting task to determine the direction of causality between executive personality and executive compensation. Executives may self-select into companies, or companies may hire executives who have the 'right' personality traits for the particular company; thus, the relation between executive personality and compensation is likely to be endogenous.

To address concerns about potential endogeneity, we exploit changes in executives in a given managerial position over time. We compare the risk aversion and compensation structure of departing executives and the newly appointed executives who replace them. Provided that the job descriptions of the departing and incoming executives remain comparable, this setup allows us to control for idiosyncratic differences between managerial positions across firms. We conduct this test in two stages. In the first stage, acknowledging that the proportion of variable compensation changes over time and is sensitive to firm performance, we estimate the abnormal variable compensation as the residual from a regression of STKOPT/SALBON and OPT/SALBON (dependent variables) on current and lagged market-adjusted stock returns, return on assets (ROA), and growth in net sales (not tabulated). In the second stage, we identify CEO and CFO changes

and compute differences in risk aversion and in abnormal compensation variability between incoming and outgoing executives. We drop the first two and the last two years of their firm tenure as these years may not be fully representative of the compensation a given executive receives. This test exploits the fact that outgoing and incoming executives take a similar position in their company. On the other hand, this test has a disadvantage in that executive changes are rather rare; we identify only 156 new CEO appointments and 135 new CFO appointments. Using this limited dataset, we find some support for our proposition. Untabulated results show that regressing the differences in STKOPT/SALBON and OPT/SALBON between current executives and their predecessors on the difference in their risk aversion, we obtain four negative slope coefficients at ΔRA, one of which is significant at the 5% level and the other two at the 10% level. We interpret these findings as suggestive evidence in support of our proposition that firms consider the risk preferences of newly appointed executives when designing their compensation contracts.

5. Conclusion

In this study, we empirically investigate a hitherto under-researched question of whether and, if so, how CEOs' and CFOs' inherent risk aversion traits shape the structure of their incentive compensation contracts. While risk aversion is a fundamental personality characteristic and the key parameter in numerous analytical models, empirical evidence on how risk aversion affects compensation structure is scarce. This is due, in large part, to the difficulty in objectively measuring executive risk preferences in large samples.

Our empirical strategy requires us to capture, for each executive, her risk aversion traits and various components of her incentive compensation contract. To this end, we first adopt a novel approach that utilizes machine-learning techniques to estimate the Big Five, or OCEAN, personality traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism)

from transcripts of the Q&A sessions of conference calls that CEOs and CFOs made to analysts. Specifically, using the Watson Personality Insights service (Watson PI, developed by IBM), we process executives' answers to questions posed by analysts and develop a risk-aversion index for each CEO and CFO. Second, we identify various components of total compensation for each CEO and CFO: (i) cash-based fixed components (salary and bonus) and (ii) equity-based variable component (stocks and options). For this purpose, we extract, from the ExecuComp database, all relevant data for the sample period of 2002-2013. We then estimate various regressions linking each compensation component to the risk-aversion index and various control variables.

Using 6,634 (5,834) firm-year observations for CEOs (CFOs), we obtain several interesting results that are consistent with our ex-ante predictions. First, we find that more risk-averse executives receive a larger portion of their pay in the form of cash-based compensation (i.e., base salary and bonus) and a smaller portion in the form of equity-based compensation (i.e., restricted stocks and stock options). Second, we find that our risk-aversion index for each executive is *negatively* correlated with the sensitivity of executive compensation to stock return volatility (*Vega*) and the sensitivity of a manager's wealth to changes in stock price (*Delta*). These results hold for both CEOs and CFOs, even after we control for firm and year fixed effects. Third, we find that more risk-averse executives tend to contract for larger severance pay that partly insulates them from the risk of potential job loss. Finally, we provide evidence that more risk-averse executives require a larger compensation premium for compensation that is variable rather than fixed.

Traditional agency theory presumes that managerial risk aversion is a key factor determining the structure of executives' compensation contracts. However, little evidence is available on whether firms consider the costs of incentivizing executives and adjust the proportion of compensation based on executives' risk preferences. To the best of our knowledge, this study

is one of the very few non-survey studies, if not the first, to examine the role of executives' personality or personality traits in the structure of their incentive compensation contracts. Given the scarcity of empirical evidence on the issue, we recommend further research in this direction.

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Appendix
Variable definition

CEO	A dummy variable equal to 1 if an executive serves as a chief executive officer (CEO) and 0 otherwise. We identity CEOs based on the date of becoming a CEO (ExecuComp variable “becameceo”), when an executive is flagged as CEO by ExecuComp (variable “ceoann”), and if the job description (ExecuComp variable “titleann”) contains “Chief Executive” or similar but not “Chief Executive of” or similar. When the above process does not identify a CEO in a given firm-year, we consider the executive with the highest salary (ExecuComp variable “salary”).
CFO	A dummy variable equal to 1 if an executive serves as a chief financial officer (CFO) and 0 otherwise. We recognize an executive as a CFO when he/she is flagged as CFO by ExecuComp (variable “cfoann”) and when the job description (ExecuComp variable “titleann”) contains “Chief Financial”, “Principal Financial”, “v-p-finance”, or similar but not in combination with “Former”, “of” or similar.
COMP	Natural logarithm of the inflation-adjusted value of the executive’s total compensation (ExecuComp variable "TDC1"). It comprises salary, bonus, restricted stock grants, stock option grants, long-term incentives, and other annual compensation.
SAL/Total	The ratio of salary (ExecuComp variable "salary") to total executive compensation (ExecuComp variable "TDC1"). We replace missing observations with zeros.
BON/Total	The ratio of bonus (ExecuComp variable "bonus") to total executive compensation (ExecuComp variable "TDC1"). We replace missing observations with zeros.
STK/Total	The ratio of restricted stock awards to total executive compensation (ExecuComp variable "TDC1"). We follow ## Coles, Daniel, Naveen (RSF‘14) and define restricted stock awards as equal to the ExecuComp variable “rstkgrnt” before 2006 (i.e., when the ExecuComp variable “old_datafmt_flag” is equal to 1) and as “stock_awards_fv” when “old_datafmt_flag” is equal to 0. We replace missing observations with zeros.
OPT/Total	The ratio of stock option awards to total executive compensation (ExecuComp variable "TDC1"). We follow ## Coles, Daniel, Naveen (RSF‘14) and define stock option awards as equal to the ExecuComp variable “option_awards_blk_value” before 2006 (i.e., when the ExecuComp variable “old_datafmt_flag” is equal to 1) and as “option_awards_fv” when “old_datafmt_flag” is equal to 0. We replace missing observations with zeros.
EQB/SALBON	The ratio of equity-based compensation (i.e., the sum of restricted stock awards (STK) and stock option awards (OPT)) and cash-based compensation (i.e., the sum of salary (SAL) and bonus (BON)). We replace missing observations with zeros.
OPT/SALBON	The ratio of stock option awards (OPT)) and cash-based compensation (i.e., the sum of salary (SAL) and bonus (BON)). We replace missing observations with zeros.

Vega	The change in the value of the executive's option portfolio in response to a 1 percent unit change in the annualized standard deviation of the firm's stock return (based on Chen et al. 2015), log transformed.
Delta	The change in the value of the executive stock and options portfolio in response to a 1 percent increase in the firm's stock price (based on Chen et al. 2015), log transformed.
SEV/Assets	Natural logarithm of 1 plus the ratio of severance payment (ExecuComp variable "term_pymt") to the firm's total assets (Compustat variable "at"). We replace negative values of "term_pymt" with zeros.
RA	An executive's risk aversion index, defined following Equation 1: [(100 – O) + C + (100 – E) + A + N)] / 5, where O denotes openness, C denotes conscientiousness, E denotes extraversion, A denotes agreeableness, and N denotes neuroticism.
Tenure	Executive tenure, defined as the number of years an executive has worked for the company up until the current year. We reset the year counter if the executive is reemployed by the company after more than two years.
FirmAge	Firm age, defined as the number of years since the first year that the firm was included in CRSP.
DIV/M	Dividends paid, defined as cash dividends (Compustat item "dv") scaled by the market value of equity computed as the product of the stock price (CRSP item "prc") and the number of outstanding shares (CRSP item "shrout") at the end of the fiscal year converted to be denominated in million dollars. We replace missing observations for cash dividends with zeros.
DEBT/M	Debt ratio, defined as the sum of book value of short-term and long-term interest-bearing debt (Compustat items "dlc" and "dltt") divided by the sum of book value of debt (see above) and market value of equity. Market value of equity is computed as the product of the stock price (CRSP item "prc") and the number of outstanding shares (CRSP item "shrout") at the end of the fiscal year converted to be denominated in million dollars.
BTM	Book-to-market ratio of firm assets. We define the book value of assets as the sum of short-term, long-term interest-bearing debt (Compustat items "dlc" and "dltt") and the book value of equity (Compustat item "ceq"). Market value of assets is computed as the sum of short-term, long-term interest-bearing debt (Compustat items "dlc" and "dltt") and the market value of equity computed as the product of the stock price (CRSP item "prc") and the number of outstanding shares (CRSP item "shrout") at the end of the fiscal year converted to be denominated in million dollars.
SGrowth	Natural logarithm of the ratio of the current year's and past year's net sales (Compustat item "sale"), each normalized for 12 months using the Compustat item "pddur".
Cash	The ratio of cash and cash equivalents (Compustat item "che") to total assets (Compustat item "at").

PPE	The ratio of the net book value of property, plant and equipment (Compustat item "ppent") to total assets (Compustat item "at").
R&D	The ratio of research and development expenditures (Compustat item "xrd") to total assets (Compustat item "at").
ROA	Return on assets, defined as the ratio of operating income after depreciation (Compustat item "oiadp") normalized for 12 months using the Compustat item “pddur” to total assets (Compustat item "at").
XRET	Excess return over the past fiscal year, defined as the raw stock return including dividends less the return on the S&P 500 index ending at the fiscal year end.
negHHI	Herfindahl-Hirschman concentration index of a firm’s net sales (Compustat item "sale") computed for a combination of a given 2-digit SIC industry using historical industry classification wherever available (Compustat item "sich") and current classification otherwise (Compustat item "sic") and fiscal year, multiplied by −1.
IO	Total percentage institutional ownership as specified by FactSet. We replace missing observations with zeros.
ChairCEO	A dummy variable equal to 1 if the CEO is also chairman of the board and 0 otherwise.
InsideDirs	The percentage of board directors who are classified by the Institutional Shareholder Services (ISS) database as “E” (employee/insider).
ExecOwn	The percentage stock ownership of the executive.
Industry FE	Fixed effects for 49 industries as defined by Fama and French (1997).
Year FE	Fixed effects for fiscal years (based on the Compustat variable "fyear").

Table 1
Descriptive Statistics

Panel A: CEOs

Variables	N	Mean	St. dev.	Min	Median	Max
RA	6,634	47.577	5.914	43.600	47.400	64.600
COMP	6,634	12.892	0.924	12.284	12.962	14.623
SAL/Total	6,634	0.254	0.191	0.126	0.193	0.997
BON/Total	6,634	0.067	0.131	0.000	0.000	0.665
STK/Total	6,634	0.250	0.246	0.000	0.220	0.793
OPT/Total	6,634	0.216	0.234	0.000	0.164	0.900
EQB/SALBON	6,634	0.320	0.238	0.146	0.237	1.000
OPT/SALBON	6,634	0.468	0.251	0.314	0.514	0.927
Vega	5,284	4.100	1.554	3.220	4.277	6.466
Delta	5,732	5.318	1.375	4.453	5.380	8.189
SEV/Assets	5,300	0.975	0.907	0.000	0.821	2.869
Tenure	6,634	8.576	4.896	5.000	8.000	18.000
FirmAge	6,634	24.087	15.020	12.000	20.000	53.000
DIV/M	6,634	0.007	0.013	0.000	0.000	0.066
DEBT/M	6,634	0.194	0.189	0.028	0.149	0.827
BTM	6,634	0.573	0.293	0.354	0.534	1.569
SGrowth	6,634	0.067	0.225	-0.012	0.068	2.040
Cash	6,634	0.158	0.166	0.035	0.097	0.957
PPE	6,634	0.261	0.224	0.087	0.187	0.942
R&D	6,634	0.032	0.062	0.000	0.002	0.957
ROA	6,634	0.096	0.095	0.057	0.094	0.373
XRET	6,634	0.083	0.430	-0.170	0.014	2.465
negHHI	6,634	-0.067	0.060	-0.075	-0.044	-0.019
IO	6,634	0.547	0.404	0.000	0.713	1.000

Table 1 – Continued

Panel B: CFOs

Variables	N	Mean	St. dev.	Min	Median	Max
RA	5,834	48.417	6.281	33.400	48.400	64.600
COMP	5,834	11.981	0.786	9.777	11.968	14.623
SAL/Total	5,834	0.321	0.179	0.020	0.278	0.997
BON/Total	5,834	0.061	0.115	0.000	0.000	0.665
STK/Total	5,834	0.233	0.220	0.000	0.208	0.793
OPT/Total	5,834	0.190	0.206	0.000	0.141	0.900
EQB/SALBON	5,834	0.382	0.217	0.036	0.324	1.000
OPT/SALBON	5,834	0.423	0.220	0.000	0.443	0.927
Vega	4,549	2.920	1.462	-2.143	3.017	6.466
Delta	5,059	3.671	1.332	-0.629	3.723	8.189
SEV/Assets	4,783	0.419	0.528	0.000	0.192	2.869
Tenure	5,834	5.722	3.858	1.000	5.000	18.000
FirmAge	5,834	24.268	15.137	1.000	20.000	53.000
DIV/M	5,834	0.007	0.013	0.000	0.000	0.066
DEBT/M	5,834	0.199	0.192	0.000	0.154	0.827
BTM	5,834	0.578	0.296	0.064	0.539	1.569
SGrowth	5,834	0.063	0.214	-1.443	0.067	2.040
Cash	5,834	0.155	0.161	0.000	0.097	0.957
PPE	5,834	0.261	0.221	0.000	0.187	0.942
R&D	5,834	0.031	0.059	0.000	0.003	0.903
ROA	5,834	0.099	0.091	-0.377	0.093	0.373
XRET	5,834	0.077	0.419	-0.791	0.010	2.465
negHHI	5,834	-0.068	0.062	-0.355	-0.044	-0.019
IO	5,834	0.544	0.405	0.000	0.710	1.000

This table presents univariate statistics for our sample of firms separately for a sample with CEOs (Panel A) and CFOs (Panel B). All variables are defined in the Appendix.

Table 2
Executive Pay Components

Panel A: CEOs

Variables	COMP	SAL/Total	BON/Total	STK/Total	OPT/Total	SEV/Assets	Vega	Delta
All	12.892	0.254	0.067	0.250	0.216	0.975	4.100	5.318
Low RA	13.022	0.226	0.055	0.273	0.232	0.964	4.264	5.450
Medium RA	12.868	0.259	0.070	0.240	0.219	0.955	4.071	5.288
High RA	12.754	0.282	0.077	0.231	0.192	1.013	3.923	5.189
Diff High-Low	**-0.268*** **	**0.056*** **	**0.022*** **	**-0.042*** **	**-0.040*** **	**0.049***	**-0.341*** **	**-0.261*** **

Panel B: CFOs

Variables	COMP	SAL/Total	BON/Total	STK/Total	OPT/Total	SEV/Assets	Vega	Delta
All	11.981	0.321	0.061	0.233	0.190	0.419	2.920	3.671
Low RA	12.106	0.293	0.053	0.254	0.197	0.408	3.171	3.859
Medium RA	12.019	0.313	0.058	0.237	0.196	0.403	3.000	3.732
High RA	11.839	0.350	0.071	0.211	0.1788	0.445	2.638	3.458
Diff High-Low	**-0.267*** **	**0.057*** **	**0.018*** **	**-0.043*** **	**-0.019*** **	**0.037*** **	**-0.533*** **	**-0.402*** **

This table presents statistics related to executive compensation across tertiles for our sample of firms separately for a sample with CEOs (Panel A) and CFOs (Panel B). All variables are defined in the Appendix.

Table 3
Regression Results

Panel A: RA and CEOs Variables	*SAL/ Total* (I)	*BON/ Total* (II)	*STK/ Total* (III)	*OPT/ Total* (IV)	*STKOPT/ SALBON* (V)	*OPT/ SALBON* (VI)	*Vega* (VII)	*Delta* (VIII)	*SEV/ Assets* (IX)
Intercept	0.050	0.157***	0.033	0.547***	6.037***	4.328***	5.878***	7.461***	0.969
	(0.48)	(3.04)	(0.61)	(3.95)	(4.28)	(4.66)	(7.70)	(27.83)	(1.50)
RA	**0.003*** **	**0.001*** **	**-0.002*** **	**-0.003*** **	**-0.052*** **	**-0.026*** **	**-0.023*** **	**-0.013*** **	**0.007*** **
	(6.33)	**(2.87)**	**(-2.72)**	**(-4.61)**	**(-5.45)**	**(-5.82)**	**(-4.87)**	**(-3.90)**	**(2.72)**
Tenure	-0.002**	-0.001***	-0.001	0.001	0.023*	0.014**	0.067***	0.097***	-0.007
	(-2.17)	(-3.12)	(-0.82)	(1.52)	(1.79)	(1.99)	(8.45)	(16.02)	(-1.62)
FirmAge	-0.001***	0.000	0.000	0.000	0.008*	0.003	0.015***	-0.001	-0.004***
	(-5.44)	(0.41)	(0.86)	(0.30)	(1.74)	(0.95)	(5.36)	(-0.43)	(-2.90)
DIV/M	0.282	-0.182	0.816**	-0.692**	1.769	-3.212	2.399	-5.889***	-5.089***
	(1.05)	(-1.08)	(2.21)	(-2.29)	(0.52)	(-1.58)	(0.56)	(-2.58)	(-3.75)
DEBT/M	-0.172***	-0.002	0.088***	0.045*	1.539***	0.596***	0.612	0.294	-0.483***
	(-5.94)	(-0.14)	(2.98)	(1.76)	(4.12)	(3.08)	(1.48)	(0.86)	(-3.64)
BTM	0.155***	0.018**	-0.016	-0.104***	-1.778***	-0.944***	-1.323***	-1.664***	-0.064
	(8.58)	(2.22)	(-1.03)	(-6.95)	(-8.13)	(-8.29)	(-11.69)	(-14.56)	(-0.76)
SGrowth	-0.050***	0.046***	0.010	-0.027*	0.311**	0.046	0.002	0.256***	0.085
	(-4.39)	(4.51)	(0.70)	(-1.86)	(2.00)	(0.42)	(0.02)	(3.29)	(1.09)
Cash	0.040	-0.004	-0.015	0.023	0.140	0.207	-0.645**	-0.733***	0.031
	(1.33)	(-0.20)	(-0.41)	(0.58)	(0.28)	(0.59)	(-2.43)	(-3.56)	(0.17)
PPE	0.070***	-0.009	0.072**	-0.064**	-0.128	-0.465*	-0.737***	-0.388**	-0.221
	(2.97)	(-0.52)	(2.37)	(-2.00)	(-0.34)	(-1.92)	(-3.15)	(-1.99)	(-1.53)
R&D	0.020	-0.070**	0.063	0.259***	1.657	1.707**	-0.278	-2.099***	-0.589
	(0.24)	(-2.22)	(0.53)	(2.85)	(1.48)	(2.18)	(-0.39)	(-2.80)	(-1.28)
ROA	-0.100**	0.061**	0.008	0.066	0.974	0.907*	1.363***	1.267***	-0.650***
	(-2.07)	(1.98)	(0.16)	(1.17)	(1.23)	(1.93)	(2.82)	(2.92)	(-3.05)
XRET	-0.024**	0.013**	0.006	-0.010	0.224	0.011	-0.121*	0.177***	0.104***
	(-2.15)	(2.46)	(0.60)	(-1.39)	(1.58)	(0.21)	(-1.89)	(3.16)	(4.56)
negHHI	0.010	0.105**	-0.026	-0.134	-0.698	-0.569	-0.386	1.088*	-0.146
	(0.12)	(2.48)	(-0.29)	(-1.41)	(-0.64)	(-0.88)	(-0.47)	(1.91)	(-0.29)
IO	-0.056***	-0.012*	0.037***	0.009	0.499***	0.154	0.367***	0.116	0.132*
	(-5.41)	(-1.78)	(2.69)	(0.69)	(2.75)	(1.39)	(3.40)	(1.23)	(1.83)
Observations	6,634	6,634	6,634	6,634	6,634	6,634	5,294	5,742	5,308
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.139	0.309	0.194	0.165	0.141	0.096	0.215	0.345	0.131

Table 3 – Continued

Panel B: RA and CFOs Variables	*SAL/ Total* (I)	*BON/ Total* (II)	*STK/ Total* (III)	*OPT/ Total* (IV)	*STKOPT/ SALBON* (V)	*OPT/ SALBON* (VI)	*Vega* (VII)	*Delta* (VIII)	*SEV/ Assets* (IX)
Intercept	0.136	0.160***	0.054	0.440***	3.493***	2.480***	3.967***	5.644***	0.346
	(1.53)	(3.90)	(0.47)	(5.53)	(2.99)	(5.72)	(6.01)	(11.71)	(1.12)
RA	**0.003*** **	**0.000**	**-0.002*** **	**-0.002*** **	**-0.029*** **	**-0.011*** **	**-0.029*** **	**-0.021*** **	**0.004*** **
	(8.62)	**(1.00)**	**(-4.48)**	**(-4.14)**	**(-7.11)**	**(-4.95)**	**(-6.93)**	**(-5.75)**	**(3.12)**
Tenure	0.001	-0.001	-0.001	-0.001	-0.012	-0.008	0.065***	0.111***	0.011***
	(1.06)	(-1.16)	(-1.27)	(-0.77)	(-0.77)	(-1.59)	(6.65)	(17.08)	(2.80)
FirmAge	-0.002***	0.000	0.001*	-0.000	0.008***	0.001	0.018***	0.011***	-0.005***
	(-6.82)	(0.45)	(1.93)	(-0.43)	(2.86)	(0.46)	(6.82)	(5.06)	(-5.66)
DIV/M	0.478*	-0.143	0.521	-0.854**	-1.660	-3.625**	1.430	-7.071***	-2.047***
	(1.73)	(-0.94)	(1.47)	(-2.33)	(-0.73)	(-2.31)	(0.34)	(-3.40)	(-3.49)
DEBT/M	-0.130***	-0.000	0.054*	0.034	0.814***	0.315**	0.319	0.334	-0.278***
	(-4.79)	(-0.01)	(1.89)	(1.43)	(3.34)	(2.50)	(1.01)	(1.19)	(-2.97)
BTM	0.149***	0.021***	-0.012	-0.089***	-0.992***	-0.544***	-1.064***	-1.623***	-0.041
	(8.68)	(3.13)	(-0.79)	(-6.02)	(-7.64)	(-8.46)	(-8.43)	(-15.58)	(-0.77)
SGrowth	-0.054***	0.030***	-0.005	-0.010	0.295**	0.169	0.031	0.177***	0.062
	(-5.95)	(4.00)	(-0.25)	(-0.59)	(2.46)	(1.54)	(0.36)	(2.80)	(1.20)
Cash	0.040*	0.017	-0.012	0.006	0.277	0.061	-0.461*	-0.765***	0.316**
	(1.71)	(1.16)	(-0.42)	(0.17)	(1.02)	(0.33)	(-1.83)	(-4.06)	(2.13)
PPE	0.062***	-0.017	0.049**	-0.040*	-0.145	-0.231**	-0.746***	-0.517***	-0.000
	(2.89)	(-1.09)	(2.05)	(-1.77)	(-0.80)	(-1.98)	(-3.43)	(-3.11)	(-0.01)
R&D	0.101	-0.112***	0.089	0.163	1.436**	1.098	-1.099	-1.546**	-0.391
	(1.04)	(-3.46)	(1.00)	(1.35)	(2.00)	(1.21)	(-1.03)	(-2.13)	(-1.23)
ROA	-0.169***	0.013	0.027	0.143***	1.041***	0.831***	1.540***	0.925***	-0.465**
	(-3.58)	(0.54)	(0.63)	(2.75)	(3.27)	(2.63)	(4.52)	(2.90)	(-2.33)
XRET	-0.017**	0.009*	0.002	-0.009*	0.127	0.035	-0.139**	0.112**	0.073***
	(-2.14)	(1.91)	(0.19)	(-1.70)	(1.28)	(0.76)	(-2.22)	(2.57)	(3.43)
negHHI	0.005	0.087**	-0.115	-0.053	-0.344	-0.114	-0.699	-0.170	0.119
	(0.06)	(2.22)	(-1.24)	(-0.63)	(-0.56)	(-0.28)	(-0.91)	(-0.27)	(0.46)
IO	-0.057***	-0.007	0.038***	0.015	0.363***	0.137**	0.359***	0.315***	0.060*
	(-5.18)	(-0.82)	(3.13)	(1.25)	(3.43)	(2.42)	(3.41)	(3.80)	(1.65)
Observations	5,834	5,834	5,834	5,834	5,834	5,834	4,557	5,069	4,790
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.161	0.325	0.189	0.191	0.118	0.112	0.228	0.376	0.116

Table 3 – Continued

Panel C: OCEAN and CEOs Variables	*SAL/ Total* (I)	*BON/ Total* (II)	*STK/ Total* (III)	*OPT/ Total* (IV)	*STKOPT/ SALBON* (V)	*OPT/ SALBON* (VI)	*Vega* (VII)	*Delta* (VIII)	*SEV/ Assets* (IX)
Intercept	0.167	0.262***	0.047	0.341*	4.648***	2.919**	6.412***	8.013***	1.087
	(1.17)	(4.51)	(0.57)	(1.85)	(2.77)	(2.50)	(7.79)	(12.78)	(1.48)
Neg.O	0.000	0.001**	0.001	-0.002*	-0.007	-0.015**	0.006	0.007	0.002
	(0.44)	(2.00)	(0.85)	(-1.95)	(-0.78)	(-2.41)	(1.15)	(1.40)	(0.55)
C	0.000	0.000	0.001**	-0.001**	-0.001	-0.003	-0.003	-0.006**	0.003
	(0.41)	(0.93)	(2.04)	(-2.25)	(-0.13)	(-1.06)	(-1.19)	(-2.23)	(1.59)
Neg.E	0.001***	0.000	-0.001***	-0.000	-0.018***	-0.005***	-0.008***	-0.003***	0.000
	(6.54)	(0.65)	(-5.05)	(-1.48)	(-6.97)	(-3.31)	(-4.27)	(-2.70)	(0.30)
A	0.000	0.000	-0.001***	-0.000	-0.009**	-0.001	-0.003	-0.000	-0.000
	(1.50)	(1.34)	(-2.86)	(-0.26)	(-2.50)	(-0.51)	(-1.32)	(-0.27)	(-0.23)
N	0.001*	0.000	-0.001**	-0.001	-0.027***	-0.015***	-0.013**	-0.001	0.004
	(1.70)	(0.23)	(-2.35)	(-1.20)	(-3.76)	(-2.85)	(-2.35)	(-0.31)	(1.31)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,634	6,634	6,634	6,634	6,634	6,634	5,294	5,742	5,308
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.142	0.309	0.197	0.165	0.144	0.098	0.218	0.346	0.132

Panel C: OCEAN and CFOs Variables	*SAL/ Total* (I)	*BON/ Total* (II)	*STK/ Total* (III)	*OPT/ Total* (IV)	*STKOPT/ SALBON* (V)	*OPT/ SALBON* (VI)	*Vega* (VII)	*Delta* (VIII)	*SEV/ Assets* (IX)
Intercept	0.295***	0.203***	-0.076	0.350***	1.764	1.898***	3.014***	5.150***	0.177
	(3.10)	(5.19)	(-0.55)	(3.75)	(1.42)	(3.54)	(4.00)	(9.88)	(0.56)
Neg. O	0.001***	0.001***	-0.001*	-0.001***	-0.016***	-0.008***	-0.011***	-0.007***	-0.001
	(3.48)	(2.89)	(-1.92)	(-2.69)	(-4.43)	(-2.93)	(-3.90)	(-3.87)	(-0.65)
C	-0.000	0.000	0.000	0.000	0.003	0.002	0.001	0.001	-0.000
	(-1.33)	(0.19)	(0.38)	(1.31)	(0.89)	(1.28)	(0.38)	(0.83)	(-0.55)
Neg. E	0.001***	-0.000	-0.001***	-0.000*	-0.006***	-0.001	-0.006***	-0.004***	0.002***
	(6.24)	(-0.89)	(-3.29)	(-1.93)	(-4.38)	(-1.55)	(-4.51)	(-3.44)	(3.80)
A	0.001***	-0.000	-0.000	-0.001**	-0.007***	-0.004*	-0.006**	-0.006***	-0.000
	(3.13)	(-0.19)	(-1.36)	(-2.12)	(-2.62)	(-1.94)	(-2.41)	(-3.52)	(-0.08)
N	0.002***	0.000	-0.001	-0.002***	-0.018***	-0.010***	-0.019***	-0.015***	0.004***
	(3.88)	(0.52)	(-1.13)	(-3.50)	(-3.83)	(-3.07)	(-5.01)	(-5.46)	(4.02)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,834	5,834	5,834	5,834	5,834	5,834	4,557	5,069	4,790
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.168	0.325	0.190	0.194	0.121	0.115	0.232	0.379	0.119

This table presents regression models of the components of executive pay on the RA measure, a set of control variables, and year and industry fixed effects separately for different components of CEO (Panel A) and CFO (Panel B), respectively. Panels C and D present regression models of the components of executive pay on the Big Five personality traits for CEOs and CFOs, respectively. All remaining variables are defined in the Appendix. In brackets are the t-values of the regression coefficients based on double clustered errors (following Petersen 2009). ***, **, and * denote 1%, 5%, and 10% significance levels, respectively.

Table 4
Fixed Effects Analysis

Variables	*STKOPT/ SALBON*	*OPT/ SALBON*	*Vega*	*Delta*
Intercept	2.549***	1.045***	3.442***	3.907***
	(13.77)	(8.29)	(23.94)	(26.53)
RA	**-0.018*** **	**-0.007** **	**-0.021*** **	**-0.019*** **
	(-4.88)	**(-2.55)**	**(-8.18)**	**(-6.57)**
Tenure	0.110***	0.040***	0.153***	0.210***
	(9.39)	(12.59)	(29.76)	(30.79)
Observations	11,583	11,583	9,023	9,905
Adjusted R^2	0.059	0.026	0.323	0.371

This table presents the estimated results of fixed effect regressions, where we regress our four proxies for compensation variability (*STKOPT/SALBON, OPT/SALBON, Vega*, and *Delta*) on *RA* and *Tenure*. All variables are defined in the Appendix. In brackets are the t-values of the regression coefficients based on double clustered errors (following Petersen 2009). ***, **, and * denote 1%, 5%, and 10% significance levels, respectively.

Table 5
Conditional Premium Analysis

Variables	COMP CEOs	COMP CEOs	COMP CEOs	COMP CEOs	COMP CFOs	COMP CFOs	COMP CFOs	COMP CFOs
Intercept	10.361***	10.593***	9.850***	9.992***	9.210***	9.487***	8.704***	8.815***
	(48.45)	(43.28)	(51.99)	(50.75)	(49.76)	(48.00)	(37.52)	(33.34)
RA	-0.001	-0.006**	-0.002	-0.005***	-0.004***	-0.009***	-0.004***	-0.006***
	(-0.48)	(-2.42)	(-1.17)	(-2.69)	(-4.49)	(-5.45)	(-4.57)	(-3.88)
STKOPT/SALBON	0.136***	0.059**			0.165***	0.023		
	(7.54)	(2.20)			(8.06)	(0.63)		
OPT/SALBON			0.113***	-0.020			0.151***	0.009
			(10.36)	(-0.61)			(9.27)	(0.14)
RA*STKOPT/SALBON		**0.002*** **				**0.003*** **		
		(2.77)				**(4.21)**		
RA*OPT/SALBON				**0.003*** **				**0.003** **
				(4.49)				**(2.13)**
Tenure	0.001	0.001	-0.002	-0.002	0.010***	0.010***	0.008***	0.008***
	(0.44)	(0.46)	(-0.52)	(-0.56)	(4.02)	(4.20)	(2.65)	(2.64)
MVE	0.123***	0.122***	0.207***	0.207***	0.167***	0.166***	0.235***	0.234***
	(6.39)	(6.36)	(11.53)	(11.64)	(9.29)	(9.43)	(11.84)	(11.93)
Sales	0.207***	0.207***	0.202***	0.202***	0.155***	0.156***	0.155***	0.156***
	(14.16)	(14.32)	(10.63)	(10.67)	(10.42)	(10.91)	(8.79)	(8.94)
SGrowth	-0.109	-0.102	-0.089	-0.100	-0.125**	-0.131**	-0.046	-0.049
	(-1.12)	(-1.05)	(-0.97)	(-1.09)	(-1.99)	(-2.08)	(-0.67)	(-0.70)
ROA	-0.279	-0.271	-0.570***	-0.553***	-0.538***	-0.520***	-0.751***	-0.741***
	(-1.63)	(-1.58)	(-2.85)	(-2.78)	(-3.45)	(-3.46)	(-5.40)	(-5.38)
XRET	0.134***	0.132***	0.163***	0.160***	0.078***	0.078***	0.092***	0.093***
	(4.50)	(4.44)	(4.44)	(4.38)	(3.90)	(3.73)	(4.58)	(4.48)
STDRet	1.063	1.065	1.728	1.744	4.197***	4.137***	5.545***	5.471***
	(0.55)	(0.55)	(0.68)	(0.69)	(2.85)	(2.79)	(3.12)	(3.09)

negHHI	0.707***	0.714***	0.906***	0.907***	0.432*	0.452*	0.562**	0.563**
	(2.88)	(2.94)	(3.25)	(3.27)	(1.84)	(1.94)	(2.15)	(2.16)
ChairCEO	0.094***	0.093***	0.080***	0.079***	0.032*	0.031	0.023	0.022
	(3.77)	(3.68)	(2.82)	(2.77)	(1.66)	(1.59)	(1.13)	(1.10)
InsideDirs	-0.603***	-0.604***	-0.775***	-0.769***	-0.219*	-0.200*	-0.295**	-0.289**
	(-3.50)	(-3.50)	(-4.32)	(-4.32)	(-1.82)	(-1.67)	(-2.07)	(-2.04)
ExecOwn	-1.375	-1.346	-2.176**	-2.141**	9.507*	10.140**	14.480***	14.487***
	(-1.56)	(-1.54)	(-2.07)	(-2.05)	(1.88)	(2.09)	(2.72)	(2.73)
IO	0.069**	0.066**	0.075*	0.072*	0.060**	0.060**	0.070**	0.070**
	(2.11)	(2.04)	(1.93)	(1.85)	(2.14)	(2.12)	(2.10)	(2.10)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	5,369	5,369	5,369	5,369	4,817	4,817	4,817	4,817
Adjusted R^2	0.703	0.704	0.601	0.602	0.726	0.729	0.629	0.630

All variables are defined in the Appendix. In brackets are the t-values of the regression coefficients based on double clustered errors (following Petersen 2009). ***, **, and * denote 1%, 5%, and 10% significance levels, respectively.